London

An investigation of the Strategic Decision Making Process in SMEs

A thesis submitted for the degree of Doctor of Philosophy

By

Wael Hasan Ali Al Jassim

Brunel Business School, Brunel University London

Abstract

Changes in the environment are a major area of concern to any firm in its strategic decision making process (SDMP). SDMP is considered to be an important component in the success of firms in the strategic management literature. This includes small and medium-sized enterprises (SMEs) operating in the electronic, telecom and information technology (IT) sector which are subjected to frequent and extremely dynamic environments both internally and externally, unlike many other industries. A lack of prior studies supporting an understanding of the SDMP in SMEs is evident, and coupled with the extremely volatile environmental conditions that compound the problem, makes SMES dealing in electronic, telecom and IT products and services highly vulnerable to closure. An immediate investigation into the SDMP in SMEs is needed and long overdue. This research seeks to address this gap in the knowledge.

In order to address the gap this research used synoptic formalism and incrementalism to develop an understanding on how SMEs in the electronic, telecom and IT sector make decisions and what is the nature of these decisions. A Strategic Decision Making Process (SDMP) model was developed based on prior research. Decision magnitude of impact acted as the input to the SDMP, rationality and intuition acted as the process component, and decision process output as the output component. Thus these three concepts acted as the three components of a process (input-process-output) configuration. The model facilitated the development of an understanding of the functioning of decision magnitude of impact as a decision characteristic factor, its relationship to SDMP and process dimensions (rationality in decision making and intuition) as an antecedent (and hence as a predictor) of decision output variables (decision process effectiveness, quality of the decision process output through the mediation of decision dimensions.

In line with the need to understand the SDMP in SMEs data were collected from managers of a large number of SMEs belonging to electronic, telecom and IT sector. The territory chosen was the Gulf Cooperation Council countries (Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait and United Arab Emirates) as this region provides a rich source of such SMEs and the environment is highly dynamic. A self-administered questionnaire was developed by adapting previously validated questionnaire scales. Pre-testing and pilot surveys were used to ensure that the contents, format and scales were appropriate. A range of decision makers in those SMEs were targeted.

464 valid questionnaires were returned, representing a response rate of over 50%. The data was coded and analysed using SPSS/AMOS, two widely used statistical software tools. The data analysis steps included reliability and validity testing (Cronbach's alpha and Confirmatory Factor Analysis, respectively). The entire model was tested using Structural Equation Modelling (SEM). Using SEM it was possible to identify the model, test the parsimonious nature of the model, determine whether the identified model makes theoretical sense and examine the fitness of the model to the data. The predictability of decision process output by decision magnitude of impact was analysed using path analysis as part of the SEM. The research outcome showed that in the electronic, telecommunication and information technology sector, where the environment is dynamic, decision magnitude as an important independent variable influences rationality in decision making directly and decision effectiveness, quality of decision process output and firm commitment indirectly. Rationality in decision making was found act as an important medicating variable in the strategic decision making process. In the same vein it was found that intuition is not affected by decision magnitude of impact. Further, dynamism in the industry and firm performance were also seen to influence decision effectiveness, quality of decision process output and firm commitment although the influence of dynamism in the industry on firm commitment was found to be very low.

Thus the main contribution of this research is the development of an understanding of the relationship between decision magnitude of impact as input to the SDMP and hence as predictor of decision process output and the SDMP process output. Furthermore, the research has advanced current knowledge on the influence of rationality in decision making and intuition as mediators between decision magnitude of impact and decision process output variables. These two aspects have been tested in an SME sector that is affected seriously by dynamism in the industry and with varying firm performance as a contextual feature. The comprehensive research outcome can be of benefit to the SMEs in the electronic, telecom and IT sector and support them in overcoming potential vulnerabilities by making strategic decisions whose magnitude of impact on the firms is high and a decision process that is rational. In addition from the point of view of methodology this research has used SEM in understanding the nature and functioning of the model as well as the operationalisation of the variables. The outcome of this research is expected to benefit the SMEs in the electronic, telecom and IT sector in their SDMP and has opened up a new area of research for other researchers and academics.

In the name of Allah, Most Gracious, Most Merciful

"Praise be to Allah, the Cherisher and Sustainer of the worlds; Most Gracious, Most Merciful; Master of the Day of Judgment; Thee (alone) we worship; Thee (alone) we ask for help; Keep us on the right path; The path of those whom Thou hast favoured; Not the (path) of those who earn Thine anger nor of those who go astray".

(Holy Quran 1:1-7)

Dedication

I would like to dedicate this thesis to my family, especially to my parents, with their blessing and to my wonderful wife and children who always believed and provided unconditional support and encouragement. This thesis would not have been possible without their love.

Declaration

I declare that the ideas, results, analysis, findings and conclusions reported in this thesis are entirely my own efforts, except where otherwise acknowledged. I also declare that this work is original and has not been previously submitted for any degree award.

Acknowledgement

First of all, I thank ALLAH the Almighty from the core of my heart for guiding and inspiring me. All good and nice things that I have had in my life are due to His Help, Love and Mercy.

I am greatly indebted to my first supervisor, Dr. David Gallear, for his guidance and support, valuable advice, and perceptive suggestions throughout the research and writing-up process of my PhD. I also wish to extend my thanks to Dr. Jamal Al Zayer, my second supervisor, for his support throughout my PhD studies.

I am extremely thankful to Mr. S. Gowrishankar for his constant help, support and encouragements throughout my PhD journey.

I would also like to express my gratitude and thanks all participants and to all who helped and supported me during my PhD.

Contents

List of Tables

List of Figures

Glossary

Acronyms	Meaning
DMI	Decision Magnitude of impact
SMEs	small and medium sized enterprises
SDMP	Strategic decision-making process
IT	information technology
DMP	decision-making process
SPSS	Statistical Package for Social Sciences
CFA	confirmatory factor analysis
SEM	structural equation modelling
TMT	Top Management Teams
SD	Strategic decision
CEO	Chief operating officer
DMP	Decision Making Process
SDM	Strategic Decision Making
TQM	Total Quality Management
FP	Firm Performance
Dyms	Dynamism in the industry
QODPO	Quality of the decision process output
FC	Firm's (organisation's) commitment
DME	Decision making effectiveness
GCC	Gulf Co-operation council
D2	Mahalanobis distance
df	Degree of freedom
MEANDMI	Mean Decision magnitude of impact
DYMS	Dynamism in the Industry
RDM	Rationality in decision making
AVE	Average Variance Extracted
GM	General Manager
SM	Senior Manager
(n.d.)	No Date
(χ2)	Chi-square
(GFI)	Goodness Fit Index
(AGFI)	Adjusted GFI
(NFI)	Normed Fit Index
(IFI)	Incremental Fit Index
(TLI)	Tucker–Lewis Index
(CFI)	Comparative Fit Index
(RNI)	Relative Noncentrality fit Index
(RMSEA)	Root Mean Square Error Approximation
(RMR)	Root Mean Residual
(ML)	the Maximum Likelihood

Chapter 1

Introduction

The strategic decision-making process in small and medium sized enterprises (SMEs) is considered to be an important area for research as little previous attention has been paid to it by researchers (Gibcus et al. 2004). Yet the strategic decision-making processes are considered to be vital for the survival of industries including SMEs. One of the reasons for the rapid entrance and exit of SMEs from various markets could be due to lack of understanding of the formal decision making process by the managers and owners of the SMEs. Many factors contribute to this strange phenomenon and require further examination. The problem is more pronounced in such industries as the electronic, telecommunication and information technology (IT) industries in the SME sector as they have to operate in a very turbulent environment (TID, 2001). Performing and surviving in such dynamic environments without appropriate strategy and strategic decision-making is a daunting task (Karami, 2008). Research outcomes are urgently needed to provide support to decision makers in SMEs in order to help them to successfully overcome challenges posed by the dynamic environment. This research is an attempt to address this problem with a focus on the electronic, telecommunication and information technology (IT) industries in the SME sector.

1 Background

Business experts, economists and policy makers firmly believe and concur that small and medium enterprises (SMEs) are fundamental drivers of countries' economic growth (Mahembe, 2011). Thornburg (1993) argues that SMEs act as a powerful engine that propels economic growth and technological progress in any nation. Needless to say, the success of SMEs should be one of the major concerns of policy makers, although the success or failure of SMEs is considered to be dependent largely on their strategic decision-making practices (Gibcus et al. 2004). One study on SMEs indicated that the failure rate of SMEs during a given year was 11% while within a five-year period it was 80% (Storey & Cressy, 1995). According to Gibcus et al. (2004) the major cause appears to be the strategic decision making process. SMEs in general are found to lack a formal and structured strategic decision making process (Dans, 1999). A lack of adequate research studies in this area compounds the problem further. This research aims to fill this gap by investigating the strategic decision-making process practiced in SMEs in order to provide an understanding of the linkages between important components of the process.

1.1 Context

Enterprises are classified commonly as small and medium based on either the capital investment made or the number of employees working in the enterprise or its annual turnover or the assets of the firm (Hertog, 2010). SMEs constantly face challenges that many times threaten their very survival. For instance constraints related to finance, technology and human capacity could affect SMEs (UNIDO & UNODC, 2012). Many thousands of SMEs in the Far East went bankrupt due to the economic crisis of the late nineties (TID, 2001) an example of the impact of the external environment. In addition SMEs suffer due to narrow profit margins, problems in accessing information or enforcing contracts (UNIDO & UNODC, 2012), the liberalization policy of global and regional trade and investment leading to dumping of products by large firms at below cost price, shifting demand to import from domestic goods and increased competition (TID, 2001). One of the most important factors that affect the SMEs has been the environmental factors, both external and internal (Karami, 2008).

The foregoing problems are common to SMEs in general. However there is an important difference between the SMEs operating in the electronic, telecommunication and information technology areas and SMEs operating in other sectors. The electronic, telecommunication and information technology industries in the SME sector are characterized by many problems that need to be resolved in very short periods and in many instances using intuition (Khatri & Ng, 2000). Examples of such problems are provided in Table 1.1.

Table1.1, Example of challenges and problems faced by Electronics, Telecommunication and Information Technology industries in the SME sector

Challenges and Problems faced by Electronics, Telecommunication and Information Technology industries in the SME sector	
Bargaining power of buyers, Rivalry among existing firms, Threat of substitute new products, Dynamic environment and Competition	Karami (2008)
Challenges arising out of competitor pricing, Challenges posed by market forces in industry, Difficulties faced in resource adaptation to customer needs and preferences, Problems in adapting capabilities to the current business environment, Problems in adapting product pricing to our suppliers pricing, Constraints in cash flow, Constraints of capital availability, Dealing with debt holder's requirements, Managing with economic conditions and Adapting to social and political conditions	Metts (2011)
Dichotomy of consumer loyalty and propensity to switch between brands or providers, limited avenues for maintaining the existing level of operations and for market growth through acquiring new customers, convincing existing customers to upgrade to a newer product, or providing potential customers with incentives for switching from other brands or providers	Kazakevitch and Torlina (2008)

1.1.1 Definition and Characteristics of SMEs

From the literature it can be found that a number of definitions have been given for SMEs and what constitutes an SME although they vary (Jafari et al. 2007; Fathian et al. 2008;

Thassanabanjong et al. 2009; Mirbargkar, 2009; Ghanatabadai, 2005). Number of members in the organization is used in some cases while in some other cases the business capital is used (Sahran et al. 2010). For instance Sahran et al. (2010) highlight those firms with employees in the range 5 to 50 could be considered as small while medium enterprises could be considered those employing fewer than 150 people. Similar classifications are used in different places, for instance, in Mauritius small firms are defined as those having fewer than 20 employees while firms are considered as medium if they employ more than 20 employees but less than 100 employees (Kasseeah & Tandrayen-Ragoobur, 2011). In Bahrain firms are classified as small if they have employees numbering between 11 and 50 while medium firms are defined as those having number of employees greater than 50 but less than 250.

As far as business capital is concerned in Bahrain small enterprises are defined as those who have invested between USD50,000 and USD130,000 (approximately) while medium firms are those that have invested between USD 130,000 and USD800,000 (EDB, 2010). Similar figures are used in the GCC countries to define SMEs (Hertog, 2008). While the definitions about the SMEs vary what is clear from the literature is that SMEs contribute significantly to a nation's economy (see Table 1.2 which provides an idea about the contribution of SMEs to various nations).

Table1.2, World Bank statistics on Contribution of MSMEs to different nations (Adapted from Kumar et al. 2013)

Country Name	**Structure of the MSME Sector (% of all MSMEs)**			**SME Participation in the Economy**		
	Micro	Small	Medium	SMEs	SME per 1,000 people	SME employment (% total)
Brazil	93.9	5.6	0.5	4 903 268	27.4	67.0
China	n/a	n/a	n/a	8 000 000	6.3	78.0
Egypt	92.7	6.1	0.9	1 649 794	26.8	73.5
United Kingdom	95.4	3.9	0.7	4 415 260	73.8	39.6
Ghana	55.3	42.0	2.7	25 679	1.2	66.0
India	94.0	3.3	-	295 098	0.3	66.9
Mexico	-	-	-	2 891 300	27.9	71.9
Malawi	91.3	8.5	0.2	747 396	72.5	38.0
Russian federation	-	-	-	6 891 300	48.8	50.5
United State	78.8	19.7	1.5	5 868 737	20.0	50.9
South Africa	92.0	7.0	1.0	900 683	22.0	39.0

1.1.2 SMEs in the GCC

Gulf Cooperation Council comprises six nations namely Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait, Qatar, Sultanate of Oman and United Arab Emirates. Like in any other region, SMEs contribute significantly. According to a report on SMEs in the GCC there are about 900,000 firms. These SMEs in GCC do business in a variety of sectors including professional, scientific and technical activities, manufacturing, transportation, storage,

wholesale, retail trade and real estate. Significantly SMEs dealing in electronics, information technology and telecommunication appear to be limited in number and these industries appear to be attracting attention of late in this region.

SMEs in the GCC are affected by many different characteristics of the region. For instance GCC economy is based on petroleum as this natural resource is abundantly available in this region although there have been calls for developing industrial sectors in other fields in order to ensure that the economy is not dependent on oil alone. Furthermore, GCC is characterized by lack of policies for developing SMEs as currently these economies are doing well due to the wealth generated by selling oil (Beidas-Strom et al. 2011). GCC countries are economically strong and do not need any investment support from external agencies. However, there has been a renewed thinking to delink the economy from the oil sector to an economy that is based on industrialization (Beidas-Strom et al. 2011).

The lack of industrialization in this region has resulted in the GCC countries to import many essential items required for modern living including those related to electronic and ICT fields. Although markets have developed in this region and there is a good demand for products and services in the fields of electronics, information technology and telecommunication, still SMEs have not grown much as they are not found to be contributing significantly to the GDP (Hertog, 2008). In addition there is scarcity of infrastructure and skilled manpower. In addition, it is seen that GCC nationals lack entrepreneurial skills to manage SMEs. These arguments clearly point out the need for a concerted effort on the part of the SMEs to develop themselves using appropriate strategic planning and decision making. Considering the fact that GCC economies have features of both advanced and emerging economies it is possible that SMEs can contribute significantly to the individual nation's GDP. Adding to this situation is the fact that private sector is capital-rich, recently infrastructure has been developing significantly and gradually national populations are becoming well educated. Moreover large scale firms are getting established and are professionally run indicating that SMEs could follow a similar pattern (Hertog, 2008). These positive aspects provide a strong setting for SMEs to make progress in this region.

Besides, the focus of this research is the electronics, information technology and telecommunication industries in GCC. SMEs in the electronics, information technology and telecommunication sector in GCC are continuing to develop in this region depending on the demand as according to one report some businesses have used latest software and hardware and some others are constantly on the lookout for latest technology (D&B, 2008). In fact the report of D&B (2008) points out that usage of technology in firms in Bahrain is termed as low to moderate and this could be the case in other GCC countries as Bahrain is one of those

countries in the GCC that is considered as a leader in using up-to-date technology. Still the areas related to electronics, information technology and telecommunication are considered to be a priority area for governments across the world including those of the GCC (EDB, 2010). This brings the discussion to focus on some of the important characteristics of the SMEs in GCC involved in business pertaining to electronics, information and telecommunication technology as these characteristic will determine the strategy to be adopted by both the owners of the SMEs and the governments in order to promote growth of SMEs.

Important characteristics of SMEs involved in electronics, information technology and telecommunication sectors in GCC include extremely dynamic and uncertain technology, lack of skilled manpower in GCC to deal in these sectors, lack of local manufacturing base, lack of research and development, lack of innovation, lack of interest amongst entrepreneurs to operate as there is hardly any incentive, good market, strong demand, good purchasing power of the population, good per capita income, strong economy and very low tax rates. However in comparison to other sectors such as construction or petroleum, SMEs do not produce vacancies for local population as salaries in this sector cannot match those of other sectors. Unlike other regions in the world, where SMEs thrive in the electronics, information technology and telecommunication sectors, in the GCC, where living conditions are comparatively better, SMEs in these sectors have limited scope to thrive. Thus the environment in the GCC is seen to be one having mixed features. In such an environment it is necessary for industries to develop strategies, plans and make decisions so that the SMEs can progress and do profitable business. Strategic decision making process gains importance.

One of the major gaps that exist in the SDMP literature is the lack of focused research conducted in the SME sector, and on those SMEs in the electronic, telecommunication and IT industry sector. The importance of these industries lies in the fact that in the modern era almost every other industry relies on the electronic, telecommunication and IT industries (e.g. Khunthongjan (2009) argues that technology is a major factor affecting all types of SMEs). This implies that support provided by electronic, telecommunication and IT industries to other industries in the SME sectors, depends upon the survival of these industries. Hence, the study of electronic, telecommunication and IT industries in the SME sector assumes great importance.

Furthermore, considering the extremely dynamic nature of the environment in which the electronic, telecommunication and IT industries operate, strategies developed in these firms will have major implications on their survival. Logically, the strategies depend on the strategic decisions made by the managers in these firms. Thus, this research is focused on the SDMP related to the electronic, IT and telecommunication industries in the SME sector, the

outcome of which provides an important guide for managers in these SMEs, and make a major contribution to the body of knowledge in the SDMP domain.

1.2 Current knowledge available in the literature

Gibcus et al. (2004) highlight the plight of SMEs in so far as strategic decision making is concerned with a caveat that hardly any study has been conducted on the decision making processes in SMEs and this situation is seriously afflicting SMEs. As a corollary to this statement it can be stated that SMEs could do better if researchers provide solutions to SMEs by developing parsimonious yet robust guidance on strategic decision-making, or associated models, which is lacking in the current literature.

Researchers, for instance Mador (2000), consider strategic decisions to be complex as well as involving uncertainty of a high degree. Mador (2000) argues that the type and occurrence of strategic decisions is dependent on a wide variety of factors such as internal and external environmental contexts of firms in which they operate. Furthermore, researchers (e.g. Elbanna, 2006; and Rajagopalan et al. 1993) argue that strategic decisions are made based on issues of strategy content or by process. Although strategic decision making in the SMEs in general has been found to be a neglected area, within the domain of strategic decision making, process based research has particularly lagged behind (Rajagopalan et al. 1993).

While strategic decision-making research that is content based has flourished, process based research needs deeper investigation, an argument subscribed to by researchers like Mintzberg and Waters (1985), and Papadakis and Barwise (1998). The reason provided by these researchers to call for further research in strategic decision making from the process perspective is the influence process based research can exert on the content based research and vice versa. In other words strategic decision-making based on content and by process are considered to be complementary to each other and not alternatives (Elbanna, 2006).

The focus of this research is 'strategic decision making by process'. Researchers argue that process research in the field of strategic decision-making has lagged behind content research due to problems faced by researchers in identifying, observing and measuring process constructs (Rajagopalan et al. 1993). In addition, many researchers (e.g. Eisenhardt & Zbaracki, 1992; Hart & Banbury, 1994) exalt that process, context and outcomes of strategic decisions need a more thorough investigation with regard to the interrelationship amongst them. Hence, an investigation into strategic decision making by process is considered pertinent.

Furthermore, central to any research approach on strategic decision-making processes is the need to empirically derive and espouse a set of significant decision process dimensions, founded on the examination of actual strategic decisions in significant numbers (Papadakis, 2002). Again, many leading researchers (e.g. Nutt, 1984; Dean & Sharfman, 1996) emphasise on the need to bring together all existing streams of research in strategic decision-making process and take them into account while defining the research approach to strategic decision-making process (SDMP).

The rationale for suggesting such an approach emanates from the utility of the SDMP dimensions to be used as the basic building block in developing and investigating a holistic theoretical framework for SDMP, their antecedents and outcomes (e.g. Rajagopalan et al. 1997). In addition, although process research can be described in terms of sequences of steps, phases or routes, researchers (e.g. Bourgeois & Eisenhardt 1988; Hickson et al. 1986; Lyles, 1987; Miller, 1987; Sharfman & Dean, 1998; Stein, 1981) argue that DMPs do not occur as a step-by-step, well-defined and sequentially evolving set of events. Instead, decision dimensions are created by researchers to explain generic features or attributes of the process (Papadakis, 2002). In line with this argument this research is built around SDMP decision dimensions examples of which include rationality in decision-making, intuition, centralization and politicization (Papadakis, 2002).

An important aspect that needs highlighting at this point, is the perceived nature of the decision itself which is considered to influence the strategic decision making process in the extant literature (Dean & Sharfman, 1993; Dutton et al. 1989; Fredrickson, 1985; Hickson et al. 1986). Contemporary researchers (e.g. Rajagopalan et al. 1993) consider research on the influence of decision specific factors such as decision characteristics to be very limited. Examples of decision-specific characteristics include decision magnitude of impact, threat/crisis versus opportunity, frequency of occurrence/familiarity, uncertainty and planned or ad hoc (Papadakis & Lioukas, 1996).

The necessity to research upon decision-specific characteristics arises due to the fact that managers in firms have perceived these characteristics as part of the decision-making process (DMP) (Papadakis & Lioukas, 1996). Again it appears that decision specific-characteristics are seen to affect the process even at the early stages of the decision process an argument that finds support from other researchers (e.g. Papadakis & Lioukas, 1996). There are also calls for further theory testing and integration using decision-specific characteristics as researchers have argued that linkage between decision-specific factors and decision-process characteristics have been neglected (Elbanna & Child, 2007). Researchers also lament that even the currently available knowledge in this field is fragmented (Rajagopalan et al. 1993).

These arguments point towards the need for thorough studies of the decision-specific characteristics and to force the attention of researchers to focus on decision-specific characteristics (Papadakis & Lioukas, 1996). This research was designed to address this need.

Furthermore, as has been argued by researchers (e.g. Mahembe, 2011), a process in general comprises three components, the input, the process itself and the output. While researchers are not in agreement with what variables need to be considered as SDMP output, one school of thought considers organizational performance as an SDMP output (e.g., Goll & Rasheed, 1997) to gain knowledge on the effectiveness of SDMP. However, Elbanna and Child (2007) argue that organizational performance does not explicitly portray SDMP effectiveness and accordingly they identified strategic decision effectiveness as representing SDMP output. However, the research outcome produced by Elbanna and Child (2007) is neither conclusive nor generalisable, necessitating the need to study decision effectiveness as the SDMP output further. In addition, other SDMP output variables like quality of the decision process output (e.g. Amason, 1996) and firm commitment (Papadakis et al. 1998) have also been suggested by researchers as needing to be investigated as part of the SDMP output (e.g. Papadakis et al. 1998) as not much is known about the individual effect of quality of decision process output and firm commitment, or about them in association with decision effectiveness.

The situation is further complicated when the investigation involves an SDMP that comprises more than one decision process dimension (for instance rationality and intuition) and an antecedent (for example, decision magnitude of impact), a case that has received very little research examination. Again, in the absence of any study linking the decision-specific characteristics, process dimensions and SDMP output, managers in SMEs are at a loss on how to perceive the decision-specific characteristics in terms of their impact on SDMP output at the beginning of the SDMP process. This is a long-standing gap in the knowledge that is addressed in this research.

While the foregoing discussions have focused on the input-process-output concept of an SDMP, many researchers argue that it is necessary to address the influence of contextual factors like environmental factors on SDMP while researching on the linkage between SDMP process variables and strategic decision-making effectiveness (Elbanna & Child, 2007). Environmental factors, both external and internal, have been found to affect the entire SDMP (Elbanna & Child, 2007). External environmental factors that have been investigated in SDMP literature include dynamic environment (Eisenhardt, 1989) and munificence or hostility (Goll & Rasheed, 1997). Internal environmental factors that have been identified to have significant impact on SDMP include internal systems, company performance, firm size and corporate control (Papadakis et al. 1998).

Both external and internal environment factors have been shown to affect SDMP dimensions in the SDMP literature (Dean & Sharfman, 1996). Although the SDMP literature is replete with research outcomes that highlight the influence of environmental factors on SDMP process, many researchers argue further work needs to be done in this area (e.g. Dimitratos et al. 2010). In addition, investigations that have been conducted on the influence of environmental factors on SDMP in general and SDMP output variables in particular are not many (Mador, 2000). While this research recognises the research work that has been done up to now, in order to know the impact of environmental factors on SDMP dimensions (e.g. environmental contexts role on determining the degree of rationality in the SDMP) it argues that there is a need to extend it further to gain knowledge on the influence of environmental factors on SDMP output.

The foregoing discussions have demonstrated that various gaps exist in the SDMP literature that pose problems to practitioners, researchers and academics alike, involved in the field of SDMP. While the discussions provided above are related to decision-specific characteristics, SDMP dimensions, SDMP output and environmental contexts, to date most of the research related to these aspects are addressed almost exclusively by Papadakis et al. (1998) and Elbanna and Child (2007) although their research outcomes are hampered by limitations. Keeping in view the foregoing discussions and the research outcomes produced by Papadakis et al. (1998) and Elbanna and Child (2007), the problems that were derived and needed to be addressed in this research are defined in the next section.

1.3 Research problem statement

There is a lack of research on SDMP in SMEs, yet literature supports the view that it is critical. Furthermore, there is an even graver lack of research on SDMP in the SME service sector context, and notably in the electronic, telecommunication and IT industries in this SME sector. Most research has focused on large firms and the manufacturing sector, neglecting the SME sector. This is clearly evident in the case of the two central studies in this area to date, namely Papadakis et al. (1998) and Elbanna and Child (2007). In this context, there is therefore the need for research addressing:

1.3.1 What factors affect the SDMP process dimensions in the SME service sector context?

1.3.2 How do the SDMP process dimensions affect the decision process output in terms of effectiveness in the SME service sector context? and

1.3.3 What other factors affect decision process effectiveness in the SME service sector context?

1.4 Aim

The overall aim of the study was to examine the relationships amongst factors affecting SDMP dimensions on the one hand and the relationship between SDMP dimensions and decision process effectiveness on the other, in the context of SMEs in the electronic, telecommunication and information technology industries' sector to aid such industries in improving their decision making process effectiveness.

1.5 Objectives

To achieve the overall aim, the following constituted the key objectives of the research:

1.5.1 to identify and study SDMP dimensions

1.5.2 to identify the factors that impact SDMP dimensions and study their linkage to SDMP

1.5.3 to study the relationship amongst the SDMP dimensions, factors affecting SDMP dimensions and SDMP output

1.5.4 to develop a relationship model linking SDMP dimensions, factors affecting SDMP dimensions and SDMP output, and a set of associated hypotheses,

1.5.5 to test the model and examine the findings.

In order to achieve the aim and objectives and hence address the research problems, a theoretical framework was developed for this research. The theoretical framework provides the limits of the theories that underpin the development of a solution to the research problem and achieve the aim and objectives. Thus the next section provides a brief outline of the theoretical framework to be used in this research. It is then discussed comprehensively in Chapter 3.

1.6 Theoretical framework

Central to this research are two models developed by Papadakis et al. (1998) and Elbanna and Child (2007). In both the models the focus is on four important aspects namely SDMP dimensions, decision-specific characteristics (strategic decision characteristics), SDMP output and environmental factors. Since the SDMP literature indicates that researchers have identified various factors under each one of these aspects, it was necessary to identify the most important factors that should be used in this research for addressing the research problem. Each one of these aspects is addressed in the sub-sections that follow and specific factors are identified based on the extant literature.

1.6.1 SDMP dimensions

The focus in this study is on two important dimensions, namely rationality in decision-making and intuition. Rationality in decision-making has been chosen as it is considered to be an essential construct in any SDMP by leading researchers in SDMP (e.g. Dimitratos et al. 2010). Intuition was chosen as it is a construct that has rarely been investigated (Elbanna, 2006) and is considered to be a realistic and important dimension in the SDMP of firms (Eisenhardt & Zbaracki, 1992) that operate under dynamic environment conditions like the electronics, telecommunication and IT industries in the SME sector. It is important to note here that research in SDMP dimensions has mostly focused on a single dimension in the process whereas models of SDMP that have used more than one dimension are very rare in SDMP literature (Papadakis, 2002). Thus, this research attempts to use two dimensions in the SDMP process, a concept supported by Papadakis (2002). This better represents the complexity of the SDMP that is seen in reality, enabling the researcher to bring out knowledge on the functioning of a more complex SDMP representation rarely addressed in SDMP literature.

1.6.2 Strategic decision characteristics

The focus in this study is on single decision-specific characteristics, namely decision magnitude of impact. The reason for choosing this decision-specific characteristic for study is that hardly any examination of this characteristic has been carried out in the extant literature and hardly any evidence has been produced that can clearly demonstrate how this characteristic influences SDMP as an antecedent (Papadakis & Lioukas, 1996). Furthermore, not much is known about the characteristic itself, a serious gap in the literature that prevents researchers and practitioners from exploiting its strengths in SDM. Magnitude of impact of decisions implies the consequences of decisions that are made and, according to Elbanna and Child (2007), could provide strongest explanations of decision-making behaviour Hence there was a strong need identified to examine the relationship between decision magnitude of impact as a single isolated decision-specific characteristic and SDMP, that is expected to bring to light valuable knowledge about decision magnitude of impact.

1.6.3 Linkage between decision magnitude of impact, rationality in decision making and intuition

In the forgoing discussions the importance on the investigations into decision-specific characteristics in the SDMP has been amply brought out. The discussions also showed that the investigations centered on the decision-specific characteristics. Considering the emphasis on decision specific-characteristics to SDMP those characteristics were considered as the building block for this research. However, literature shows that SDMP dimensions have been considered to be the core aspect of SDMP and decision-specific characteristics were related to

the decision specific-characteristics as antecedents of the SDMP dimensions by researchers (e.g. Papadakis & Lioukas, 1996) in SDMP. For instance, Papadakis and Lioukas (1996) empirically demonstrated the influence of decision-specific characteristics on SDMP dimensions such as rationality. However their study does not integrate other factors such as context (environmental factors) and SDMP output (outcome) factors which are essential to understand the SDMP as a holistic framework. Thus it emerges that decision-specific characteristics are important components of SDMP and further investigations are needed to understand their relationship within SDMP as antecedents to SDMP dimensions, and within SDMP as a holistic framework. In line with these arguments, this research focused on the influence of decision magnitude of impact as a decision-specific characteristic on the two SDMP dimensions rationality in decision-making and intuition.

1.6.4 SDMP output

The focus of SDMP output in this research is the decision effectiveness identified by Elbanna and Child (2007). However, Papadakis et al. (1998) argue that additional SDMP output factors also need to be studied and recommend further investigation of SDMP that uses firm commitment and quality of decision-making process output also as output variables. In line with the arguments of Papadakis et al. (1998) this research extends the research efforts of Elbanna and Child (2007). Thus, in order to better understand the complex nature of SDMP in greater detail, in this research firm commitment and quality of decision process output were added as two additional components of SDMP output, alongside decision effectiveness.

1.6.5 Contextual factors (environmental factors)

Amongst the different external environmental factors that have been identified by researchers as affecting SDMP, this research focuses on dynamism in the industry. The rationale behind this choice arises from the fact that the focus of this research is the impact of SDMP on SMEs in the electronic, telecommunication and IT sectors which are heavily subjected to a dynamic external environment (Kazakevitch & Torlina, 2008). Therefore, dynamism in the industry was identified as the most important environmental factor. Other factors could have been included, but to make the research process systematic, organised and easily understandable they were beyond the scope of this study and are recommended for examination in future research. In the same vein, it is argued that the internal contextual factor firm performance was chosen for investigation in this research as the current understanding generated by researchers was found to be contradictory. In addition firm performance is identified in the literature as an important indicator of organisational outcome, and hence as an important influence on SDMP output (e.g. Elbanna & Child, 2007; Fredrickson, 1985), a major focus of SDMP. Thus this research concentrates on the individual impact of dynamism in the industry

and firm performance as external and internal environmental factors respectively on SDMP output.

In essence, the overall investigation in this research was concerned with the relationship between decision magnitude of impact (input) and SDMP output variables decision effectiveness, quality of decision process output and firm commitment (output), linked by the SDMP dimensions rationality in decision making and intuition, as part of the input-process-output concept. Decision-specific characteristics act as the input, the SDMP dimensions represent the process and the output of the process is the SDMP output itself. Such an investigation was carried out recognising the potential impact of external environmental factor dynamism in the industry and internal contextual factor firm performance on SDMP output variables decision effectiveness, quality of decision process output and firm commitment.

1.7 Synopsis on research methodology

The main data collection method used in this research was the survey questionnaire. A cross-sectional study was employed. According to researchers (e.g. Churchill, 1995; Sekaran, 2000; and Zikmund, 2003) data collection using survey research is the most appropriate technique as it provides a faster, economical and efficient means to collect data when large samples are involved over a wide geographical area. The questionnaire used a 5-point Likert scale rating with multiple measures, details of which are provided in Appendix I.

The data collection process was carried out in two steps. The first one involved pre-testing the questionnaire using a pilot study in order to check the validity of the content, format and scales (Creswell, 2003). The instrument for the main study was therefore revised based on the results of the pilot study.

The pilot study was followed by the main survey. A consulting organisation was appointed to collect data from electronic, telecommunication and IT based SMEs located in four countries in the Gulf Cooperation Council region. The countries were the Kingdom of Bahrain, the Kingdom of Saudi Arabia, Kuwait and United Arab Emirates. A target of 500 returned questionnaires was sought and 464 were provided. There were no missing data and all responses were valid. Rigourous statistical tests were carried out using Statistical Package for Social Sciences (SPSS) version 18.0. Descriptive statistics and inferential analysis were the data analysis methods used. Inferential analyses included confirmatory factor analysis (CFA), structural equation modelling (SEM) and path analysis which led to hypotheses testing. AMOS version 18.0 was used to conduct CFA, SEM and path analysis while SPSS was used

to analyse descriptive statistics. Using CFA, the reliability and validity of the variables were assessed. This was followed by structural assessment of the model in terms of the relationship between the latent constructs. Model estimation (coefficient parameter estimation) and fitness (goodness-fit) were assessed using SEM which was in line with the suggestions provided by other researchers (e.g. Byrne, 2001; Kline, 2005; Hair et al. 2006). Path analysis provided the magnitude and direction of the relationship between the independent and dependent variables. Lastly, the hypotheses were reviewed based on the outcome of the path analyses.

1.8 Significance of study

Research in SDMP in electronic, telecommunication and IT industries in the SME sector operating in dynamic environment provides meaningful guidance to managers involved in SDMP in those industries that have hitherto not existed. In this context the outcome of this research makes the following contributions to theory and practice.

In the first instance, the research contributes to theory through the development of the integrated SDMP model that has linked the decision magnitude of impact to decision effectiveness, as well as the associated decision process output factors namely quality of decision process output and firm commitment. Such a linkage is shown to be mediated by rationality leading to decision process output that is effective and qualitative enabling the firm to commit to the decisions. The model thus provides guidance on how to successfully overcome environmental challenges dynamism in the industry and firm performance.

Secondly as far as contribution to practice is concerned, this research could be immensely useful to SMEs in implementing a formal SDMP and improve their decision making significantly leading to enhancement in firm performance. Managers and entrepreneurs could be supported purposefully by enabling them to take rational decisions, if this model is implemented in SMEs.

Thirdly, the model provides an important opportunity for strategists, entrepreneurs, researchers and other practitioners in the field of SDMP to guide the SMEs to implement a formal decision making process that can help to lead to successful implementation of decisions. SMEs will be in a position to analyse and understand the magnitude of impact of the decisions being taken and the influence of those decisions on the decision effectiveness. Further, influence of those decisions on decision effectiveness will be supported by rationality in decision making enabling the SMEs to commit to the decisions and its implementation. Such a commitment will be based on the quality of the decision process output. This in turn is expected to enable them to make sound decisions which if implemented are expected to result

in enhancement in the overall performance of the organisations. Under extreme environmental conditions, decision magnitude of impact could be manipulated to achieve better decision effectiveness and quality of decision process output, using rationality as the mediator, resulting in a commitment to the implementation of the decision.

Thirdly, the model provides an opportunity for researchers to critically examine the utility of other decision-specific characteristics in the SDMP and the mediating effect of other SDMP dimensions affected by various environmental factors. Such an examination could be carried out by expanding the integrated SDMP model.

From the methodology point of view the research contributes in terms of the mediating aspects of rationality in decision making on SDMP; clustering of the samples; use of survey research method for similar studies, cross-sectional study, error-variance as an additional method along with routine data analysis and CFA and SEM in data analysis are important contributions that could be used by researchers conducting similar research.

1.9 Structure of the thesis

This section describes the structure of the thesis in brief. Chapter one has provided an introduction to the various aspects concerning the relationship between strategic decision magnitude of impact and decision output in the context of electronic, telecommunication and IT industries in the SMEs sector.

Chapter 2 critically reviews the literature related to SDMP with a focus on the electronic, telecommunication and IT industries in the SME sector. Concepts related to strategic decision making, models related to SDMP, variables related to SDMP dimensions, antecedents of SDMP dimensions, constructs affecting SDMP output and theoretical underpinning related to the linkage between the SDMP variables are all reviewed. The decision characteristics as antecedents and the various identified decision characteristics are discussed. The basic building blocks of SDMP which are the decision dimensions are critically analysed along with the influence of decision characteristics as antecedents. SDMP output factors as the dependent variables are examined, including their relationship to decision characteristic variables mediated by decision dimensions. The influence and importance of contextual factors, that includes both external and internal environmental factors is highlighted through a critical examination of the various concepts available in the literature. The impact of external and internal environmental factors on decision process output variables is examined. Overall the review presented in the chapter provided the basis to choose the independent, dependent

and mediating variables that were needed to build the conceptual model that was used in addressing the research problem.

Chapter 3 presents the development of the research relationship model based on the critical review of the various concepts, models and research findings found in the extant SDMP literature provided in Chapter 2. The model provides the linkage between decision magnitude of impact as an independent variable and dependent variables decision effectiveness, quality of decision process output and firm commitment, mediated by rationality in decision-making and intuition. The model takes into account the influence of environmental factors namely dynamism in the industry (external environmental factor) and firm performance (internal context) on decision process output. Hypotheses were developed to test the relationship amongst the variables. This model was tested based on the data collected using the methodology described in Chapter 4.

A comprehensive discussion is provided in Chapter 4 with regard to the methodology followed to test the proposed research relationship model presented in Chapter 3. The methodological aspects cover the epistemological and ontological stance adopted by the researcher in solving the research problems, the research approach and method adopted in the research and the data analysis process carried out in this research. The rationale behind the choice of the research philosophies, approach and method is outlined. The research framework, design and strategy adopted in the research are described. Details including research instrument development, pre-testing of the questionnaire, pilot survey, main survey and statistical data analysis techniques are discussed comprehensively.

Chapter 5 provides a complete picture of the statistical data analysis conducted in this research. Broadly descriptive statistics, reliability and validity aspects, inferential statistics involving structural equation modelling, justification for the choice of the tests, results of the statistical tests and their interpretation are presented. In addition, the chapter discusses the hypothesis testing.

Chapter 6 covers the discussions on the findings of the research. The discussions describe how the research problems have been addressed along with the detailed analysis of the testing of the hypotheses. Inferences have been drawn based on the analysis.

Chapter 7 is the concluding chapter that discusses the extent to which the aim and objectives set for the research have been achieved. In addition the chapter highlights the contributions of the research to the body of knowledge, methodology and practice related to SDMP. Finally

the chapter identifies the limitations of the research alongside recommendations for future research.

1.10 Chapter summary

This chapter provides an introduction to the reader on the various research aspects covered in this thesis. The chapter explains the background, context, gaps in the literature and the research problems derived from the literature. In addition the aim and objectives set for this research and the theoretical framework developed for generating the relationship model needed to solve the research problem and address the aim and objectives. The main methodological aspects have been highlighted as have the main contributions (significance) of study, and thesis structure have been detailed.

Chapter 2

Literature Review

2 Introduction

Small and medium-sized enterprises (SMEs) contribute significantly to both local and international business activities. At the same time, SMEs are facing a number of challenges including globalisation, market maturity, frequently changing technology, increasing customer demands and cut throat competition (Purateera et al. 2009) that affect their very existence. These challenges create an unstable and unpredictable business environment resulting in mounting pressure on the SMEs and the strategies they develop to overcome the challenges (Purateera et al. 2009). Considering the fact that SMEs play a leading role in the economy of many countries, solutions need to be provided to the SMEs so that they can equip themselves to face the challenges successfully, lest they affect their very survival.

SMEs are characterized by their enormous potential to develop entrepreneurship in people with lower social capital thus reducing unemployment and increasing the per capita of a nation. However, successful SMEs are seen to depend not only on the capital but also on other factors such as knowledge, competence, capability and skills amongst others (Richard, 2001). SMEs are seen to be attractive to customers due to the quality of products or services they offer, and furthermore, many larger firms are seen to depend on SMEs who act as ancillary units (Sakolnakorn et al. 2008). Hence it can be argued that SMEs must live up to the expectations of customers and larger firms who depend on them, thus highlighting the need for SMEs to have sound processes including strategic decision making processes to achieve end user satisfaction (Ekamen, 2005). An effective decision making process in SMEs could thus greatly enhance the output of the SMEs enabling them to take care of the needs and wants of the customers in the most efficient manner (Ekamen, 2005).

On the one hand, SMEs appear to be a fundamental component of any economy but on the other they are seen to be vulnerable to changes in the environment like for instance changes in customer's values and expectations or risk of competition (Purateera et al. 2009). Strategies are needed for SMEs to combat vulnerabilities and thwart the threats that could exploit their vulnerabilities. But there is a lack of understanding in the literature on how the SMEs develop strategies and make strategic decisions which address the vulnerabilities of these SMEs (Gibcus et al. 2004; Hutzshenreuter & Kleindienst, 2006; Elbanna, 2006; Rajagopalan et al. 1997). Robinson and Pearce (1983) long ago claimed that strategic decision making is an important element used by organizations particularly SMEs and such decisions play an

important role in the success or failure of the SMEs. This position has not changed in the past three decades and consequently there is a growing need to address this issue of strategic decision making in SMEs urgently, as otherwise an important and vital component of any economy could be at peril leading to disastrous consequences.

This chapter is organised as follows. Critical review of strategy and strategic decision-making process literature are addressed in Section 2.1. Section 2.2 discusses the strategy literature, 2.3 about strategic decisions, while Section 2.4 discusses the strategic decision-making process literature. Important elements of strategic decision-making processes are addressed next which include strategic decision dimensions in Section 2.5, strategic decision characteristics in Section 2.6, environment factors in Section 2.7, external environment factors in Section 2.8, internal contextual factors in Section 2.9 and decision process output in Section 2.10. Lastly, Section 2.11 provides a summary to the findings of the chapter.

2.1 Strategy and strategic decision making process

Challenges faced by SMEs in the 21st century are daunting. With globalization affecting all countries across the globe, there is a change in the demography of the population and their purchasing pattern pointing to the need for firms to reorient themselves to satisfy customer needs and wants (Hjalager, 2007; Mauro et al. 2008). Strategic imperatives thus are likely to play a leading role in the success or failure of the firms including SMEs (Megicks, 2007). Despite the growing challenges and changes taking place in the environment, a number of SMEs have succeeded, pointing to the fact that such SMEs have possibly adopted strategies that enabled them to successfully tackle the impact of the changing environment (McGee & Petersen, 2000). This also indicates the need for decision makers in unsuccessful SMEs to be concerned with developing strategies. Further, even the successful SMEs must ponder over the extent to which various strategies that they have developed have affected their performance (Megicks, 2007). It is possible that a lack of knowledge on the extent to which strategies affected the firm's performance could lead to a possible situation where the success could be attributed more to chance and less to strategy.

Although strategy is expected to play an important role in the success of SMEs, not much attention has been paid by researchers to strategy in SMEs in general and the influence of strategy at different levels, in particular in determining the success or failure of the SMEs (e.g. Byrom et al. 2001; Megicks, 2001; Hofer & Schendel, 1978). More importantly, in the case of SMEs in sectors whose internal and external environment are highly dynamic, like for instance the electronic, telecommunication and IT industries, with which the researcher is concerned, hardly any studies have been conducted on the impact of strategy on the

performance of the SMEs. For instance Li (2001) points out that it is not clear how high technology industrial sector firms including SMEs operating in IT and electronics, have used strategies to deal with the environment. Thus there is a need to study the relationship between strategy and performance under changing environmental conditions. In line with the above arguments the following sections critically look at strategy and strategic decision making process separately.

2.2 Strategy

The word strategy is derived from the Greek word "strategos". The meaning of strategos is an army and its leadership. Strategy appears to be linked to the leader of the army who is responsible for making the strategy (Kokkinis, 1995). In other words, strategy has been thought of as meaning a plan or a set of actions that determine the utilization of resources for a particular activity that help in achieving the intended goals. A review of literature shows that strategy is defined in many different ways. Wood and Joyce (2003) claim that strategy is a set of beliefs and such beliefs enable a firm to achieve success. As an extension it will be consistent to contend that intuition and philosophy form an important part of strategy (Brockman & Anthony, 2002; Beaver, 2003). Henderson (1989) argues that strategy cannot be just confined to beliefs and contends that strategy extends beyond beliefs which include a step-by-step study to identify a plan of action enabling the firm to derive competitive advantage and compound it. According to O'Regan et al. (2006), an important part of the step-by-step study that is used to identify the plan of action in a strategy is the necessity to anticipate and foresee problems and opportunities manifesting in the external environment.

Literature on strategy shows that there are a number of schools of thought that have been described. Table 2.1 provides a brief history about the various schools of strategy described in the literature.

Table2.1, History of developments on schools of thought on strategy (Adapted from Greiner et al. 2003)

No.	Period	About strategy
1.	1940s	Budget extrapolation and financial goals.
2	1950s	Long-range planning and formal models.
3	1960s	Business idea and corporate identity.
4	1970s	Competitive advantage analytics.
5	1980s	Strategy implementation, capability, and alignment.
6	1990s	Strategic leadership and reengineering.
7	2000	Continuous strategic renewal.

Amongst the different schools of thought on strategy Mintzberg's (1994) schools of thought has attracted some attention. Mintzberg (1994) identified ten different schools of thought namely design school, planning school, positioning school, entrepreneurial school, cognitive school, learning school, power school, cultural school, environmental school and

configurational school. In simple terms how each one of the schools of thought of Mintzberg (1994) view process is provided in Table 2.2.

Table2.2, Mintzberg's view of the ten schools of thought on strategy (Adapted from Mintzberg, 1994, pp. 2-3; and Mintzberg et al. 1998)

School	View of Process	About the school
The following three schools are prescriptive in nature and enables elucidation of appropriate methods or procedure for making strategy		
Design	Conceptual	More oriented towards being a conceptual and informal process; based on SWOT analysis; strength lies in the assessment stage of the planning process of strategy.
Planning	Formal	More oriented towards a formal and prescribed process; based on SWOT analysis; strength lies in the assessment stage of the planning process of strategy.
Positioning	Analytical	More focused on content rather than process and hence identified as a school that is analytical in nature in the rational or methodical sense.
The following seven schools are descriptive in nature implying that the school uses strategic approaches or viewpoints that are based on thematic representations		
Cognitive	Mental	Strategy formation focuses on mental or deliberative processes.
Entrepreneurial	Visionary	The emphasis is on a "strong person" with a compelling vision of the future and is a visionary process.
Learning	Emergent	Stresses on collective or "group-think" and strategy formation is considered as an emergent process.
Political	Power	Political orientation influences strategy formation and considers strategy formation as a process of negotiation.
Cultural	Ideological	Strategy formation is a cultural view and is a collective process.
Environmental	Passive	Focus on environmental aspects in strategy formation which is viewed as a reactive process.
Configurational	Episodic	Thematic view of strategy formation is configurational and as a process of transformation

Another school of thought that is well discussed in the literature is the three paradigm model of Eisenhardt and Zbaracki's (1992). In fact Eisenhardt and Zbaracki (1992) that 'rationality and bounded rationality', 'politics and power' and 'garbage can' can be considered as dominant paradigms of strategy making. Table 2.3 provides some explanation about each one of the three paradigms proposed by Eisenhardt and Zbaracki's (1992).

Table2.3, Three paradigm model proposed by Eisenhardt and Zbaracki's (1992) (Adapted from Veetil, 2008)

Paradigm	Strategic view
Rationality and bounded rationality	Decision makers have known objectives and these objectives determine the value of the possible consequences of an action; cognitive limits exist to the rational model; no optimization by decision makers but they satisfice; decisions based on fundamental phases namely problem identification, development and selection; repetition of phases enables deeper analysis of issues; decision process depends on the complexity of the problem and conflict resolution amongst decision makers.
Politics and power	Organisations are coalitions of people with competing interest; during strategy making process the final decision is significantly influenced by the most powerful coalition; decision makers engage in political tactics; assumes people are individually rational but not collectively.
Garbage can	Describes decision making in highly ambiguous settings termed as organised anarchies; useful in decision making in a complex, unstable and ambiguous world; places greater emphasis on chance.

In addition to Mintzberg's and Eisenhardt and Zbaracki's (1992) schools of thought on strategy making, there are other schools of thought that address strategy making including the five approaches to strategy process (Bourgeois & Brodwin, 1984), Baldrige Criteria (Young, 2003) and the Bryson Strategic Model (Young, 2003). In fact Young (2003) argues that are numerous ways and schools of thought that are used to address strategy making, strategic planning and decision making and reviewing every one of those ways or schools in one PhD is nearly impossible. Hence further discussions are restricted to aspects mentioned in the preceding arguments.

While the focus of this research is strategic decision making in SMEs, the schools of thought on strategy need to be reviewed because they provide the basis to understand the various ways strategy could be understood. A review of the foregoing discussions clearly indicates there are various schools of thought which describe strategy and strategy can be viewed as. However these views create an ambiguity in a sense that it is difficult to know whether the various schools of thought are different from one another or just different parts of the same process. In such a situation it may become difficult to operationalize strategy formulation as a process because the ambiguity may cause complexities in the research process. One way to overcome this problem could be to understand strategy as a blend of the various schools of thought, an argument supported by Greiner et al. (2003). In line with this argument Greiner et al. (2003) have brought out their own synopsis of strategy and strategic management which is provided in Table 2.4.

Table2.4, Blend of strategic schools of thought (Adapted from Greiner et al. 2003)

Strategic aspects
Strategic management is comprehensive and integrative.
All major business disciplines are relevant to strategy.
Strategic thinking and behavior are very dynamic.
Strategy is a constant search for a competitive edge with high returns.
Every firm is indeed unique in its strategic capabilities.
The firm's strategy and organizational context must align and reinforce each other.
Strategic management requires spontaneous thinking and doing.
Strategic change will happen frequently

The discussion above shows that strategy comprises many aspects that include strategic management, strategic planning, strategic thinking and strategic decision making. However the purpose of the foregoing discussions is simply to focus on the areas related to strategy making as the schools of thought provide the basis to investigate into various aspects related to strategy making as a process and associated factors. It is argued by Young (2003) that one important aspect of the various schools of thought on strategy making is the strategic planning and one definition of strategic planning is: "a long-term and future-oriented process of evaluation or assessment, which involves goal-setting, and, perhaps most importantly,

decision making" (Young, 2003; p. 8). Despite the fact models and schools of thought have been developed well in the literature with regard to strategy making, there is a dearth of empirically derived models that have applied those models and schools of thought to explain strategy as a process. The primary aim of this research to conduct this empirical study in understanding the strategic decision making process in the context of SMEs in the GCC, using particular theories or models or schools of thought finds support.

Furthermore, it is possible to argue based on the preceding sections, that the various definitions on strategy though having different connotations, lead to a certain process that is linked to decision making. For instance theories in psychology such as Theory of Reasoned Action indicate that beliefs are considered essential for taking decisions (Ajzen, 1985) whereas some other authors have suggested that intuition and philosophical thinking are necessary for decision making (Taylor & Todd, 1995). In the same vein it can be added that the step-by-step process involved in identifying a plan of action while developing strategy leads to decision-making, an inference derived from the arguments of Kotey and Meredith (1997), Hendry (2000) and Frishammar (2003). O'Regan et al. (2006) while contending the need for anticipation of problems and opportunities in the process of developing strategies have claimed that there is a need to forecast and predict challenges and opportunities implying the need for appropriate decision-making. The underlying concept in the preceding discussions is that an important ingredient of the strategic planning process is the decision making which includes strategic decision-making.

2.3 Strategic decisions

Research on strategic decisions has produced multiple descriptions and identified various characteristics. Some of the descriptions of strategic decisions include the following:

- Mintzberg et al. (1976) describe strategic decisions as committing resources substantially, setting precedents and enable creation of lesser decisions.
- Schwenk (1988) argue that strategic decisions are ill structured, non-routine and complex.
- Hickson et al. (1986) claim that strategic decisions are those that are substantial, unusual and all pervading.
- Papadakis, et al. (1998) define strategic decisions are those that act as the means for the management to effect choices, leading to the commitment of substantial resources and that impact an organization or firm as a whole.
- Eisenhardt (1989) explains that strategic decisions are those that take into account strategic positioning, have high stakes, affect an organisation's functionalities and indicate the process by which the organization makes important decisions.

- Eisenhardt and Zbaracki (1992) suggest that strategic decisions are made by top management in a firm and such decisions affect the health and survival of the organization.

The foregoing explanations on what constitutes a strategic decision indicate that strategic decisions in general are made by the top management in a firm or organization, affect the firm or organization as a whole, and can need substantial resources. Furthermore, researchers have identified certain characteristics of the strategic decisions that impact firms in many respects. Table 2.5 provides a synopsis of key characteristics identified by many researchers.

Table2.5, Strategic Decision Characteristics

No.	Strategic Decision Characteristic	Author /s
1.	Indicate the interaction between an organization and its environment	Ginsberg (1988)
	Reflect how an organization manages the relationship with the environment	
2.	Formal or informal	Pennings (1985)
	Intended or emergent	
3.	Embedded in both inner and outer contexts of the organisation	Pettigrew (1992)
	Contexts could include factors such as psychological, structural, cultural, political and competitive	
4.	Difficult to define or assess with respect to firm or organization performance	Wilson (2003)
	Associated with risks and different trade-offs	
	Act as precedents for following decisions	
	Interrelated to other decisions in the organisation	
	Political	
	Identified with high level of uncertainty	
	Seldom have one solution that is the best	
	Difficult to reverse once the decision is made	
5.	Address typically issues that are unusual to the firm	Stahl and Grigsby (1992)
	Do not address issues that are linked to routine decision making	
	Address concerns considered essential to the very existence and livelihood of a firm	
	Affect a large proportion of an organisation's resources	

Although strategic decisions are shown to have multiple characteristics, in essence these characteristics indicate the highly varying and complex nature of strategic decisions. From this it can be argued that making such decisions is tough, risky and expensive, and could impact the performance of a firm both positively and negatively. Further, the contextual nature of the decisions could lead different firms to take different decisions making those decisions unique to a firm, thus lacking in uniformity. Therefore while it could be said that strategic decision is a very important and inseparable part of an organization or firm, and despite the importance that is associated with strategic decisions to firms, contemporary research has not been able to provide solutions to the multiplicity of problems faced by firms in taking decisions or in the decision making process (Grigoryan, 2012).

2.4 Strategic decision making

The foregoing discussions lead to an important topic in strategic planning namely strategic decision-making. Although this topic has been heavily researched, it still requires further

investigation due to lack of generalizable conclusions, limited empirical studies in terms of factors influencing the strategic decision-making process and contradictory results produced by researchers (Nooraie, 2008). Researchers (e.g. Elbanna & Younies, 2008) have shown immense interest in studying the strategic decision-making process indicating that the topic is still central to strategic planning. In fact strategic decision-making process has been an important theme in strategy research during the last few decades (Butler et al. 1993; Cyert & March, 1963; Hart & Banbury, 1994; Lu & Heard, 1995; Rajagopalan et al. 1993; Papadakis & Barwise, 1998; Elbanna & Child, 2007). Since the literature is strewn with a number of models and theories that have been propounded to deal with the process of strategic decision-making, it is virtually impossible to adopt a single model as a generalized model. For instance Papadakis (2006) lists a set of eight models that have been discussed in the literature namely rational, bureaucratic, incremental, political, avoidance, "garbage can", symbolic and intrapreneurial. Harrison (1993) lists a set of four models namely Rational (classical), Organizational (neoclassical), Political (adaptive) and Process (managerial). Nickols (2005) lists out five strategic decision-making models namely the Classic model, the Military model, Mintzberg's General model, Cynefin Framework and Donaldson-Lorsch model. In the absence of a generalisable model, it is important to review the contemporary literature to understand the underlying concepts that affect strategic decision-making. Consequently this chapter critically reviews the strategic decision making process literature with a focus on characteristics of strategic decision making processes and related aspects such as strategic decision dimensions, the effectiveness of strategic decisions under varying environmental conditions and strategic decision process output.

2.4.1. Current scenario related to SDMP research

Research on strategic decision making process is still an important topic of interest and still being researched heavily (Nooraie, 2012). Much of this interest emanates due to a variety of reasons which include constant changes that take place in the external environment leading to uncertainty in the decision making process in businesses. Although there are calls for more empirical research to be conducted in the area of strategic decision process, still literature shows that research outcomes that are decade old continuing to be used indicating paucity in the research efforts. For instance the publication by Nooraie (2012) on factors influencing strategic decision making processes still revolves around decision magnitude of impact while the research conducted by Sykianakis (2012) on the exploration of the nature of strategic decision making revolves around rationality and organisational politics, concepts proposed by Eisenhardt and Zbaracki's (1992). Even established researchers like Elbanna (2011) are relying upon literature that is at least a decade old and recent research outcomes of Elbanna (2011) are found to be one of the few that has discussed new areas in the field of strategic decision making process. This is a major gap in the strategic decision making process

research. Thus there is a need to further study the concepts of strategic decision making in order to gain a greater understanding of the decision making process as strategic decisions are by nature unstructured, involve multiple courses of action, hard to evaluate, complex and uncertain in their outcomes (Sykianakis, 2012).

2.4.2. Review of the strategic decision making process

A close scrutiny of the literature reveals that the research in strategic decision-making process is broadly divided into four categories namely context, process, content and outcome (Bell et al. 1997). According to Akkermans and van Aken (1999) a strategic issue that concerns a strategic decision could be called the content, the way the decision is reached could be called the process, the result of the decision making process could be called the outcome and the influence of environment on the decision making process including both internal and external ones, as the context. While there is general agreement with researchers on the definition of context, process, content and outcomes (for instance Lioukas & Papadakis, 2003; and Elbanna, 2006), there is a strong difference amongst researchers on the focus of SDM research. For instance Elbanna (2006) argues that most of the SDM research is focused on either content or context. This argument indicates that strategic decision-making process and process outcomes have not been investigated in-depth by researchers and have been neglected.

Considering the importance of processes and outcomes in the strategic decision-making literature, several researchers have emphasized on the need to examine the impact of strategic decision-making processes and outcomes on the success of implemented decisions (Elbanna, 2006). Furthermore, Lioukas and Papadakis (2003) argue that there is a widespread agreement that an understanding of the relationship amongst strategic decision-making processes, outcomes, contexts and decision content is limited. This is supported by Elbanna (2009) who argues that research on the relationship between strategic decision process and performance of organizations until now has ignored the effect of moderating or intermediary variables. This argument confirms that the research on the relationship between strategic decision processes and outcomes of decisions is not comprehensive and needs further investigation. Furthermore, these arguments imply that it is very important to study not only the impact of strategic decision-making processes and outcomes but also the interrelation amongst strategic decision-making processes, outcomes, contexts and decision content on the success of implemented decisions. Additionally, Papadakis (2002) claims that strategy 'process' research itself has lagged behind on strategy 'content' research, indicating the need to further research in the area of strategy process. It can therefore be said that research on strategic decision making process and its relationship between outcomes, contexts and decision content is vital to an understanding of strategic decision making in firms as well as to

develop guidance to overcome the limitations surrounding the literature related to the strategic decision making processes.

In addition to the above, the models that have been developed by researchers in the field of SDMP are categorized under two broad themes, namely synoptic formalism and political incrementalism (Goll & Rasheed 1997; Johnson, 1988). The reason for categorizing appears to be the compulsion that arises due to the way managers take decision in firms which affects the different aspects of decision itself such as decision dimensions (Elbanna, 2006). For instance, rationality - a decision dimension - is considered to fall under synoptic formalism while intuition is supposed to fall under incrementalism (Elbanna, 2006), both of which are characteristics of decision-making process. Synoptic formalism is considered to be the antithesis of incrementalism. Synoptic formalism analyses the basic features of a decision while incrementalism analyses the way organizations take strategic decisions. While there is no clarity in the extant literature on which one of the two should be used in research and when, i.e. the choice of a particular model of SDMP either synoptic or incremental, there is an argument that proposes the use of both the types in research (e.g. Elbanna 2006).

Furthermore, researchers argue that strategic decision-making processes are not the same in all contexts and do not consider that these processes are always iterative or well-defined or comprise a sequentially evolving set of activities in all firms (Bourgeois & Eisenhardt, 1988; Hickson et al. 1986; Lyles, 1987; Miller, 1987; Sharfman and Dean, 1998; and Stein, 1981). In contrast Tarter and Hoy (1998) argue that decision-making processes do not greatly vary between organizations as essentially every decision making instance, be it rational or deliberate or purposeful action, begins with the formulation of a decision strategy, undergoes an implementation process and leads to appraisal of outcomes. Tarter and Hoy (1998) further claim that although the content of the decision making may be different, the process of decision making is broadly the same and cite examples of the similarity of such decision making processes in organizations such as defence, education or service oriented. Things become even more complicated when one recognises the arguments of Robinson and Pearce (1983) and Romanelli and Tushman (1986) who argue that strategic decision making largely depends on external environment implying that environment is the single most important factor that affects strategic decision making process and the success of the decisions.

Amongst the many conflicting arguments put forward by researchers in strategic decision making process, it is striking that one characteristic which the leading proponents of strategic decision making processes have invariably used as the basis for advancing their ideas in their research is the strategic decision making dimension (e.g. Elbanna and Child, 2007; Akkermans and van Aken, 1999; Eisenhardt and Zbaracki, 1992; and Rajagopalan et al.

1997). This argument is further strengthened by (Papadakis, 2002) who supports the need to identify decision dimensions that can lead to the description of generic attributes of a decision making process. Papadakis (2002) further posits that this will enable decision makers and researchers to create different strategic decision-making process models that are generally complex in nature. Various authors have identified various decision dimensions. These are presented in Table 2.6.

Table2.6, Decision Dimensions

No.	Decision Dimensions	Author /s
1.	Rationality/comprehensiveness dimension	Dean and Sharfman (1993a; b); Fredrickson (1984); Lyles and Mitroff (1980); Miller et al. (1988); Langley (1989); Langley (1990); Lyles (1987); Cray et al. (1988); Fahey (1981).
2.	Political/dynamics dimension	Butler et al. (1991); Dean and Sharfman (1993b); Lyles (1987); Pfeffer and Salancik (1974); Cray et al. (1988); Hickson et al. (1986); Pettigrew (1973); Stein (1981); Narayanan and Fahey (1982); and Miller (1987).
3.	Centralisation	Cray et al. (1988); Lyles (1987); Mallory et al. (1983); Miller (1987).
4.	Normalisation/standardisation	Grinyer et al. (1986); Mallory et al. (1983); Stein (1981).
5.	Disruption, impedance, speedups and other dynamic factors	Cray et al. (1988); Mintzberg et al. (1976); Hickson et al. (1986).
6.	Duration	Fahey (1981); Hickson et al. (1986); Cray et al. (1988).
7.	Risk taking behaviour	Miller (1987).
8.	Need for intuition	Lyles and Mitroff (1980).

Thus, while it is difficult to ignore the importance of strategic decision dimensions in any strategic decision making process stage or model, it is necessary to know what could be considered as important decision dimensions as well as their attributes, use and effect on the decision making process. Such knowledge is vital for application in the development of SDM models that employ decision dimensions as factors. Further, although decision dimensions have been found to be important in the strategic decision making process, researchers are not in agreement on whether decision dimensions alone can be effectively used in the decision making process. For instance, Hickson et al. (1986) identified a set of three strategic decision dimensions, namely complexity, politicality and unrelated process aspects, to describe the strategic decision making process. But according to Papadakis (2002), these three dimensions alone may not be adequate to represent the SDM process. Additionally, many researchers have clearly indicated the need to include such factors as context and decision effectiveness within a strategic decision making process without which it will be difficult to achieve a meaningful description of the process (Elbanna & Child, 2007; Papadakis, 2002).

The arguments provided above lead to the following important inferences:

- Strategic decision dimensions can influence the decision making process.

- Decision dimensions alone may not be sufficient to describe a complete strategic decision making process implying the need to associate other factors such as context or decision process effectiveness.
- More research needs to be conducted in regard to the use of strategic decision dimension in the strategic decision-making process literature.
- In the absence of a strong and evidence based SDMP research model or outcome that is universally accepted, it is necessary to understand the influence of the strategic decision dimension on the SDMP.

While the influence of strategic decision dimensions on the SDMP is found to be an under-researched area, it is vital to understand how contextual factors could be related to the strategic decision dimensions as well as the effectiveness of the SDMP. The need to link decision dimensions to the context as well as the SDMP effectiveness arises due to the fact that context has been found to have a critical interrelationship with the SDMP which includes SDMP effectiveness, by most researchers working in the SDMP area (e.g. Hart & Banbury, 1994; Papadakis & Barwise, 1998b; Rajagopalan et al. 1997; Dean & Sharfman 1996). In the event of non-inclusion of contextual factors and decision effectiveness as part of the SDMP, it could be difficult to capture the complexity involved in the SDMP (Hart and Banbury 1994; Alge et al. 2003). It transpires that there is an emphasis made by researchers (e.g. Papadakis, et al. 1998) on the need to involve additional decision variables such as decision dimensions and understand the complex interrelationship that exists amongst the SDMP variables (Priem et al. 1995) to gain deeper knowledge of the SDMP. A comprehensive review therefore is needed to understand the important role played by contextual factors, decision dimensions and SDMP effectiveness in the decision making process.

2.5 Strategic decision dimensions

Research on strategic decision process dimensions is not exhaustive. A careful review of the literature shows that SDMP dimensions have been used to describe SDMP as a recent phenomenon (Papadakis, 2002). Further, SDMP literature shows that a number of authors have identified strategic decision dimensions and explained their role in the SDMP (e.g. Dutton et al. 1989; Lioukas & Papadakis, 2003; Elbanna, 2006). Although researchers have found common ground on the concept of strategic decision dimensions, there is total divergence with regard to the impact of decision dimensions on the process outcomes with researchers producing contradictory results (Rajagopalan et al. 1997). Furthermore, researchers have failed to generate generalisable results in relating the decision process dimensions and the process outcomes (Sharfman & Dean, 1991).

On the one hand, researchers have converged to defend the importance of strategic decision dimensions while on the other there is a lack of consensus on how interrelationship between the various decision dimensions as well as the impact of other factors such as context and resources on the SDMP affect process outcomes. For instance, Dutton et al. (1989) concluded that there is a need to find the effect of perceptions about the dimensions on resource allocation. Similarly, Lioukas and Papadakis (2003) argue that the influence of certain decision dimensions on process outcomes in certain contexts is not uniform and varies. Many researchers identify SDMP dimensions as characterising the SDMP processes or as constructs of SDMP (Papadakis, 2006; Dean & Sharfman, 1996). It is apparent that SDMP dimensions or constructs are central to any SDMP and that they can have a definite impact on the strategic choices and decision outcomes. Some researchers have suggested that outcomes of decisions must be studied in terms of dimensions of decision processes (Eisenhardt & Zbaracki 1992). These arguments underline the need to study further the impact of certain decision dimensions on the process outcomes, taking into account essential SDMP factors such as context and environment.

The question of which decision dimensions should be considered under what context is not well answered in the SDMP literature. For example Dean and Sharfman (1993a) demonstrated that rationality as an important decision dimension will have limited applicability in varying internal and external environmental conditions like for instance the market conditions or industry specific sectarian aspects. Similarly, Hickson et al. (1986) point out that a strategic decision comprising decision dimensions applicable to one industry is not applicable to another industry. Type of industry therefore could be assumed as an important contextual factor in the SDMP. These arguments unambiguously indicate that it is advisable to consider industry specific SDMP while investigating the impact of decision dimensions on process outcomes. Thus, in the context of the current research which is dealing with SDMPs in SMEs in the electronic, telecommunication and IT sectors, it is essential to gain an understanding about those decision dimensions that could have a relationship with decision process effectiveness.

Many decision dimensions have been identified in the SDMP literature. Some of the widely discussed decision dimensions include rationality, intuition, comprehensiveness, formalisation, hierarchical decentralisation, lateral communication, and politicization (Papadakis 2006).

Although there are a few widely used decision dimensions that are advocated by researchers, the process of developing the decision dimensions by researchers vary. For instance initially Dutton et al. (1989) identified 26 decision dimensions based on a review of the literature on

strategic issues. Then Dutton et al. (1989) argued that the basis on which SD dimensions need to be identified are the strategic issues. Further Dutton et al. (1989) explained that strategic issues are triggers that lead to the initiation of the SDMP. This implies that decision processes are initiated by decision dimensions which are developed based on strategic issues. In contrast, other researchers such as the Bradford team (Hickson et al. 1986) have identified decision dimensions based on decision processes not on issues only. This difference in the process of identifying decision dimensions in the SDMP although provides divergence of views on the development of decision dimensions, but introduces a kind of confusion on the basis on which the decision dimensions need to be identified.

Considering the definition that strategic decision dimensions are those that could define the steps involved in, and the shape of a strategic decision process, particularly with regard to such aspects as rationality of a decision or resource allocation or deciding on alternatives, identifying the dimensions just based on the triggers of decision process alone may not provide enough ground to justify the identification. Additionally from the point of view of the impact decision dimensions can have on decision process outcome, it may be essential to consider the decision dimensions as intermediaries within a process rather than as those linked to the stimuli that lead to the initiation of an SDMP. This argument is further supported by the various SDMP models where decision effectiveness in many contexts has been linked to decision dimensions directly and indirectly by researchers in different contexts (Elbanna, 2006; Dean & Sharfman, 1996; Miller & Ireland, 2005).

Furthermore, although Dutton et al. (1989) arrived at a list of 42 decision dimensions using strategic issues as the basis, it appears that some of the decision dimensions identified by them could still be considered and included as part of the SDMP. For instance the decision dimension 'magnitude of impact' identified by Dutton et al. (1989) has been considered by Papadakis et al. (1998) as an important decision characteristic in the SDMP. Thus, while acknowledging the research outcomes of Dutton et al. (1989), it is also necessary to review the usefulness of some of the decision dimensions identified by them which might influence the SDMP as intermediaries.

The foregoing discussion essentially brings out the two different ways by which decision dimensions could be identified in the SDMP research, although the most widely used one is the use of decision dimensions as part of the SDMP rather than as stimuli. Thus, this research adopts this way in describing and applying decision dimensions. The decision dimensions that have been found in the SDMP literature include rationality/comprehensiveness, intuition, conflict, politicization, hierarchical decentralisation, lateral communication, problem-solving disagreement/dissension, duration of the process, disruption, formality, formal co-ordination

devices and financial reporting (Papadakis, 2002; Elbanna, 2006). Amongst these dimensions the ones that have been widely discussed and considered important in SDMP literature by researchers are rationality (Cray, 1988; Dean & Sharfman, 1993a; Fredrickson, 1985), political/dynamics dimension (Lyles 1987; Hickson et al. 1986), centralization (Cray et al. 1988; Lyles, 1987), and formalization/ standardization (e.g. Stein, 1981). However other researchers who have advanced the research in SDMP have emphasized on the need to include intuition as an important decision dimension as empirical evidence shows that there is a clear linkage between intuition and SDMP (Elbanna, 2006). Accordingly, these five decision dimensions are reviewed individually, enabling the researcher to gain knowledge on their importance and utility in determining SDMP in the context of SMEs in the electronic, telecommunication and IT sectors.

2.5.1 Rationality in decision making

This dimension is one of the most widely discussed and well-accepted dimensions in the SDMP literature (e.g. Papadakis & Barwise, 2002). Discussions on rationality in decision making in the literature include definitions, its role in SDMP, limitations, operationalisation and constructs used to measure. Definitions of rationality vary. A list of definitions provided by various authors is given in Table 2.7.

Table2. 7, Definitions of rationality

No.	Author	Definition
1.	Simon (1987)	Behaviour that is calculated
2.	Tribe (1973)	Behaviour that is instrumental
3.	Bell et al. (1988)	Maximising the expected utility of individuals
4.	Dean and Sharfman (1993a)	Making the best decision possible under a given situation regardless of the maximisation of utilities
5.	Butler (2002)	Reasons for doing something and within a given situation merit a behaviour as reasonable and understandable
6.	Eisenhardt and Zbaracki (1992)	Rational actions involve: decision makers enter decision situations with known objectives; then gather relevant information as well as define alternative actions; choose the optimal alternative.
7.	Payne et al. (1988)	Choice of an alternative that can be shown to maximise their expected value mathematically
8.	Cyert and Manch (1963) Cyert et al. (1956) Canter (1971)	Determines how important organisational decisions are made and why these decisions are made in such a way.
9.	Bourgeois and Eisenhardt (1988)	Collection and analysis of information

Choice of the most appropriate definition of rationality for a particular research appears to depend largely on the context (Butler, 2002). For instance in the context of SMEs where the organisations are characterised based on the business they do, personal computer manufacturing organisations will have different rationality in comparison to call centre service providers. If there is a strategic decision to be made with regard to financial investment into expansion of the activities, manufacturing units may need to decide on capital equipment and machinery required for the manufacturing plant, in contrast to call centre

service providers who may have to make decisions on additional human resources needed for providing services. Thus definitions of rationality that could fit the former case could be the one suggested by Eisenhardt and Zbaracki (1992) where as in the latter case the definition provided by Butler (2002) could fit. Thus, the context plays an important role in defining rationality. Nevertheless it is difficult to ignore one definition in favour of the other due to the wide variety of organisations one sees in different SME sectors. Furthermore rationality has been synonymously used with comprehensiveness by many researchers, implying that one could be used in place of the other or together (Papadakis & Lioukas, 1996; Elbanna & Child, 2007; Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989).

2.5.1.1 Role of rationality in decision making

The role of rationality has been considered to be central in the decision making process (Papadakis and Barwise, 1997). However the role of rationality in decision-making has been variously conceptualized by researchers with multiple constructs finding importance and favour. A glimpse of the various constructs identified by different researchers and their conceptualization is provided by Elbanna (2006), as presented in Table 2.8.

Table2.8, Various rationality constructs identified by different researchers (Elbanna, 2006)

Study	Construct of rationality	Conceptualization
Langley (1989)	Formal analysis	Written documents reporting the results of some systematic study of a specific issue.
Kukalls (1991)	Planning comprehensiveness	The completeness of the strategic planning process and the number of area in which strategic planning is applied (e.g. capital spending, investment panning and new product development).
Dean and Sharfman (1996)	Procedural rationality	The extent to which the decision process involves the collection of information relevant to the decision and the reliance upon analysis of this information in making the choice.
Khatri (1994)	Strategic rationality	An explicit (formal), systematic and analytical approach to decision –making.
Schwenk (1995)	Decisional rationality	The extent to which decision-making follow a systematic process in reaching carefully thought out goals.
Fredrickson (1984); Papadakis et al. (1998)	Comprehensiveness	The extent to which organizations attempt to be exhaustive or inclusive in making and integrating strategic decisions.
Butler (2002)	Rationality	The reason for doing something and to judge behaviour as reasonable is to be able to say that the behaviour is understandable within a given frame of reference.
Hough (2005) and Hough and White (2003)	Availability and pervasiveness	Availability captures the degree to which the available cues were known by the team when they made their decisions. High availability indicates that the team had a great deal of knowledge about the issue. Pervasiveness assesses to what extent all team members were informed of the available information.

Rationality in decision making is seen to emerge as playing a leading role in strategic decision making and the literature shows that it influences various components of the decision making

process including performance (Fredrickson & Mitchell, 1984), quality of decision (Hough & White, 2003), behaviour of the decision makers (Butler, 2002), decision motives (Fredrickson, 1985), organizational effectiveness (Jones et al. 1992) and cognition (Hough, 2005).

SDMP in the context of SMEs is an under-researched area (Gibcus et al. 2004). Much less is known about the SDMP in regard to the electronic, telecommunication and IT companies in the SME sector. In fact researchers believe decisions in most SMEs, including electronic, telecommunication and IT companies, could be spontaneous, without attaching a great deal of rationality to the decision making process, as they operate in a very turbulent and complex environment (Rice & Hamilton, 1979; Brouthers et al.1998; Byers & Slack, 2001).

For instance a study of the market for information technology and mobile products in Australia (Kazakevitch & Torlina, 2008) revealed that a number of factors such as product up gradation, maturity of market, price and other dynamic environmental aspects leave very little time for the vendor firms dealing in IT and mobile products to take strategic decisions to meet market demands. In such situations it is difficult to ensure that the SDMP will go through the entire process, including ascertaining the rationality of the decision, before a decision is taken. It can be inferred that such dynamic situations may imply that rationality dimension could be ignored in the SDMP though there is no empirical evidence to prove this. While Fredrickson and Mitchell (1984) seem to agree with this implication Bourgeois and Eisenhardt (1988), Miller and Toulouse (1986) and Priem et al. (1995) differ with this view.

Additionally, Dean and Sharfman (1996) seem to agree with Fredrickson and Mitchell (1984) and argue that rationality has positive influence on the SDMP in firms that are in stable industries sector. Thus with research outcomes being contradictory, it can be said that the role of rationality has not been clearly established in the SDMP, particularly in firms that are part of the industry sector that is affected by a dynamic environment. The situation is further aggravated with respect to the SMEs where there appears to be hardly any prior research on the role of rationality in SDMP. Thus, in the context of the electronic, telecommunication and IT industries in the SME sector which are subjected to extremely dynamic and volatile environmental conditions, it is necessary to investigate the role of rationality to gain a greater knowledge on its usefulness in SDMP.

Apart from the role that rationality in decision-making can play in SDMP, it is necessary to know what the various SDMP constructs it can influence are and what antecedents can influence it, in the SDMP, without which it may not be possible to link SDMP output and effectiveness to the strategic decision. This is amply demonstrated by Papadakis and Lioukas

(1996) and Elbanna and Child (2007) who have indicated the many different constructs that have a relationship to rationality. For instance Papadakis and Lioukas (1996) argue that a set of decision characteristics including Magnitude of Impact, Uncertainty, Threat/Crisis, Pressure, Frequency/Familiarity, Planned vs. "adhoc" can be related to many decision dimensions including rationality, centralization, political/dynamics and formalization/standardization.

Similarly Elbanna and Child (2007) suggested the impact of external environment on rationality. These arguments indicate that many different antecedents have a potentially direct relationship to rationality. Furthermore researchers have shown that rationality influences firm performance (Miller & Cardinal 1994; Schwenk & Schrader 1993) and decision process outcomes (Rajagopalan et al. 1993). At this point it is important to highlight that research outcomes to date have not clearly established the generalisability of the relationship between rationality as a construct and its antecedents across all industrial sectors and types of industries. Similarly, generalisability of the relationship between rationality and other variables it could influence has not been clearly established across all industrial sectors and types of industries.

However, it is important to note that most of the researchers in this area (e.g. Rajagopalan et al. 1993; Elbanna & Child, 2007) believe that rationality is an important construct that has significant influence in SDMP especially with regard to firm performance. This argument is contested by other researchers, who have indicated a lack of influence of rationality in unstable and dynamic industries (Fredrickson & Mitchell, 1984; Tarter & Hoy, 1998), leading to a situation where a fresh look at the relationship between rationality and other constructs is necessitated. Such an investigation could throw new light on the relationship between rationality in decision-making and other constructs, especially in the context of SMEs in the electronic, telecommunication and IT industries.

Furthermore, many researchers are of the opinion that rationality alone does not influence the outcome of the SDMP (Elbanna & Child 2007). Researchers (e.g. Eisenhardt & Bourgeois, 1988; Eisenhardt, 1989) conclude that other decision dimensions such as politicization and conflict need to be integrated into the decision making process as they claim that the decision makers are driven by other considerations other than rationality due to the uncertainty that surrounds the decision making environment. Especially in turbulent situations researchers feel that rationality as a decision making dimension does not suffice to inform the outcome of the decision making process as many decisions could be erroneous and conflicting (Galbraith, 1977; Weick, 1979). Concurring with these arguments Carmeli et al. (2009) argue that such situations need to be addressed beyond the influence of rationality, in order to understand the

decision-making process and behaviour of top management. Thus it is reasonable to expect that rationality alone cannot influence the SDMP and other correlates need to be considered to understand the performance outcomes of the SDMP.

An important aspect of the SDMP is that researchers have stressed on the need to consider the influence of antecedents on SDMP. A review of the relevant literature on SDMP shows that Top Management Teams (TMT) characteristics, decision specific characteristics, environmental characteristics and firm characteristics are some of the important antecedents identified by researchers as affecting SDMP (Papadakis et al. 1998; Papadakis & Barwise, 2002; Elbanna & Child, 2007). It is important to recognize that not only rationality as a decision dimension, even other decision dimensions like for instance politisation will be affected by such antecedents. Considering the influence of the antecedents of SDMP on the role played by decision dimensions, these antecedents that affect decision dimensions are separately discussed under the Section 2.6.

2.5.2 Intuition

Review of the literature shows that there are a number of definitions of intuition. Salient definitions given are provided in Table 2.9. Some of the definitions that can be related to the SD literature include cognitive conclusion (Burke & Miller, 1999), a decision making process that cannot be translated into words (Barnard, 1938), heuristic (Riquelme & Watson, 2002) and a kind of decision process that is guided by rational and logical thinking skill (Agor, 1989a). These definitions are widely varying and a common definition to intuition has tended to elude researchers. Especially in the context of SMEs, intuition appears to play a leading role and hence an appropriate definition with regard to SDMP is a necessity, which has not hitherto been addressed in the SDMP literature. Various definitions of intuition as a construct SDMP are provided in Table 2.9.

Table2.9, Definitions of intuition and its relationship to SDMP

No.	Author /s	Definition	Relationship to SDMP
1.	Burke and Miller (1999)	A cognitive conclusion that depends on prior experience and emotional inputs.	Related to intuitive decision making in the SDMP
2.	Khatri and Ng (2000)	Intuition as a single decision making dimension within SDMP.	Significantly related to organizational performance but not on SDMP
3.	Elbanna and Child (2007)	Empirical research on the role of intuition and its importance in SDMP.	Importance role of intuition is rarely found in the SDMP literature , intuition is not related to strategic decision effectiveness
4.	Robinson and Pearce (1984); Lenz and Lyles (1985); Mintzberg et al. (1976)	Decisions based on intuition or gut feeling.	No relationship between intuition and decision effectiveness in the SDMP in the context of SMEs
5.	Eisenhardt (1989); Judge and Miller (1991); and Wally and Baum (1994)	Empirical study carried out on the relationship between intuition and decision process outcomes.	No relationship between intuition and decision process outcomes
6.	Bennett (1998)	A daring conclusive leap.	Relationship between intuition and rapid or more efficient decision making
7.	Prietula and Simon (1989); Wierzbicki (1997)	A complex, quick, non-emotional and non-biased psychological process that is based on "chunking" that an expert hones over years of specific task experience	Relationship between intuition and decision making process at an advanced level
8.	Covin et al. (2001)	A subjective feelings rooted in past experience	Intuition related to decision making process at an early stage.

It is also seen that the SDMP literature research that has discussed the association of intuition with the SDMP is very limited. Accordingly, researchers have highlighted the need to gain a greater understanding on the impact of intuition in SDMP and the process outcome (Elbanna, 2009; Lyles and Mitroff, 1980). Intuition is a decision dimension that has been ignored by many researchers in the SDMP for instance Dean and Sharfman (1993a), who argue that rationality and politicization as decision dimensions are good enough to describe the decision making process. However, many researchers have emphasized the need to include such situations wherein decision makers need to use their intuition while making decisions (Eisenhardt & Zbaracki, 1992; Butler, 2002). While arguing the importance of intuition, Elbanna (2006) claims that intuition plays an important role in determining the effectiveness of the SDMP. However intuition by itself does not seem to influence the whole SDMP. Butler (2002) argues that executives make decisions intuitively though they associate both political and rationality as decision dimensions in the SDMP. Thus while it is seen that intuition as a decision dimension impacts SDMP it is not known to what extent intuition plays a role in the SDMP (Elbanna & Child, 2007).

2.5.2.1 Role of Intuition

While some researchers have recognized the importance of the role of intuition in the decision making process (Butler, 2002), empirical research on its actual role and its importance in SDMP is rarely found in the SDMP literature (Elbanna & Child, 2007). Adding to these problems, it is seen that a few of the empirical studies that have been carried out by researchers on the role of intuition do not address the relationship between intuition and decision process outcomes (Eisenhardt, 1989; Judge & Miller, 1991; Wally & Baum, 1994). The empirical research carried out by Khatri and Ng (2000) is one of the rare investigations on the impact of intuition on organizational performance, but not on SDMP. Their research addressed the relationship between intuition and organizational performance under stable environmental conditions, which is rarely found in the context of SMEs. Further study on this aspect by Elbanna and Child (2007) shows that in the SDMP, intuition is not related to strategic decision effectiveness.

It is worthwhile to note here that the study by Khatri and Ng (2000) has indicated that intuition is significantly related to organization performance which is contradictory to the study conducted by Elbanna and Child (2007). This contradiction is further compounded by the results achieved by Elbanna and Child (2007) which indicates that the influence of other decision dimensions such as rationality and politicization on the decision making process could greatly reduce the impact of intuition on the SDMP. While the study by Khatri and Ng (2000) shows that intuition as a single decision making dimension within an SDMP could be significantly related to organizational performance, it appears the inclusion of additional dimensions can impact the relationship between intuition and decision effectiveness (Elbanna & Child, 2007).

Another important aspect, that is to say the relationship between intuition and decision effectiveness under uncertain environment conditions, has also been shown to be inconsistent. For instance, Elbanna and Child (2007) reported that there is no impact of uncertain environment on the relationship while Bourgeois and Eisenhardt (1988), Fredrickson (1984), and Goll and Rasheed (1997) indicate a definite impact on the relationship. This contradiction further complicates the understanding on the impact of uncertain environment on the relationship between intuition and decision effectiveness in the context of SMEs. There appears to be hardly any study relating intuition to decision effectiveness by industry sector, including the electronic, telecommunication and IT industries in the SME sector.

While many researchers have indicated that in SMEs decision making processes have not been well researched (Gibcus et al. 2004), others have inferred that decision makers in SMEs tend to take decisions based on intuition or gut feeling (Robinson & Pearce, 1984; Lenz &

Lyles, 1985; Mintzberg et al. 1976). In addition intuition has not been addressed together with rationality in any decision making process in SDMP literature (Elbanna & Child, 2007). On the contrary intuitive processes have been considered to contradict rationality as intuition is considered to be knowledge gained without rational thought (Rowan, 1986). However some authors have suggested that intuition and rational decision making process could be used in combination in stable environment (Khatri & Ng, 2000). These inconsistencies found in the literature need to be examined. It is clear from the above arguments that no concrete conclusions can be drawn on the relationship between intuition and decision effectiveness in the SDMP in the context of SMEs with particular attention paid to the electronic, telecommunication and IT industries. Thus, this important gap in literature needs to be addressed to understand the strategic decision making processes in the SME sector.

The arguments provided thus far indicate the need to study the relationship between intuition and decision effectiveness in the SDMP in the SME context in particular but it can also be noticed that many researchers have not indicated the impact of antecedents on intuition in the strategic decision making process (Elbanna & Child, 2007; Khatri & Ng, 2000). This is another major area that could be investigated because in research topics other than SDMP some discussions have been found in the literature on the antecedents of intuition (Blume & Covin, 2011). Any such influence of antecedents of intuition could be expected to affect the SDMP and the SMEs in particular.

Thus while intuition is seen to be a part of the decision making literature, it is also seen that a search through the SDMP literature regarding the influence of antecedents of intuition did not yield any results. However, research in other disciplines has produced a number of antecedents of intuition, like for instance "situational decision ambiguity" (Burke & Miller, 1999), "experience training and practice" (Bennett, 1998; Chandler & Jansen, 1992; Covin et al. 2001; Khatri & Ng, 2000, Harper, 1990) and "problem sensing, gestation, deliberation, and analysis" (Wierzbicki, 1997). It appears that there is a possibility to link some of these antecedents either directly or through their proxies in the SDMP thereby enhancing the accuracy of the predictability of the impact of the variables in the SDMP on decision process output factors such as effectiveness. A detailed and critical discussion on the influence of the antecedents of intuition is provided under the Section 2.6.

2.5.3 Politicisation

Politicisation is generally understood as a certain behaviour of decision makers which could involve negotiations and bargaining observed in the process of decision-making (Cray et al. 1988; Hickson et al. 1986; Pettigrew, 1973). In another discourse on politicization, Elbanna and Child (2007) argue that political behaviour could be assumed as a process in which the

most powerful of the decision makers prevail and whose goals differ from one another leading to the formation of alliances to achieve the goals. In SDMP literature politicization has been identified as a decision dimension that affects SDMP (Tarter & Hoy, 1998). Considering the fact that politicization is a factor that exists in most organizations, the next section discusses its role in SDMP.

2.5.3.1 Role of politicisation

In the SDMP literature many authors agree that many decisions are ultimately political (Eisenhardt & Bourgeois, 1988). While the definitions found in the extant literature on SDMP convey similar meanings what is significant is the strong role played by politicization in the SDMP. However many authors also argue that politics is negatively related to firm performance (Dean & Sharfman, 1996). These arguments are contradictory. If politics is negatively related to performance and it is inevitable that politics cannot be separated from the final decision, then if the decision taken has to lead the firm to perform successfully some other influence on the SDMP must exist without which it is not possible for the firm to perform effectively. One explanation given by some authors about this strange situation is that politics can result in a better decision making process if the decision making teams are well managed (Amason, 1996). Though team heterogeneity is a desirable feature, in many SMEs it may be reasonable to assume that the difficulties involved in bringing in such heterogeneity could invariably result in politicizing the decision making process. Furthermore, the studies on SDMP which have addressed the influence of politics on SDMP have invariably suggested that politics is negatively related to performance or effectiveness (Elbanna & Child, 2007b; Nutt, 1998; Dean & Sharfman, 1996; Eisenhardt & Bourgeois, 1988). Thus, while politicization of the decision making process is considered to be negatively related to firm performance or effectiveness, it is also seen that in some contexts, it could lead to better decision making due to the involvement of conflict (conflict is considered as an important correlate of politics by researchers (e.g. Wilson, 2003; Amason, 1996; Eisenhardt et al. 1997).

In the context of the current study on SMEs with a focus on the electronic, telecommunication and IT industry sectors, based on previous studies mentioned above, it is reasonable to assume that politicization could be negatively related to firm performance or effectiveness. Additionally, in smaller firms the chief executive or the head of the organization is expected to be more powerful than the rest and hence decisions are more likely to be taken by one person leading to the possible assumption that politicization may not be significant in such firms (Papadakis, 2006). This argument leads to a situation where politicization as a variable could be construed as a constant in the SDMP process thereby obviating the need to discuss in detail about this correlate. Particularly in the context of an unpredictable environment in

which the SMEs in the electronic, telecommunication and IT industries operate, politicization could be viewed as a factor that may lead to detrimental performance (Baum & Wally, 2003). Hence the role played by politicization as a decision making dimension is understood to be negative.

2.5.4 Formalisation

Hetherington (1991) argues that formalisation measures the degree to which the final decision is taken through a process that is controlled. Papadakis (2002) argues that degree of formalisation or standardisation indicates the extent to which written documentation of management processes are made available in a firm explicitly. While the way formalisation is interpreted by different researchers may show common connotation on what they mean, literature review shows that formalisation as a decision dimension has not been well explored by researchers with regard to contextual factors (Lioukas & Papadakis, 2003). Furthermore, Lioukas and Papadakis (2003) feel that formalisation as a decision dimension is beset with limitations. Despite these problems, it is worthwhile to review the role of formalisation in the SDMP.

2.5.4.1 Role of formalisation

Although it appears that formalisation is one of the important decision dimensions that is considered to have potential in predicting superior organisational performance (Kim & Mauborgne, 1998) researchers feel that an understanding about formalisation is limited. Some researchers (e.g. Papadakis, 2002; Lioukas & Papadakis, 2003; Eisenhardt & Bourgeois, 1988) feel that formalisation could be linked to SDMP and organisational performance. On the other hand, literature review shows that there is no consensus amongst researchers on the nature of relationship between formalization and organisation performance. For instance, Pearce II et al. (1987) claimed that there exists a positive relationship but Robinson et al. (1984) indicated there is no relationship. Furthermore, one of the main arguments that emerges from the literature review is that formalisation as a construct is more close to rationality as a variable in theoretical terms (Elbanna, 2006) than other decision dimensions, although empirical results have shown contradictory results (Papadakis, 2002; Baum & Wally, 2003; Schaffer et al. 2001). From these arguments an important inference can be made which is that formalisation as a decision making dimension has influence on firm performance and decision process. More in-depth study may be required individually about formalisation in order to gain a greater understanding on its influence on the firm performance and SDMP. Prior to establishing this aspect, any attempt to involve this construct in the SDMP as a decision dimension alongside other established decision dimension constructs such as rationality or intuition, to ascertain its impact on the SDMP may be premature.

2.5.5 Decentralisation

Decentralisation deals with the total amount of participation of departments and individuals at different hierarchical levels (Tannenbaum, 1968; Papadakis, 2005). Cray et al. (1988) argue that decentralisation captures the centrality aspect in the SDMP. Others argue that decentralisation is a central element in the SDMP process that indicates the degree of decentralisation of decision-making introduced by the top management (Miller et al.1988). An important inference that emerges from the literature review is that while some researchers have used centralisation as the theme (Cray et al. 1988), others have preferred to use decentralisation as the theme (Papadakis, 2006; Miller et al. 1988), to demonstrate the influence of centralisation or decentralisation on the SDMP with respect to the decision making prerogative of the top management in a firm. Such a differentiation has the potential to indicate different meanings under different contexts, leading to the belief that centralization and decentralization could be used interchangeably. This logically though is not the case as centralisation could indicate the extent of decision-making responsibility vested with the top management whereas decentralisation could mean the extent of divesting decision making more widely. This anomaly in the literature needs to be carefully addressed while dealing with decision-making process dimensions.

2.5.5.1 Role of decentralisation

While review of the literature shows that researchers have strongly argued in favour of the idea that strategic decision making is a prerogative of the top management (Burgelman, 1983), emerging research outcomes have contradicted this view. Literature on SDMP shows that some studies have been carried out on the role played by decentralization as a decision dimension and its moderating effect on firm performance (Astley et al. 1982; Butler et al. 1979; Cray et al. 1988; Lyles, 1987; Miller et al. 1988). Fredrickson (1984) argued that decision-making process may involve the interaction of several employees at different levels, a view supported by Schilit and Paine (1987) who empirically measured the importance of inclusion of middle management employees in SDMP. However some authors have found that decentralization as a decision dimension may not be a very positively influencing factor under certain important contexts such as CEO characteristic (Papadakis, 2006). Although Papadakis (2006) has studied the influence of decentralisation on SDMP with regard to the central theme of CEO characteristics, his findings clearly indicate that decentralization as a variable is influenced only with respect to a few demographic characteristics like tenure and personality and no other non-demographic characteristics such as risk propensity.

Furthermore Papadakis' (2006) study clearly shows that decentralisation can also act as a stimulant of politicization leading to an inference that decentralisation as a decision dimension may not positively influence firm performance. Thus it is not clear whether

decentralisation as a decision dimension will greatly influence SDMP positively under all contexts and in association with other decision dimensions. This argument is further strengthened by Papadakis (2006), who argued that in SDMP research the correlation achieved between decentralization and the SDMP characteristics is not very high. This argument leads to the possible conclusion that decentralization as a decision making dimension may not be significantly affecting the SDMP with respect to a majority of contextual factors and other decision dimensions. Furthermore in the context of SMEs where the decision-making is largely vested with the CEO or the owner, decentralization could be expected to play a much less important role in the SDMP and hence may not be a significant decision dimension in the SDMP.

2.5.6 Other decision dimensions

From the foregoing discussions it can be seen that a host of decision dimensions have attracted the attention of researchers in the SDMP literature (Papadakis, 2002). However, the importance and significance of such dimensions to SDMP have been largely related to various organizational contexts only. This obviates the need for the inclusion of all the dimensions in SDMP models or relationships in general (Papadakis, 2002). Other important reasons that limit the scope of the discussions to only those decision dimensions mentioned above are that those dimensions have been found to affect SDMP significantly and the availability of empirical evidence strongly suggest the need to involve such dimensions in the SDMP in multiple organizational contexts. For instance lateral communication has been found to be a decision dimension that impacts positively the firm performance by Papadakis (2006).

However, literature also shows that lateral communication cannot be considered as a dimension that could be applied in all types of organizational structures, contexts and environments (Tayeb, 1987). Similarly Andersen (2005) argues that communication should be both vertical and lateral for organizations to have efficient dissemination of information that will lead to better performance because lateral communication is seen to be prone to exchange of unstructured and unquantifiable information. This leaves a gap with respect to exchange of structured and quantifiable information that could be achieved perhaps only with vertical communication. Thus it can be seen that lateral communication as a decision dimension cannot be assumed to be a general decision dimension that could be applied to SDMP in all types of organizations, or to exchange all types of information. A generalized discussion on such decision dimensions may therefore not provide a strong rationale to include those decision dimensions in the SDMP, as those dimensions do not seem to have good support from the literature.

Furthermore, some of the dimensions are considered to be part of other decision dimensions. For instance Papadakis (2002) argues that Problem-Solving Dissension and Gestation and Duration as decision dimensions could be considered to be part of the politicisation dimension and the dimension "set of formalized rules followed" could be considered to be part of the "formalization" dimension. Such representations of strategic decision dimensions may slightly add to the overall impact of the SDMP but may not significantly alter the SDMP process if not included in the models developed by various researchers. In fact the majority of research in the SDMP literature shows that rationality (Papadakis & Barwise, 1997) and politicization (Child & Tsai, 2005; Wilson, 2003) dimensions have been given the highest importance by researchers. Although intuition as a decision dimension has been increasingly considered to play a significant role in SDMP (Miller & Ireland, 2005; Sadler-Smith & Shefy, 2004; Elbanna, 2006), hardly any research is conducted on its role in SDMP, particularly in the context of SMEs, which implies the need to include in any SDMP research, particularly this research.

The foregoing discussions on decision dimensions have enabled the researcher to gain a good understanding of the need, purpose and importance of decision dimensions in the SDMP. However, the literature clearly shows that decision dimensions alone cannot predict the outcomes of SDMP without the influence of antecedents. One of the antecedents that has been discussed in a limited way in the SDMP literature is the decision characteristics.

A detailed and critical discussion on decision characteristics is expected to generate a greater understanding on their type and influence on decision dimensions in the SDMP. Thus the following sections provide a critical review on decision characteristics.

2.6 Strategic decision characteristics

Papadakis and Lioukas (1996) argue that the early perceptions of decision-making are considered as decision characteristics. In contrast Papadakis et al. (1998) claim that the nature of the decision itself could be significant in the SDMP and this is referred to as the decision characteristics. Another view found in the literature about decision characteristic explains that these characteristics are similar to stimuli that affect a decision and decision makers in different firms do not perceive such stimuli uniformly. Thus while the definition of decision characteristics seems to be vague or abstract, researchers believe that the way a decision is interpreted and labelled at the early stage of the SDMP, will have a relationship to the subsequent response of the firm in the SDMP (Papadakis et al. 1998).

Furthermore, strategic decisions are expected to address issues that are unusual to a firm (Stahl & Grigsby, 1992), which indicates that unusual issues could be interpreted in multiple ways by managers, particularly during the early stages of the decision making process. Such interpretations could determine the subsequent response of the firm as part of the decision making process. For instance, evidence from the literature shows that if a decision is understood as a crisis at an early stage, then the response of the organisation will differ from the one understood as an opportunity (Jackson & Dutton, 1988; Milburn et al. 1983). Characteristics assumed by the decisions due to the decision makers presumptions about the decision, could have serious implications to the decision outcomes.

From the foregoing discussions it can be construed that the idea of decision characteristic is considered as a notion that could be referring to the early stage perception and labelling of decisions. The literature shows that decision characteristics and their relationship to the SDMP is possibly the least explored topic in the SDMP literature and the knowledge currently available about this topic is limited (Rajagopalan et al. 1993). Thus researchers have emphasised the need to investigate such a relationship due its impact on overall SDMP (Papadakis et al. 1998).

A few researchers who have made in-depth study on decision characteristics have pointed out that factors representing decision characteristics can be identified in organisational decision making processes and such factors could exert strong influence on the decision making process (Dutton, 1993; Fredrickson, 1985). Some of the factors that have been identified by researchers as representing decision specific characteristics include decision stimulus (Blume & Covin, 2011), decision urgency (Pinfield, 1986), decision uncertainty (Papadakis et al. 1998), magnitude of impact (decision importance) (Dean & Sharfman, 1993a; Stein, 1981; Elbanna & Child, 2007), Threat/Crisis (Dutton, 1986), Opportunity (Dutton & Jackson, 1987; Mintzberg et al. 1976; Stein, 1981) and familiarity (frequency of occurrence) (Papadakis & Lioukas, 1996; Astley et al. 1982).

Researchers have been able to argue that these decision specific characteristics have impact on the decision-making process as well as sequential outcomes. Elbanna and Child (2007) have established a relationship between two of the SDMP antecedents namely decision uncertainty and decision importance on the one hand, and decision effectiveness (outcome of SDMP) on the other. Similarly, Papadakis and Lioukas (1996) have argued that relationship between magnitude of impact, decision-specific uncertainty and threat/crisis, and decision dimensions such as rationality, comprehensiveness and politicisation can be empirically established. These examples indicate that some prior research has highlighted the importance of decision characteristics in the SDMP as wells their behaviour as antecedents to the SDMP.

However, these efforts are few and far between, and suffer from a lack of consensus and generalisability. This argument leads further to the inference that in the context of SMEs, particularly for those firms dealing with electronic, telecommunication and IT products or services, currently available models or relationship pertaining to SDMP may not be applicable as a general theory and may require deeper investigation. While literature review shows that decision characteristics play an important role in the SDMP and its outcomes, there is a need to conduct in-depth investigation on their impact on the SDMP. Such an investigation is needed to gain an understanding of their influence on the correlates of SDMP, in particular the decision dimensions. The following sections therefore critically review some of the important decision characteristics that have been identified by researchers in the SDMP literature.

2.6.1 Magnitude of Impact

Amongst the decision characteristics the one about which researchers have arguably the least knowledge is the 'magnitude of impact of decisions' on organisational SDMP (Papadakis & Lioukas, 1996). Although 'decision magnitude of impact' has attracted attention, the few studies that have been conducted to date have produced contradictory results. For instance, Dean and Sharfman (1993a) found no importance for decision-making (synonymous to decision magnitude of impact, (Elbanna & Child, 2007), a decision characteristic, to related to procedural rationality, an important decision dimension in the SDMP. However, Papadakis and Barwise (2002) drew the opposite conclusions and showed that decision magnitude of impact is a strong predictor of decision dimension variables in the SDMP like for instance decision comprehensiveness/rationality. From these contradicting arguments, it is clear that the influence of decision magnitude of impact on SDMP needs to be studied further. As has been elaborated previously (Section 1.8.2), literature appears to be silent on the relationship between a range of decision magnitude of impact correlates and a range of decision dimensions in the SDMP (Papadakis et al. 1998).

From a review of the research publications dealing with magnitude of impact of decisions it is possible to provide a general meaning to magnitude of impact as a correlate (Dean & Sharfman, 1993a; Stein, 1981; Papadakis, 1995). Elbanna and Child (2007) have also addressed the concept of magnitude of impact but under the label decision importance as they argue that executives when making important decisions need to weigh the consequence of such decisions since they are linked to the success or failure of the organisation. Decision makers are likely to be more rational while making important and crucial decisions that impact organisational success (Hickson et al. 1986), like earning profit. This indicates that the profits earned by the organisation as a decision magnitude of impact dimension can predict whether the subsequent response is going to be rational or otherwise in the SDMP.

Another meaning to decision magnitude of impact can be derived from the description of strategic issue. For instance, researchers consider strategic issues as those that describe the developments or events at the initial stage of the SDMP which have not attained the status of a decision event yet (Dutton & Duncan, 1987). Such issues have been found to influence the current and future strategy of an organisation (Ansoff, 1979; Dutton et al. 1983). In this context, decision magnitude of impact can be said to affect strategic issues as both are identified with the early stages of decision-making process. Further both are seen to have widespread impact on the organisation and SDMP. Strategic issues are seen to trigger interpretations of strategies by decision makers that impact the organisations (Dutton & Duncan, 1987). Dutton et al. (1989) consider magnitude of impact as a dimension used by managers to understand and interpret strategic issues and include this dimension as part of the analytic characteristics of issues. Thus there is an impact of decisions taken by decision makers on the overall organisation with respect to a strategic issue.

The foregoing discussions on magnitude of impact indicate that strategic issues as antecedents of SDMP could be linked to decisions, decision making process and the magnitude of impact of those decisions. That is to say, strategic issues could be considered as representing decision magnitude of impact. Further, it is seen from the literature that the magnitude of impact of such decisions can impact a range of factors which include profit, quality of service / products, total production, cost, sales, market share, call for changes in existing programs and organizational adjustment required to serve the decision (Papadakis et al. 1998).

Although the magnitude of impact of decisions are seen to affect the overall organisation, literature review reveals that research outcomes have largely not addressed the decision magnitude of impact as a variable having the potential to shape the SDMP, particularly in the context of SMEs in the electronic, telecommunication and IT industries. Considering the important role decision magnitude of impact can play in the SDMP as an antecedent, there is a growing need to study the link between the decision magnitude of impact and SDMP effectiveness. Such a linkage promises to provide important clues in understanding how early stage decision making could be significantly improved to enhance the effectiveness of SDMP.

Review of the literature shows that only a few prior studies have attempted to link decision magnitude of impact as an independent variable to the effectiveness of SDMP as a dependent variable. For instance (Papadakis et al. 1998) have linked decision magnitude of impact as part of the SDMP to the characteristics of top management and the contextual factors. Papadakis et al. 1998) conducted their research on manufacturing industries located in Greece. Here, decision magnitude of impact was used as one of the many variables to predict the characteristics of top management and the contextual factors. This led to the inference that

the independent effect of decision magnitude of impact on top management characteristics got mired in a complex model resulting in a lack of knowledge on its specific impact on the top management characteristic.

The model developed by Papadakis et al. (1998) shows that decision magnitude of impact as part of the construct decision characteristics is related to a set of seven decision dimensions, although the research outcomes have not addressed the issue of decision process effectiveness. Despite these shortcomings, the research by Papadakis et al. (1998) indicates that there is a strong linkage between decision magnitude of impact and decision rationality/comprehensiveness. Papadakis et al. (1998) conclude that decision magnitude of impact is one of the strongest explanatory variables of decision-making behaviour, an argument previously supported by Dean and Sharfman (1993a) and Stein (1980). Furthermore, the research conducted by Papadakis et al. (1998) was specific to the manufacturing sector pertaining to specific products and is not generalisable across SMEs or other product and service sectors in the manufacturing segment. There is a need to link decision magnitude of impact as a predictor of SDMP effectiveness pertaining to SMEs to gain knowledge on how, as an independent variable, it could be controlled by managers in the SMEs to improve the effectiveness of the SDMP. This in trun could enable them to take adequate precautions before implementing the decisions.

Additionally it can be seen that the empirical study of Papadakis et al. (1998) is limited in its purpose as the linkage of decision magnitude of impact to a number of decision dimensions and the contextual factors did not allow the study to identify the explicit influence of decision magnitude of impact on the overall SDMP. Nevertheless, the research outcomes provided by Papadakis et al. (1998) provide a basis for investigating the influence of decision magnitude of impact as a strong explanatory variable on the SDMP and SDMP effectiveness. The outcomes of the research conducted by Papadakis et al. (1998) provide a way forward to develop a model that could be used in determining the impact of decision magnitude of impact on strategic decisions at an early stage of decision formulation, applicable to a wider set of industries. Such a research could provide greater insights into the factors that have a bearing on the overall magnitude of the impact of decisions on the organisations, enabling decision makers to make the right decision alternatives thus enhancing the overall SDMP effectiveness.

To date, apart from the research conducted by Papadakis et al. (1998), research outcomes using decision magnitude of impact as an important antecedent to predict SDMP effectiveness that are significant could not be found in the literature. Despite this, the literature shows that the strengths of decision magnitude of impact as an antecedent of SDMP include its ability to

explain decision making behaviour (Dean & Sharfman, 1993a; Stein, 1980), act as a strong predictor of decision dimensions (Papadakis et al. 1998) and act as a dimension of strategic issues (Dutton et al. 1989) and decision outcomes such as client satisfaction (Naoum, 1994; Soetanto & Proverbs, 2001; Soetanto, 2002). To highlight this aspect Table 2.10 has been provided which gives information about the various research outcomes produced by different authors found in the SDMP literature that have related decision magnitude of impact to SDMP.

Table2.10, Relationship of decision magnitude of impact to SDMP

No.	Author	Relationship of decision magnitude of impact to SDMP
1.	Papadakis and Lioukas (1996)	limited knowledge is the magnitude of impact of decisions on organisational SDMP
2.	Dean and Sharfman (1993a)	Importance of decision-making synonymous to decision magnitude of impact
3.	Elbanna and Child (2007)	A decision characteristic, not related to procedural rationality, an important decision dimension in the SDMP.
4.	Papadakis and Barwise (2002)	Decision magnitude of impact is a strong predictors of decision dimension variables in the SDMP like for instance decision comprehensiveness/rationality
5.	Papadakis et al. (1998)	Decision magnitude of impact part of the SDMP to the characteristics of top management and the contextual factors
6.	Dean and Sharfman, 1993a; and Stein,1980	Decision magnitude of impact is one of the strongest explanatory variables of decision-making behaviour.

2.6.2 Threat and crisis

Threat or crisis is defined as an incident that can seriously impact an organisation (Heath, 1998). Product or corporate reputation that is adversely affected by adverse publicity could be a threat. Another example could be product recalls (Bland, 1998). In addition, firms are frequently faced with rapidly changing and fast-paced environments necessitating organisations to interpret accurately and actively opportunities and threats enabling them to take appropriate strategic decisions (Dess et al. 1997). For instance the research conducted by Bourgeois and Eisenhardt (1988) on the microcomputer industry found that rapid but discontinuous changes which take place in the microcomputer industry due to a number of factors including technology, demand and competitors to name a few, result in inaccurate and sometimes obsolete information. Such information could lead to misunderstanding of the environment thereby causing confusion in reading the situation as a threat or crisis or opportunity. Decisions that are taken in these situations are likely to be affected due to inaccuracy of the information available to the decision makers leading to an unclear situation wherein it may not be possible to make a proper distinction between threat or crisis and opportunity.

Yet again, the rapidness with which markets change today does not instil confidence in decision makers as a decision that was considered appropriate and taken in a particular

situation might prove to be inappropriate or obsolete soon after (Dickson, 1992). Thus threat or crises versus opportunity need to be accurately judged by the decision makers in making strategic decisions and decisions are likely to bear a characteristic that signifies a threat or an opportunity. However, the literature shows that researchers do not concur on a single method that could enable the decision makers to correctly identify a threat or crisis and opportunity. For instance literature review shows that SWOT analysis was a useful method that was used by decision makers until recently, while methods such as regional clusters are considered to be better than SWOT analysis as researchers feel that SWOT analysis does not clearly provide a deep insight into the phenomenon (Valentin, 2005). Therefore decision makers need to be shrewd enough to identify what is a threat or crisis and an opportunity.

At this juncture it won't be out of place to state that it is necessary that the impact of threat or crisis needs to be separately studied in-depth to gain a greater understanding on the relationship between threat or crisis and the SDMP dimensions and as antecedents of SDMP. This argument is supported by other researchers (e.g. Jackson & Dutton, 1988) who feel that more work is still to be done in understanding the impact of threats and crisis on SDMP. Especially in the context of SMEs, the vulnerability associated with the industries to various environmental factors need careful assessment of threats and crises which if not properly assessed could be detrimental to the performance of the SMEs. The situation is further complicated due to a lack of an SDMP in SMEs which could enable managers to find ways to identify a threat or a crisis beyond reasonable doubt and thus make appropriate decisions. However this aspect is rarely addressed in the SDMP literature and considering the importance of the impact of this variable in the SDMP this gap needs to be separately investigated to generate outcomes linking threat and crises to SDMP particularly in the context of SMEs. It can be inferred from the above discussion that a deeper discussion on the definition of threat or crisis as well as its implications to SDMP is needed. However such a discussion is beyond the scope of this research as the focus of the research is to develop a relationship between decision characteristics and decision process effectiveness and not on the decision characteristic itself.

2.6.3 Uncertainty

One of the major problems in SDMP in any firm is the effect of internal and external dynamism and complexity of the environment that results in uncertainty of management (Schaffer et al. 2001). For instance judgements in turbulent industry environments may lead to uncertain decisions that are erratic (Mitchell et al. 2011). Turbulent environments may create such situations, in which managers resort to reduced usage of available information (Gilbert et al. 1988), narrow their attention (Ward & Mann, 2000), are distracted (Lavie et al. 2004) and find it difficult to detect inconsistencies (Bargh &Thein, 1985). Furthermore,

researchers believe that when managers are faced with the option of taking uncertain decisions then there could be a failure in their cognitive functioning (Gilbert et al. 1995) due to engagement in multiple cognitive activities (Gilbert & Osborne, 1989). Thus, uncertainty could be considered as a decision characteristic that has an important role to play in SDMP, particularly in dynamic environments (Baum & Wally, 2003; Hough & White, 2003).

Uncertainty is also considered as an important decision characteristic and antecedent of decision dimensions (Rajagopalan et al. 1993). In the SDMP literature uncertainty as a factor has been considered both as an environmental factor as well as decision outcome factor (Rajagopalan et al. 1993). While uncertainty as an environmental factor affecting decision-making has been addressed by many (Eisenhardt et al. 1997; Akgun et al. 2008) it has been found that accepted criteria for dealing with uncertainty in the decision-making process or decision outcomes in the SDMP literature (Tarter & Hoy, 1998) are scarce. It appears that in the SDMP literature, there is no generalised definition of decision uncertainty. However the discussions on decision uncertainty by some of the authors, for instance Astley et al. (1982) lend support to the argument that uncertainty in decision-making can be considered as a factor that arises out of the situation within an organisation where existing structures cannot cope with an issue. Furthermore Tarter and Hoy (1998) argue that decision uncertainty is a factor that affects the selection of the best option due to obscure consequences and makes it difficult for managers to maximise on a difficult choice due to demands on human cognition that are overwhelming.

The foregoing arguments indicate that uncertainty as a decision characteristic can have major impact on the consequences of the decisions made by managers as part of the SDMP and hence the decision process effectiveness, although researchers have neglected this area. The necessity to address the linkage between decision uncertainty and decision process effectiveness arises out of the potential impact uncertainty can have on decision process effectiveness. Uncertainty needs to be investigated thoroughly as an independent decision characteristic as well as a variable because literature shows that uncertain decisions could lead to unpredictable consequences which include:

- managers' dependence on intuition and not on data or information (Astley et al. 1982)
- bypassing routine (Astley et al. 1982)
- reduction in formality
- reduction in reporting
- higher centralisation
- raising of politicality at the problem formulation phase (Papadakis &Lioukas, 1996)

Although Bourgeois and Eisenhardt (1988) contend that uncertainties in decision-making can be beneficial to organisations due to increased in-depth analysis and information processing as well as enhanced rationality in decision-making, the lack of significant prior studies on uncertainty as an antecedent to the SDMP can act as a major impediment in understanding the SDMP clearly. There are many situations in the context of SMEs where decision makers in volatile sectors including micro computer and information technology, could be forced to make uncertain decisions related to import or further investments or new ventures as they may not be certain about the objectives or outcomes. A lack of theories or concepts relating to the impact of uncertainty as a factor in the SDMP further impairs the decision makers in identifying solutions when forced to take uncertain decisions. Therefore, there is a need to inform decision makers of the outcome of uncertain decisions and their impact on the organisation and help them to gain knowledge on tackling uncertain decisions, through deeper investigations focussed on uncertainty which is beyond the scope of this research.

2.6.4 Other decision making characteristics

There are other decision-making characteristics that have been highlighted by researchers such as "Planned" or "Ad hoc" and Frequency of Occurrence/Familiarity (Papadakis & Lioukas, 1996) as having linkage to SDMP. These characteristics have not been dealt with in this literature review because the rigour needed in addressing these characteristics as antecedents of SDMP as indicated by the discussions in this literature review with regard to other decision characteristics including decision magnitude of impact, threats and crises and uncertaintywas beyond the scope of this research. A review of the literature indicated they were less important in the SME / dynamic environment context of this research. Thus, it was not considered essential to discuss all the decision characteristics that have been highlighted in the SDMP literature in this review. Consequently the current review on selected decision characteristics provided in this chapter offered the strong basis needed for the researcher to choose the decision characteristic most salient as an antecedent of SDMP in the context of this research, keeping in view the gaps found in the contemporary SDMP literature.

2.7 Environmental factors

Literature on strategic decision-making indicates that environmental aspects play a key role in determining the effectiveness of a decision making process (Elbanna, 2006). The relationship between organisational aspects and environment has been widely discussed by many authors although some observe that not much empirical research has been conducted in regard to the effects of environment on the SDMP (Dean & Sharfman, 1996; Mintzberg & Waters, 1982; Fredrickson, 1984; Dean & Sharfman, 1993). Dean and Sharfman (1996) argue that environmental contexts play an important role in determining the degree of rationality in the

SDMP and this aspect needs further study. Other authors claim that external environmental factors moderate decision effectiveness (Goll & Rasheed, 1997). Thus, considering the importance environmental factors play on SDMP, the following sections provide a review of the environment factors that are widely discussed in the SDMP literature and their relationship to SDMP.

Environment is considered to be a key contingent factor in SDMP literature (Mintzberg, 1979; Castrogiovanni, 1991). There are many different environmental factors that have been identified by researchers in the SDMP literature categorised under internal and external corporate environment characteristics (Papadakis, 2002). Some of the factors identified under external corporate environment characteristics include stability, complexity, velocity, munificence (Mintzberg, 1979; Goll & Rasheed, 1997; Castrogiovanni, 1991), heterogeneity, hostility, dynamism and uncertainty (Miller, 1987; Grinyer et al. 1986), and under internal corporate environment, internal structure, planning systems and reward systems (e.g. Marsh et al. 1988). Table 2.11 lists the various environmental factors identified by many researchers.

Table2.11, List of environmental variables identified by various authors

No.	Environmental variables	Description/Authors
1.	Environmental hostility	Impact of environmental hostility on decision making [Goll and Rasheed, 1997; Wan and Hoskisson, 2003; Rajagopalan et al. (1993); Elbanna (2009)].
		Environmental hostility was a significant predictor of the relationship between the strategy process and organizational outcomes [Elbanna and Child, 2007; McArthur and Nystrom, 1991].
2.	Environmental dynamism and munificence	Business environments and empirical studies of strategic decision processes [Child, (1972); Dess and Beard (1984); Priem et al. (1995)].
3.	Environmental dynamism and munificence	Significant determinants of firm performance in empirical research [Bantel (1998); Keats and Hitt (1988)].
4.	Environmental dynamism	Moderating role of environmental dynamism between firm emotional capability and performance (Akgun et al. 2008).
5.	Environment complexity	Environment complexity affects decision-making (Dess and Beard 1984); degree of environmental complexity in a firm's operating environment directly impacts the amount and nature of information that has to be processed by decision makers. (Rajagopalan et al. 1993).
6.	Heterogeneity, dynamism, hostility, uncertainty	Characteristics of the external corporate environment [Miller (1987); Grinyer et al. (1986)].
7.	Internal structure, reward systems, planning systems	Characteristics of the internal corporate environment (Marsh et al. 1988).
8.	Competition, technology, government regulation	Importance of environmental factors in varying environmental contexts and unstable environments (Khatri and Ng, 2000).

Environmental factors have been found to impact a number of decision dimensions in the SDMP including rationality (Fredrickson & Mitchell, 1984; Khatri, 1994; Hough & White, 2003), political behaviour (Child & Tsai, 2005; Eisenhardt & Bourgeois, 1988) and intuition (Khatri & Ng, 2000; Agor, 1989a; Mintzberg, 1994; Quinn, 1980). While there is no consensus amongst researchers on the effect of various environmental factors on SDMP, the

existing literature appears to lack clear and systematic treatment of environment variables (Dess & Beard, 1984).

For instance Dess and Beard (1984) argue that researchers have not focused on the effect of many environmental variables such as hostility, munificence, and complexity on SDMP though uncertainty as a variable has been addressed. In fact research outcomes indicate that environmental complexity may play a key role in decision making if not treated rationally (Dess & Beard, 1984). These arguments clearly point towards a need for a greater understanding of the linkage between many different environmental variables and the decision dimensions.

2.8 External Environment

Environmental contexts play an important role in the performance of the SMEs (Davis & Sun, 2006). External environment around an industry has been identified by researchers to be of various types that include high-velocity environments (Eisenhardt, 1989), turbulent environments, rapidly changing environments, hostile and benign environment (Covin & Slevin, 1989), unstable environments and stable environments (Eisenhardt and Bourgeois, 1988; and Bourgeois and Eisenhardt, 1988). While a number of researchers have developed constructs that address the impact of environment on the SDMP, uncertainty appears to surround those research outcomes (Mador, 2000).

While the type of a particular environment such as high-velocity or stable environment have been found to affect SDMP by researchers, still some researchers feel that the SDMP complexity demands further investigation as it is felt that measuring success of the process is not easy in itself (Mador, 2000). Researchers feel that impact of external environmental factors on SDMP in a dynamic environment pertaining to industries including SMEs dealing in IT or telecommunication or electronic services or products need further study as dynamic environments appear to impact performance (Huy, 2005). There is a need to study the impact of environment factors in a particular environment pertaining to a particular industry sector to gain knowledge on how the SDMP in those sectors could be formulated to improve the effectiveness of the SDMP and hence the performance. In this context, it is reasonable to argue that factors or variables including dynamism, stability, hostility, munificence, velocity, complexity, scarcity and uncertainty that impact environments need to be studied further.

The literature review shows that researchers do not agree to a common set of external environmental factors that affect the business environment and the SDMP (see Table 2.11) leading to the inference that each one of these factors could be important in different decision-making processes and contexts. Although all the external environmental factors could affect

the SDMP effectiveness, it is seen that researchers (see Table 2.11) have found that the linkage between each one of these factors and SDMP to be individually very strong. Research studies therefore logically prefer to address the impact of individual environmental factors on SDMP effectiveness, and not 'many' as a cluster (see Table 2.11).

Considering the fact that SMEs are vulnerable to even a moderate change in the environment due to the influence of the environmental factors, it is arguably very important to investigate the impact of one environmental factor at a time on the SDMP. This method could yield a deeper and wider understanding of the impact of each one of the external environmental factor on the SMEs decision-making process. Furthermore it is necessary to prioritise the study on these external environmental factors due to the fact that some may logically have a greater impact than the others depending on the type of industry sector. For instance, in the case of a firm in the microcomputer industry the firm must keep pace with the changing technology through appropriate understanding of the dynamism of the external environment, failing which the firm could be forced to deal with obsolete technology. Such a situation calls for an SDMP that will enable the organisation to either minimise losses or gain competitive advantage in terms of launching newer technology in the market.

The following discussions critically review a few of the factors identified by various researchers with regard to their linkage to SDMP and SDMP effectiveness. This discussion formed the basis for the choice of the most appropriate factor that had relevance to the current research, namely dynamism. Table 2.12 lists the various environmental factors' definition identified by many researchers.

Table2.12, Definitions of external environmental factors identified in SDMP research (Mador, 2000)

Descriptor	Definition	Reference
Dynamism	Used interchangeable with uncertainty.	Goll and Rasheed (1997) Mintzberg (1979)
	Opposed to stability on a continuum.	
Stability	Opposed to dynamism.	Mintzberg (1979) and Goll and Rasheed (1997)
Complexity	Numerous, interconnected, environmental elements are relevant.	Dess and Beard, 1984
	Measure of the extent to which the environment requires the organisation to have a great deal of sophisticated knowledge about products, customers, or whatever.	Mintzberg (1979)
Velocity	A measure of speed of change and continuity in demand, completion and technology. In high velocity environments, changes are so rapid and discontinuous that information is often inaccurate, unavailable, or obsolete.	Bourgeois and Eisenhardt (1988)
Munificence	Scarcity or abundance of critical resources needed by firms operating within an environment	Castrogiovanni (1991)
	Opposite to Hostility on a continuum. Influenced by the organisation's relationships with outside groups, as well as by the availability of resources to it.	Mintzberg (1979)
Hostility	Opposite to munificence on a continuum.	Mintzberg (1979)
Uncertainly	Rate of change.	Rajagopalan et al. (1993)
Scarcity	Opposite to munificence on a continuum.	Staw and Szwajkowski (1975)

2.8.1 Dynamism

According to Dess and Beard (1984) environmental dynamism could be described as the rate and unpredictability of change in a firm's external environment. Goll and Rasheed (1997) argue that dynamism could be used interchangeably with uncertainty of the environment which is the rate of change of the environment. Baum and Wally (2003) identify environmental dynamism as unpredictability. While the descriptions provided here on environmental dynamism may slightly differ from one another in general it is seen that environmental dynamism is considered to be a factor that signifies both unpredictability and rate of change.

The literature review on SDMP shows that many authors have identified environmental dynamism as an important variable of SDMP. For instance Baum and Wally (2003) have studied the impact of dynamism as a moderating variable between decision speed and financial performance of a firm. Similarly Judge and Miller (1991) posited that environmental velocity is linked to firm performance wherein it can be seen that dynamism is a component of environmental velocity (Baum & Wally, 2003). Papadakis et al. (1998) argue that dynamism influences DMPs.

Although research outcomes are found to address the issue of influence of dynamism on DMPs (Fredrickson, 1984; Eisenhardt, 1989; Judge & Miller, 1991) such research outputs are sparse and have produced contradictory results (Rajagopalan et al. 1997). For instance, Priem et al. (1995) argue that comprehensive processes showed that companies perform better in rapidly changing environment where as Fredrickson and Iaquinto (1989) claim that firms adopt rational-comprehensive strategic DMPs in a stable environment. Thus there is a need to study the impact of dynamism on SDMP to clear the cloud surrounding the impact of dynamism on SDMP, especially with regard to SMEs that face dynamic environment for instance the computer industries (Eisenhardt, 1989).

Dynamic environments are pronounced in a number of forms like for instance dynamic competition across industries (D'Aveni, 1994; Thomas, 1996), frequent changes in the industry, changes in the customer demand and rapid changes in the technology (Akgun et al. 2008). Empirical research shows that environmental dynamism can impact firms' performance negatively by creating threats (Walters & Bhuian, 2004). Furthermore researchers believe that such threats can affect the existing fit between a firm and its environment (Walters & Bhuian, 2004). Additionally Akgun et al. (2008) claim that dynamism as a factor can place greater demand on managers in firms as routine solutions that are practiced on an everyday basis may become impracticable. This in turn could lead to adaptation of changes to fit changing circumstances. However other authors while disagreeing that environmental dynamism is a

source of hindrance for managers, in the same breath claim that it can provide new opportunities to firms and enable them to improve their performance (Lee et al. 2001).

Lee et al. (2001) argue that dynamic environments can provide an opportunity to firms to gain flexibility in reallocating resources and reorganising the organization in terms of rearranging and manipulating competencies leading to improved performances. Thus, on the one hand, dynamism as an external environmental factor has the potential to impact firms negatively, but on the other, can provide opportunities for organizations to improve their performance. This contradiction is a major impediment in purposefully using the research outcomes and hence an investigation into the impact of environmental dynamism on SDMP, especially in the context of such vulnerable industries as IT in the SME sector becomes imperative.
Furthermore, researchers have attempted to provide a linkage between environmental dynamism and SDMP by identifying dynamism as a variable that influences firm-level constructs, capabilities, and organisational performance (Grieves, 2000). Mador (2000) attempted to relate environmental dynamism as antecedent to decision characteristics. Andersen (2005) hypothesises that environmental dynamism moderates the linkage between decentralization and firm profitability. Goll and Rasheed (1997) argued that association between rationality and firm performance is positively moderated by dynamic environment. These empirical studies clearly indicate the role of external dynamism in SDMP although researchers do not concur on whether dynamism as a variable moderates the decision characteristic or decision dimensions or decision process output. Such an anomaly requires further investigation.

2.8.2 Munificence

Another important environmental factor that affects firms is munificence and is described as the availability of critical resources required by a firm in shortage or abundance to operate within an environment (Castrogiovanni, 1991). Mintzberg (1979) concluded that munificence is the opposite of hostility on a continuum. Lenz and Engledow (1986) argue that munificence indicates the availability or scarcity of critical resources and claim that munificence affect environment. Khandwalla (1977) argue that munificence is a measure of the degree of environment and could be linked to riskiness, stressfulness and dominance over the company. While researchers do not agree on a common definition of munificence, it is clear that munificence is an important factor that impacts environment in which a firm is operating.

Literature review in the field of SDMP shows that munificence has appeared frequently in research as well as theories on business environments and empirical studies on SDMP (Child, 1972; Dess & Beard, 1984; Priem et al. 1995). Many researchers believe that munificence is an important correlate of firm performance in empirical studies (Bantel, 1998; Keats & Hitt,

1988). However, Rajagopalan et al. (1993) argue that munificence as an important factor of SDMP has received little attention. Elbanna and Child (2007), while highlighting the importance of munificence in SDMP research, argue that the extent of empirical research that addresses the impact of munificence on SDMP is limited. Thus empirical investigation into munificence has attracted only limited attention of researchers and more work needs to be done in this area.

Currently, the available research shows that researchers have tried to establish a relationship between SDMP and firm performance with munificence as a moderator, for instance Goll and Rasheed (1997). Others have attempted to use munificence as a moderating variable in linking decision dimensions to strategic decision effectiveness, for instance positive influence of rationality on decision effectiveness under high environmental munificence or negative influence of intuition on decision effectiveness under high environmental munificence (Elbanna & Child, 2007). Dess and Beard (1984) have argued that competitive threat could be linked to munificence and claim that competitive threat is the greatest when munificence is low and vice versa.

The foregoing discussions demonstrate the potential impact of munificence on SDMP as factor of the external environment. In addition, these discussions imply that munificence as a factor opposing environmental hostility is very significant and requires deeper study with respect to its impact on decision effectiveness without considering the interference or interaction with other environmental factors. Knowledge gained thus could be more useful in terms of understanding the impact of munificence on SDMP variables like for instance rationality, than combining it with other environment factor such as dynamism or complexity because of the necessity to control decision effectiveness more closely than possible now. Especially in the context of SMEs operating in highly dynamic environment, the impact of munificence on decision effectiveness as a separate study could yield deeper insights into the linkage between munificence and decision effectiveness either as a moderating variable or as an independent variable. As indicated by Rajagopalan et al. (1993) this factor needs greater study as hardly any attention has been paid to the impact of munificence on SDMP correlates in the SDMP literature.

2.8.3 Hostility

Environment hostility as a factor affecting SDMP has elicited contradictory views from researchers. For instance Papadakis et al. (1998) claim that environmental hostility does not influence any of the characteristics of SDMP and dispute the claims of Dess and Beard (1984) and Rajagopalan et al. (1993) that organisations follow more rational SDMP in hostile environments.

Environmental hostility is defined as a task environment in which a firm is placed and could pose threats to the viability of the firm with the possibility of impacting the SDMP (Slevin & Covin, 1997). Miller and Friesen (1983) describe environmental hostility as the extent of a situation the firms are forced to face, with respect to a number of factors that include price, unattractive market demand, scarcity of resources, problems arising due to regulations and competition in production and distribution. Although definitions and descriptions of environmental hostility vary, what is significant appears to be the contradictory results found in the empirical research on the impact of environmental hostility on SDMP. However, considering the fact that relatively little attention has been paid to the linkage between environmental hostility and SDMP characteristics (Elbanna & Child, 2007) and the few outcomes that have produced opposite results (Papadakis et al. 1998), a deeper investigation into the effect of environmental hostility as a standalone factor related to SDMP effectiveness could be necessary. Dedicated research may have to address the needs of various industries operating in different sectors including SMEs. The current depth of knowledge in this area is inadequate. However considering the depth of study required in addressing hostility as a factor related to SDMP, may need an entirely new study which is beyond the scope of this research. Hence hostility as an environmental factor is not investigated in this research.

2.8.4 Heterogeneity

A review of the SDMP literature shows that heterogeneity can be attributed to both internal and external environmental contexts (Schaffer et al. 2001). The SDMP literature shows that heterogeneity is an external environmental factor that affects the decision making process within a firm (Papadakis & Lioukas, 2003) although researchers appear to have arrived at contradictory results in their understanding of the influence of heterogeneity on SDMP. For instance Smith et al. (1994), found through their study on top management teams in firms that heterogeneity has a negative impact on performance in certain respects as they found demographic diversity influences top management decision making. However Papadakis and Lioukas (2003) claim that environment heterogeneity is positively associated with overall satisfaction with the decision. Further Dess (1987), points out that the impact of environment heterogeneity is generally disregarded by managers in their decision making process, a sentiment echoed by other authors involved in the SDMP research (Judge & Miller, 1991; Priem, 1990; Priem et al. 1995; Rajagopalan et al. 1993), an argument that could be considered as a serious limitation in SDMP literature (Dess, 1987). While the foregoing arguments indicate the importance of heterogeneity in the SDMP process, it is also seen that the number of research outcomes that have addressed all aspects of heterogeneity is very limited.

External environment heterogeneity could be described as an aspect that indicates the diversity observed in the external environmental contextual factors, for instance Seethamraju (2008) argues that heterogeneity of technology affects firm performance and hence the SDMP. Similarly Butler et al. (1991) argue that customer heterogeneity increases complexity in the external environmental context that in turn is expected to affect the decision-making within firms.

Another description of external environmental heterogeneity could be provided as the differences that exist amongst the individual elements of a set of elements and variation that are seen amongst the elements. For instance Bhattacharjee and Holly (2009) argue about the differences in the views of members in a committee or the variation in the individual beliefs of members in a committee as examples of heterogeneity. Thus it is seen that while a formal definition of heterogeneity is difficult to be arrived at but can only be derived from descriptions of heterogeneity by individual authors. However it is possible to infer from the foregoing discussions that heterogeneity is applicable to a wide range of objects and subjects relevant to SDMP like culture (Hofstede, 1980), identity groups (Cox, 1993; Jackson, 1992; Nkomo, 1992) and technology (Kidd & Teramoto, 1995).

Relationships between heterogeneity and decision dimensions have been developed by many researchers but SDMP literature shows that there is no unified theory that has been developed by researchers to link the impact of heterogeneity to a number of factors that affect the SDMP. For instance with regard to firm growth researchers believe that the heterogeneous nature of the growth factor is not adequately examined by researchers with regard to multiple growth patterns (Delmar et al. 2003). Such examinations need to produce unified theories for the benefit of decision makers although some researchers believe that production of such theories is unlikely in the immediate future (Gibb & Davies, 1991). This argument could be extended to many other components affecting SDMP leading to the possible inference that a study of the impact of heterogeneity as an external environmental contextual factors requires a deeper investigation in its own merit. Such a research could produce outcomes that can enable decision makers in many different industrial sectors in associating heterogeneity meaningfully in the decision making process including the SME sector.

The foregoing discussions on the external environment contextual variables provide a comprehensive synposis on the need to consider these variables as part of research on SDMP and their impact on SDMP effectiveness. However, it is prudent to consider the linkage of one external variable at a time to the SDMP in any research related to the SDMP effectiveness, to avoid complexities that could arise if multiple factors are considered together due to the diverse nature of the variables.

Alongside the review on the external environment factors it is necessary to consider the effect of internal organisational contexts on the SDMP as prior research shows that such contextual factors affect the SDMP effectiveness (Papadakis et al. 1998). Thus the following sections provide a critical review on the internal contextual factors that could impact the SDMP.

2.9 Internal context

Literature review in the field of SDMP unequivocally indicates the importance of contextual factors related to the internal characteristics of the firm on the SDMP (Papadakis et al. 1998). Researchers have felt that integrating contextual factors into the decision making process is an area that needs further research (Papadakis et al. 1998). That environmental context, both external and internal, play an important role in SDMP has been recognised by many authors including Beach and Mitchell (1978), Billings et al. (1980), Bryson and Bromiley (1993), Dutton et al. (1983), Hitt and Tyler (1991) and Rajagopalan et al. (1993). The discussions in this section focus on the internal firm factors that impact the SDMP.

Although there are contradictory opinions on whether internal firm factors impact SDMP or not, call for investigating into the impact of internal firm characteristics on SDMP are growing. For instance, although some researchers (e.g. Papadakis et al. 1998) have raised questions on the influence of internal firm context on the SDMP many others (e.g. Bryson & Bromiley, 1993; Pettigrew, 1990; Schneider & De Meyer, 1991; Rajagopalan et al. 1993; 1997) have called for wider research to gain knowledge on the linkage between the internal firm factors and SDMP. Infact researchers (see Bryson & Bromiley, 1993; Pettigrew, 1990; Schneider & De Meyer, 1991; Rajagopalan et al. 1993; 1997) argue that this area remains largely unanswered. The situation becomes even more precarious if one tries to address the issue of internal firm factors in the context of SMEs as the internal firm factors could play a significant role in the SDMP an argument supported by (Koh & Simpson, 2005). Thus despite contasting opinions, the foregoing arguments strongly suggest the need to investigate the influence of internal firm factors as variables affecting SDMP and their relationship to firm performance.

Papadakis et al. (1998) identified internal systems, company performance, firm size and corporate control as important internal firm characteristics. Romanelli and Tushman (1986) highlight current organisational arrangements, existing organisational structures, presently used organisational systems, organisational processes as well as resources as characteristics that impinge upon the SDMP. If one reviews the extant literature it can be seen further that other researchers too have identified internal firm characteristics as related to specific SDMP characteristics such as decision speed instead of SDMP as a whole like Baum and Wally

(2003). In the same vein it can be added that there are other firm factors that exert influence on SDMP which include past strategies, structure, past performance, organization size, organizational slack, top management team (TMT) characteristics (Rajagopalan et al. 1993) and power distributions within the decision-making group (Rajagopalan et al. 1993; Eisenhardt, 1989; Jemison, 1981; Shrivastava & Grant, 1985). Although many internal firm factors have been identified by researchers that impact SDMP, Rajagopalan et al. 1993; Alge et al. 2003) claim that research on such internal firm factors is limited. For instance Rajagopalan et al. (1993) claim that as past strategies, past performance, and TMT characteristics need further study. Although the above mentioned arguments could confuse decision makers and create contradictions, the fundamental inference that can be made is that internal firm characteristics need to be considered in any SDMP process as it is apparent that they influence the SDMP.

As far as current status of research is concerned, literature shows that some of the authors have investigated the linkage between firm factors and SDMP. Fredrickson (1985), for instance, examined the role of past performance, and Fredrickson and Iaquinto (1989) examined impact of organizational size and TMT characteristics on the decision dimension comprehensiveness. These efforts appear to be exceptions in a literature that has very limited information on the influence of internal firm factors on SDMP. Thus there is a need to gain knowledge on the impact of organizational factors on SDMP using which it could be expected that managers will be able to effectively take decisions as part of SDMPs.

These studies on internal factors of a firm by Papadakis et al. (1998) indicate the existence of positive relationship between the variables identified and SDMP. However these results have a limited utility of serving those firms on which the research has been conducted. Generalisation across other industries and other contextual factors is absent. This argument is further strengthened by the contradictory results achieved by Papadakis et al. (1998) pertaining to the relationship between firm performance and the extent of rationality found in the decisions made in firms. While they claim that there is a positive influence of firm performance on the extent of rationality associated with the decisions made, Bourgeois (1981) and Fredrickson (1985) have found that firms with superior performance were characterized by decisions in which the extent of rationality was less. In view of these inconsistencies found in the extant literature, three relevant internal contextual factors have been chosen for critical discussion in this research: firm performance, size, and corporate control. This discussion led the researcher to generate knowledge on how to address the SDMP problems arising out of internal contextual factors in SMEs for the purpose of this research.

2.9.1 Firm performance

Firm performance has been explained in many ways by different authors. Baum and Wally (2003) consider growth and profitability as indicators of firm performance whereas Papadakis et al. (1998) have used return on asset and growth in profits. Other authors have used market share (Anderson et al. 1994), return on sales and return on equity (Orlitzky et al. 2003; Waddock & Graves, 1997). The various indicators identified show disagreement on the part of researchers on a common set of indicators that best represent firm performance. Despite this disagreement it can be seen that firm performance plays an important role in the organisational decision making process.

An important aspect of SDM is that research establishing links between past firm performance to SDMP is limited (Rajagopalan et al. 1993). The research outcomes that are available are also contradictory. Fredrickson (1985) found that past performance is negatively related to the comprehensiveness of strategic decision-making process. However, Smith et al. (1998) found that small and large firms alike performed better when the decision making process was comprehensive. In light of the contradictory findings, it is important to examine the relationship between internal firm factors and SDMP further, in particular in the context of SMEs.

Furthermore, within the SDMP, Papadakis et al. (1998) have argued that firm performance affects a number of decision characteristics whereas Elbanna and Child (2007) have argued that firm performance is an antecedent to strategic decision effectiveness. The situation is further complicated with Fredrickson (1984) arguing that performance is dependent on comprehensiveness of decision making with the relationship being either positive in stable environment or negative in unstable environment. These varying arguments on the relationship between firm performance and decision comprehensiveness are contradictory and are not generalisable. Accordingly, it was necessary to investigate the proper nature of the relationship between performance and the SDMP constructs. An investigation becomes particularly imperative in the context of SMEs due to their heavy reliance on external environment and the limited research carried out on the relationship between organisational performance and SDMP in general (Rajagopalan et al. 1993).

2.9.2 Size

According to Elbanna and Child (2007) one characteristic that affects an organisation as an internal contextual factor related to the SDMP is the firm size. Elbanna (2009) claims that the importance of size as a contextual variable in the SDMP has been well addressed in related research (e.g. Papadakis et al. 1998). However, literature shows that firm size though considered usually by researchers as an important variable in the context of SDMP (Papadakis

et al. 1998), there are contradictory opinions. For example, while Fredrickson and Iaquinto (1989) and Child (1972) argue that firm size is associated with SDMP, Dean and Sharfman (1993a) as well as Hickson et al. (1986) did not find any relationship between SDMPs and firm size. Furthermore the study conducted by Papadakis et al. (1998) on manufacturing firms in Greece, in investigating the role of management and context on SDMP clearly shows that firm size is related to SDMP. Papadakis et al. (1998) argue that this finding is in line with previously published research.

Considering that a number of research findings (Fredrickson, 1984; Fredrickson & Iaquinto, 1989; Mintzberg, 1973) have found that firm size plays an important role in SDMP, it may be reasonable to concur with the arguments of Papadakis et al. (1998). Thus firm size can be considered to be an important internal contextual variable affecting SDMP. However considering the fact that the focus of this research is SMEs, firm size will act more as a constant than as a variable.

2.9.3 Corporate Control

According to SDMP literature many researchers have argued in favour of including corporate control as an important variable that affects SDMP (e.g. Papadakis et al. 1998; Lioukas et al. 1993; Mintzberg, 1973; Mallory et al. 1983). While corporate control could refer to the type of ownership, for instance owned by a local or multinational, much of the evidence supporting their linkage to SDMP in the SDMP literature are inconclusive. It is important to note here that Papadakis et al. (1998) have found through their research on manufacturing firms in Greece that there is no relationship between corporate control and SDMP. Although the results achieved by Papadakis et al. (1998) are not conclusive, it may not be reasonable to ignore the findings due to the lack of statistical significance found by Papadakis et al. (1998) as well as the lack of consensus amongst researchers on the importance of corporate control as a variable affecting SDMP. Thus further discussions on corporate control as a construct representing internal firm contextual factor was considered as not significant for this research.

The foregoing discussions on internal firm contextual factors and their relationship to SDMP clearly show that there is little consistency (if any) in the prior research that could enable the researcher to identify a set of well-established variables to be used as part of the current SDMP research. In such a situation, it is advisable to examine the individual impact of a contextual variable on SDMP rather than the collective impact of many on the SDMP, to elicit a clear result and eliminate complications.

After the discussion on the decision dimension variables, decision characteristic variables, external environmental variables and internal contextual variables that have been found to

influence SDMP, it is important to gain an understanding on the decision output factors that are affected by them. This argument emanates from the claims of many researchers who have argued that those variables are related to many decision output factors such as decision effectiveness (Elbanna & Child, 2007), and process outcomes (Rajagopalan et al. 1993). While some research outcomes have established a relationship between SDMP dimensions and characteristics (Papadakis et al. 1998), there is a lack of well-established linkage between specific SDMP characteristics, the SDMP dimensions and SDMP output variables. In this context, it is essential to understand what factors constitute decision output and what is the nature of the association between those factors and the rest of the SDMP components. The next section focuses on the decision output factors to enable an understanding on their importance and relationship to SDMP.

2.10 Decision process output

Review of the literature shows that some researchers argue that any SDMP leads to decision outcomes described in terms of firm performance (Akkermans & van Aken, 1999) while others have argued that decision outcomes are linked to increasing the speed of the SDMP, generating creative decisions and better implementation of decisions (e.g., Eisenhardt, 1989; Judge & Miller, 1991). In addition, decision outcomes are said to be comprising of quality of decision-making and implementation of decisions (Akkermans & van Aken, 1999; Pettigrew, 1992) although some disagreements exist amongst researchers like for instance Van de Ven (1992) who argues that SDMP research is diverse and cannot be described as part of a single paradigm. It must be noted here that many researchers have classified the decision outcome to comprise decision-making phase and implementation phase although this classification seems to be arbitrary (Akkermans & van Aken, 1999; Fredrickson & Mitchell, 1984; Eisenhardt & Zbaracki, 1992; Priem et al. 1995; Steiner, 1972). Also the literature review indicates that decision outcomes need to be viewed as part of the overall SDMP with the decision outcomes viewed as part of the input-process-outcome linkage (Mador, 2000).

These diverse arguments point towards a need to gain a clearer understanding of the decision outcomes and their relationship to SDMP. Considering the difficulties involved in determining the short term and long-term outcomes of decisions in firms, it is necessary to gain a deeper understanding of the decision outcomes. Additionally predicting whether good decisions made will lead to successful implementation of decisions and good outcomes or bad decisions made will lead to unsuccessful implementation or bad outcomes appears to be a complex task (Edwards, 1984; Keeney, 2000).

The extant literature suggests that decision outcomes provide an understanding of the quality of decisions that are taken as part of the SDMP (Eisenhardt & Zbaracki, 1992) as well as how well they have been implemented (Baum & Wally, 2003; Nutt, 1993; Wilson, 2003). Considering these arguments and the fact that decision process outcome is a part of the input-process-outcome linkage, the decision making phase itself could be considered as one of the outputs of the decision process outcome. In this context a linkage between the decision process output as part of the decision process outcome and decision process dimensions as part of the decision making process appears to be logical although it is a grossly neglected area of research that needs further study (Eisenhardt & Zbaracki, 1992).

The necessity to link decision process output to the decision process dimensions arises out of the need to understand its impact on successful implementation of decision and the resultant strategic decision success (Elbanna, 2006) which is an argument supported by other researchers. For instance, Hickson et al. (2003) highlight the relationship between decision success and the way decision implementation is managed. Furthermore researchers believe that good decisions cannot be evaluated based on its outcome (Edwards, 1984; von Winterfeld & Edwards, 1986). Thus gaining knowledge on how good decisions are made as part of the decision process output gains currency.

Since SMEs are characterised by quick entry and exit from the business stage (Mador, 2000), it is prudent to examine the decision process output and its relationship to SDMP ahead of the implementation phase in order to explain how SMEs could be provided with a meaningful method to survive, progress and sustain in dynamic environments by taking rational decisions. In light of this argument the following discussions provide a critical review on the decision process output factors that influence associated with the SDMP.

2.10.1 Factors affecting decision process output

Researchers appear to argue that when a decision is taken it is not known whether it is a good or bad decision because it is not possible to predict and foresee the outcome (Chen & Chien, 2009). In a complex world where the environment is uncertain and decision making hinges on a number of dimensions that may or may not be controllable by a firm especially in the SME sector, it may be difficult to guarantee that good decisions lead to good outcomes and predict that bad decisions necessarily lead to bad outcomes (Chen & Chien, 2009). In such a situation it is necessary to elicit factors that could be controlled to provide a reasonable idea on how SDMP variables influence decision output factors and increase the chances for the managers in the SMEs to take successful decisions leading to possible outcomes that can be characterised as good.

The extant literature in SMDP relevant to SMEs indicates that SMEs in general do not seem to have a well-defined SMDP through which decisions are made and implemented (Gibcus et al. 2004). Such a situation can be a major factor in many of the SMEs entering and exiting markets quickly. While an SDMP could greatly enhance the success factor of these SMEs, such an SDMP if linked to decision process output factors may enhance the success of the SMEs considerably. Especially SMEs in the ICT sector that are subjected to constant change in the market conditions may find it supportive in dealing with changing external factors if decision process output factors could be linked to the SDMP. In this context, a search through 25 papers published by leading researchers in the SDMP literature produced only limited number of factors that could be considered as a part of decision process output (Table 2.13).

Table2.13, List of leading researchers in the SDMP literature

No.	Title of the paper	Author
1	Strategic decision-making in an ever-changing world : creating conditions for informed action	Akkermans and van Aken (1999)
2	Strategic decision speed and firm performance	Baum and Wally (2003)
3	Organizational structure, environment, and performance	Child (1972)
4	Does decision process matter? A study of strategic decision-making effectiveness	Dean and Sharfman (1996)
5	Making fast strategic decision in high velocity environments	Eisenhardt (1989)
6	Strategic Decision Making	Eisenhardt and Zbaracki (1992)
7	Strategic decision making: process perspectives	Elbanna (2006)
8	Influences on Strategic Decision Effectiveness: Development and test of an integrative model	Elbanna and Child (2007)
9	The comprehensiveness of strategic decision processes: extension, observation, future decisions	Fredrickson (1984)
10	Inertia and Creeping Rationality in Strategic Decision Processes	Fredrickson and Iaquinto (1989)
11	Strategic Decision-Making in Small Firms: Towards a Typology of Entrepreneurial Decision-Makers	Gibcus et al. (2004)
12	Rational decision making and firm performance: the moderating role of environment	Goll and Rasheed (1997)
13	Top Decisions: Strategic Decision-Making in Organizations	Hickson et al. (2003)
14	How do small business managers make strategic marketing decisions? A model of process	Jocumsen G. (2004)
15	Strategic Decision Progresses and Outcomes: Effects of Context	Lioukas and Papadakis (2003)
16	Strategic Decision Making Processes: Extending Theory to an English University	Mador (2000)
17	Implanted Decision-making: American Owned Firms in Britain	Mallory et al. (1983)
18	Strategy-Making in three Modes	Mintzberg (1973)
19	Strategic Decision Making in Microfinance Organisations: Stakeholder perspective	Mori and Munisi (2009)
20	Public Private Differences and the assessment of alternatives for decision	Nutt (1999)
21	Strategic decisions – Making Processes: The Role of Management and Context	Papadakis et al. (1998)
22	The character and significance of strategy process research	Pettigrew (1992)
23	Strategic Decision Processes: Critical Review and Future Directions	Rajagopalan et al. (1993)
24	Decision Analysis and Behavioural Research	von Winterfeld and Edwards, (1986)
25	Strategy as decision making	Wilson (2003)

However although researchers do not specify any particular factor as being linked to SDMP, certain authors have indicated what could be considered as a decision process output factor. For instance Mori and Munisi (2009) highlight that effectiveness of decision process output could be a factor that could lead a firm to good performance. In a similar tone a few authors have identified decision quality as an important factor that could be considered as part of the decision process output (Chen & Chien, 2009; Bell et al. 1988; Majone, 1984; Schilit & Paine, 1987). Furthermore, Dooley et al. (2000), Ling et al. (2008) and Papadakis et al. (1998) argue that commitment could be an important factor that determines strategic decision making. Another example of a factor that seems to impact strategic decision output is the satisfaction derived from the SDMP. For instance Papadakis et al. (1998) argue that satisfaction could be a factor that influences decision process outcome and hence could be considered as a decision output.

Prior research that has addressed decision process output in the SDMP literature is very limited. However, considering the fact that decision-making phase precedes decision implementation phase, it is worthwhile to critically examine the decision making as the decision process output to gain knowledge on its influence on SDMP. Conclusions derived from such an examination may be very useful to SMEs, as SMEs could gain knowledge on the likely success or failure of the implementation of strategic decisions and firm performance prior to their implementation. Thus, the following sections provide critical review of the decision process output factors.

2.10.1.1 Decision quality

Elbanna (2006) argues that decision quality is an important part of the decision outcome of an SDMP. However Chen and Chien (2009) argue that very little research has been conducted in the field of decision sciences that address the quality of decisions made through the decision making process. Furthermore, in the absence of established research outcomes it may be difficult to judge the relationship between the quality of decisions made and their impact on the firm's performance. These arguments indicate that literature on the quality of decisions made through DMP needs further investigation. If decision quality is not properly understood then problems may creep in while relating the causality of the firm's performance to the quality of the decisions like the relationship between isolated decisions and the firm performance which may indicate a weak relationship due to lack of appropriate measures that could be used for measuring the quality (Elbanna, 2006). In fact it may not be an exaggeration to say that quality of decisions, whether good or bad, and their causes, if well understood, could enable many firms, especially the SMEs, to find ways to gain knowledge on how to make quality decisions and enhance the performance of the firm. The above arguments combined with lack of reliable research outcomes necessitate an in-depth examination of the

causal relationship between the quality of the decisions made through the SDMP and the impact of the quality of decisions on the firm's performance.

Quality as an important attribute of decisions made is described differently by different researchers. For instance Chen and Chien (2009) argue that in times of uncertainty, doing the right thing right, using the right people could be considered a quality decision while CIMA (2009) argues that quality of decision making helps firms to gain competitive advantage. However within the SDMP literature, quality of the decisions made as a decision process output has not been well addressed (Nooraie, 2008). In contrast Bourgeois and Eisenhardt (1988) contend that rational analysis as part of the SDMP could improve the initial quality of the decision indicating the limited character of the research in this area.

With contradictory arguments and limited research, an investigation into the relationship between the decision making process and the quality of decisions as part of the decision process output may yield significant insight into how good decisions are made leading to good results for a firm. This could further lead to a better understanding of how context, process and outcome affect the quality of decisions made, the quality of the decision-making process and degree and direction of the causality among the main SDMP variables. In fact some of the leading authors in SDMP research like for instance Papadakis et al. (1998) argue that quality of decision-making and decisions need further investigation with regard to their antecedents in any SDMP.

Moreover, in the context of SMEs conducting business in dynamic environments, this aspect becomes even more important as lack of understanding of the quality of decisions made by managers in these SMEs could land the firms in problematic situations, especially in a competitive market. This argument is supported by researchers who claim that quality of decisions impact the competitive advantage of a firm, for instance timely decisions that could produce good results (Chen &Chien, 2009). Thus quality of decisions could be considered as important decision process output attributes that needs further study with regard to its linkage with other SDMP variables.

2.10.1.2 Satisfaction

In the SDMP literature satisfaction is largely linked to the satisfaction of the decision makers emanating out of successful decision-making, and indicated by better performance of a firm or the achievement of satisfactory results by the firm based on the decisions taken by the firm (Elbanna, 2006; Schweiger et al. 1986). However, prior research related to satisfaction as a decision outcome, has produced contradictory results. Schweiger et al. (1986) highlight that certain SDMP lead to good quality decisions that are less satisfying, while Simon et al. (1986)

argues that decision makers look for satisfying decisions and not optimal or the best solutions. These contradictory arguments highlight the need to consider satisfaction as an important factor associated with the SDMP and specifically as a decision process output. Papadakis et al. (1998) have articulated the need to consider satisfaction as an important correlate of decision outcomes, arguing that further research is needed to link satisfaction as an important variable of decision process output.

Considering the fact that SMEs operating in a dynamic environment face tough challenges, many researchers have argued that the influence of many SDMP dimensions on satisfaction are not uniform. For instance, Bharati and Chaudhury (2006) argue that strategic decision making is influenced by information quality and is affected by environment. However Lioukas and Papadakis (2003) found that influence of rationality in decision making on satisfaction increases initially but decreases with increasing rationality and is not affected by a dynamic environment. Lack of consistent research outcomes dictates further investigation. Thus further research is imperative in gaining a deeper understanding on how satisfaction as a decision process could be linked to SDMP antecedents. However considering the large extent of research that is needed to establish the relationship between satisfaction as a decision process output variable and SDMP components, it was necessary to make the right decision on including satisfaction as a variable in the current research, and it was deemed that it was beyond its scope.

2.10.1.3 Commitment

Many researchers (Eisenhardt, 1989; Wooldridge & Floyd, 1990) have identified commitment as an important part of decision outcome. Commitment as a factor could indicate different aspects, for instance commitment to resources (Rajagopalan et al. 1993), to strategic decisions and decision-making (Eisenhardt, 1989; Wooldridge & Floyd, 1990), to ongoing actions (Rajagopalan et al. 1993) and implementation of decisions (Dean & Sharfman, 1996). Although many researchers have argued that there could be a linkage between commitment as a decision outcome variable and SDMP (e.g. Wooldridge & Floyd, 1990; Mintzberg et al. 1976; Quinn, 1980) researchers in general opine that research linking commitment as an important SDMP outcome variable to the other SDMP variables needs to be advanced (Rajagopalan et al. 1993; Papadakis & Barwise, 1998). One of the reasons for this could be that fact that researchers have not taken into account the impact of context and content as well as process and outcome on the decision output factors (Papadakis & Barwise, 1998).

It is imperative to note here that improving the clarity about the concepts behind the SDMP output factors such as commitment could lead to better decision quality and subsequent successful implementation (Rajagopalan et al. 1993). Thus, it was reasonable to assume that

further research linking commitment as decision process output to the SDMP correlates could advance the current knowledge in the area of SDMP. Particularly in the context of SMEs that face many challenges threatening their survival, research outcomes linking SDMP to commitment could prove highly beneficial to entrepreneurs and managers.

2.10.1.4 Decision Effectiveness

The largest body of research in SDMP appears to focus on firm performance as an important outcome of the SDMP (Elbanna & Child, 2007). However one of the contentions of some researchers is that firm performance may not necessarily portray decision effectiveness (Elbanna & Child, 2007). Another significant argument made by Chen and Chien (2009) is that effectiveness of a decision should be construed as not the decision outcome effectiveness but the decision process effectiveness. Furthermore, Weber et al. (2005) claim that decision-making effectiveness improves with recognition based decision-making process. These arguments bring into focus the importance of decision effectiveness although there is a difference of opinion on whether decision effectiveness informs decision outcome effectiveness or decision process effectiveness.

Elbanna and Child (2007) argue that strategic decision effectiveness can be considered as a decision process outcome factor an argument that finds resonance with Butler et al. (1993). However Eisenhardt (1999) and Simons et al. (1999) appear to describe strategic decision effectiveness as being closely related to organisational effectiveness. These contradictions though can be a little confusing, it is reasonable to conclude that decision effectiveness could be related to both the SDMP as well as the organisation. However for the purpose of this research, decision effectiveness has been considered as a factor of the decision outcome in line with the arguments of Elbanna and Child (2007) and implies that decision effectiveness indicates the SDMP effectiveness as a synonym.

Studies have shown that strategic decision characteristics (e.g. top management team characteristics) and dimensions (e.g. rationality) influence strategic decision effectiveness (Carmeli et al. 2009). However research has shown inconsistent results. While Carmeli et al. (2009) have concluded that it is the decision characteristic such as Top Management Teams that has a direct bearing on decision effectiveness, Elbanna and Child (2007) appear to conclude that SDMP variables and environment factors affect the decision effectiveness. While the arguments of Carmeli et al. (2009) find support from Weber et al. (2004), many authors opine that research outcomes in this area suffer from serious differences between theoretical insights and empirical material (Akkermans & van Aken, 1999) as also lack conclusive evidence on the superiority of any one method over the other used by different authors to link decision effectiveness to SDMP variables (Rajagopalan et al. 1993). Thus in

the absence of a strong evidence on what factors of SDMP could be linked to decision effectiveness further investigation on the linkage between decision effectiveness and SDMP is needed and is expected to enhance the current knowledge on the influence of SDMP on decision effectiveness.

2.11 Chapter summary

The strategic decision making process in SMEs is an under researched area. Significant gaps in the SDMP literature pertaining to both SMEs and large-scale enterprises exist. Current knowledge lacks depth with regard to the linkage between decision characteristics as independent variables, decision dimensions as mediating variables and decision output as dependent variables under specific environmental conditions. In particular, linkage between decision magnitude of impact as a decision characteristic and decision output factors needs further study in the context of SMEs operating in dynamic environments in the electronic, telecommunication and IT sectors. This chapter provides the basis for developing the theoretical framework for this research which follows.

Chapter 3

Theoretical Framework

3 Introduction

The theoretical framework provided in this chapter defines the boundaries of the theories, models and concepts used in developing a research relationship model for addressing the research problem. The literature review provided in Chapter 2 provided the basis to define the variables that are supported by various authors and their conceptualisation. The linkage between the variables and their integration into a comprehensive research relationship model using sound theoretical underpinning is provided in this chapter. The rationale provided in establishing the linkages led the researcher to formulate the hypotheses that were used in testing the interrelationship between the variables, the results of which are presented in Chapter 5.

This remainder of this chapter is organized as follows: The theoretical framework is discussed in Section 3.1. Rationality in decision making and intuition are discussed as mediating variables in Sections 3.2 and 3.3 respectively. Sections 3.4 and 3.5 discuss the influence of internal contextual and external environmental factors on SDMP. Section 3.6 explains why some of the environmental factors have not been included in this research. Section 3.7 outlines the research relationship model developed (the theoretical framework) and Section 3.8 provides a brief summary to the chapter.

3.1 The framework

The theoretical framework for this research was primary influenced by the models developed by Papadakis et al. (1998) and Elbanna and Child (2007) and other relevant literature. Consequently, the SDMP models used in this research include both synoptic formalism and incrementalism which is in line with the research conducted by Papadakis et al. (1998) and Elbanna and Child (2007). SDM is a fertile ground for conducting research (e.g. Dean & Sharfman, 1993a; Papadakis & Barwise, 1998a; b; Rajagopalan et al. 1993). As identified through Chapter 2, in general research in SDM has linked four important factors namely content, context, process and outcome (Bell, Bromily and Bryson, 1997).

Furthermore, although SDM as an important concept has been researched extensively, the bulk of the research has focused on content, linking it to firm performance (Rajagopalan et al. 1993). Recently however, there has been a fresh interest generated in researching the process side of the SDM, as researchers feel that the current available knowledge on SDM is based

mostly on assumptions that are highly untested (Dean & Sharfman, 1993a; Papadakis & Barwise, 1998a, b; Rajagopalan et al. 1993). It is therefore necessary to investigate the impact of process on the SDM in firms. Outcomes from such research efforts would supplement and extend the existing knowledge in SDM that is largely focused on content.

In addition, researchers generally believe that the linkage between strategic decision making processes and decision process outcomes needs further study as the current knowledge about this linkage is limited (e.g., Rajagopalan et al. 1997; Papadakis et al. 1998). Although many researchers have conducted research in this area that have been generally regarded as bases for further research (e.g. Fredrickson, 1984; Eisenhardt, 1989; Dean & Sharfman, 1993a), such research outcomes have produced contradictory results. This situation has deprived industry practitioners of the required knowledge to tackle various issues related to SDMP. This highlights the need for further research in this area.

The research in this thesis is built on the belief of certain researchers who have recognized the need to develop an integrative research that investigates how certain factors such as decision characteristics, decision dimensions and contexts influence SDMP and the decision process outcome (for instance Papadakis et al. 1998). Thus, central to this research is the SDMP and its linkage to context and decision outcome. However, SDMP is a vast field of research and it is necessary to narrow down to concepts that could be effectively used in helping to address some of the challenges faced by the industry. Thus the theoretical framework that is presented in this chapter also defines the boundaries of the theories and concepts within which the research was conducted.

Strategy, strategic planning and strategic decision-making are believed to significantly affect many different types of industries and organisations. There are numerous research articles that have been published and have addressed strategy, strategic planning and strategic decision making in the large scale sectors, for example Fredrickson (1984) and Papadakis et al. (1998). However research contributions related to SMEs are sparse. In particular, the review of the literature indicated that their examination in SMEs in the electronics, telecommunication and information technology (IT) sectors that function in dynamic environments has not been addressed, to develop an understanding on how strategy, strategic planning and strategic decision-making could be beneficial to them.

The reason for choosing electronics, telecommunication and IT industries is that these industries have heralded a new era in the area of organizational performance and have a significant role to play in the economies of many countries. Any change affecting these

industries could impact the economy of the host countries. Furthermore entry and exit of firms in these sectors also appear to be more frequent than other sectors. Under these circumstances one of the tools that could be effectively used by those firms is strategic decision making. Thus SMEs in the fields of electronics, telecommunication and IT were the context for this research.

Furthermore, electronics, telecommunication and IT industries in the SME sector in the Gulf region including Bahrain, depend largely on finished goods imported from various countries as well as services provided by overseas companies. The majority of the firms are operating in the SME sector. Local contribution to the industries in delivering the products or services is largely restricted to financial investments. Non-availability of home grown workforce or infrastructure to manufacture has prevented the industries from establishing large-scale manufacturing or research and development activities. These limitations make investments risky in this region and sustaining a profitable firm a great challenge.

However, these limitations are somewhat compensated through the economic boom being witnessed in the Gulf region due to the wealth this region possesses in terms of the oil reserves and the petrodollars earned through the sale of oil to the rest of the world. The economic power available in the region acts as an important stimulus to investors who have to take strategic decisions while establishing their business. Especially in the electronics, telecommunication and IT sectors, where the technological advances are rapid, investments and sustaining business operations require careful decision-making processes. Failure to make appropriate decisions based on sound reasoning or rationality could land the SMEs in serious trouble, including closure. Thus on the one hand there is economic power to invest in the electronics, telecommunication and IT industries, and on the other there is a need to implement effective decision-making processes. These aspects combined with a lack of studies on SDMP in the SMEs in general, provided a strong reason to investigate into SDMP based on the study of the SEMs located in the Gulf region. It was expected that such a study could assist entrepreneurs and managers in the SMEs operating in the electronics, telecommunication and IT in making appropriate decisions leading to better performance and higher return on their investment under risky and turbulent environments.

3.2 Rationality in decision making

Furthermore SDM itself is considered to be central to strategic planning (Elbanna & Younies, 2008). It is also evident that researchers have produced many different models in dealing with SDM. For instance, Papadakis (2006) lists a set of eight models that have been discussed in the literature namely rational, bureaucratic, incremental, political, avoidance, “garbage

can", symbolic and entrepreneurial (e.g. Chaffee, 1985; Hart, 1992; Lyles & Thomas, 1988). Amongst these models, the literature shows that rationality is likely to have a positive influence on decisions made in a firm (Dean & Sharfman 1996; Fredrickson & Mitchell 1984). Rationality is considered to be one of the most important dimensions that has been found to characterise a decision process (Papadakis, 2002). Many researchers including Dean and Sharfman (1993a; b); Hart (1992); Steiner (1969) consider that rationality is a concept that plays a prominent role in decision-making theory and practice. Eisenhardt and Zbaracki (1992) argue that the debate over whether mangers who make decisions are rational or boundedly rational is no longer controversial. These arguments indicate the wide acceptability of rationality as an important concept that affects SDMP. Though some contradictions have been found against these arguments, many authors suggest that rationality can be considered to play an important role in decision-making process (Papadakis & Lioukas, 1996; Elbanna & Child, 2007; Fredrickson & Mitchell, 1984; Fredrickson & Iaquinto, 1989).

3.3 Intuition

In contrast Elbanna (2006) argues that although intuition is an important aspect in the SDMP, hardly any empirical research has been conducted in understanding to what extent managers in firms use intuition in SDMP and is an important area for research. In fact several researchers suggest that senior management in firms use intuition in dynamic environments (e.g. Agor, 1989a; Mintzberg, 1994; Quinn, 1980). In addition Sadler-Smith (2004) argues that rationality and intuition are two contrasting cognitive styles and mirror two distinct ways of information processing. Furthermore, Vasilescu (2011) argues that managers in the senior management in most cases use a combination of rationality and intuition in decision-making. It is reasonable to argue that in the context of SMEs in the electronic, telecommunication and IT sectors where industries are most likely owned by individuals (Peterson & Meckler, 2001), intuition is expected to play a leading role in decision-making.

The foregoing review of the literature pointed out that a wide range of dimensions have been identified by researchers that affect SDMP, including formalisation, hierarchical decentralisation, lateral communication and politicization (Section 2.5). However, it is practically not possible to tackle them all in a single research project. Instead, they need to be examined in a systematic manner necessitating the need to have a clear focus in any single study. In this context two important arguments posited by leading researchers need to be mentioned here that support the choice of rationality and intuition as the two constructs that impact SDMP in the context of this research. The first one is the argument of Elbanna and Naguib (2009) who say that main perspectives and models in the SDMP literature have revolved around rationality and intuition. The second is the argument of Khatri and Ng (2000)

who emphasise that both rationality and intuition are important for strategic decision making, an argument echoed by other researchers (e.g. Pondy, 1983; Simon, 1987) as well. Thus rationality and intuition are the two constructs that will be the focus of this research.

3.3.1 Relationship between rationality, intuition and decision effectiveness

While research in SDMP has shown that each one of these dimensions can play a role in the performance outcomes of firms, it is rationality and intuition, the two contrasting yet important decision dimension variables that appear to be the two most important decision dimensions that, as such, have been considered by researchers to be central to SDMP (Papadakis & Barwise, 1997; Khatri & Ng, 2000). Thus, rationality was chosen as a focal variable of decision dimensions, alongside intuition which was chosen as another important decision dimension variable due to its importance in the SME context.

Furthermore, in the SDMP literature, decision process output is considered to be a significant factor that determines the implementation of decisions and performance of the firm. Researchers (e.g. Papadakis et al. 1998; Rajagopalan et al. 1993) consider that rationality plays an important role in determining the decision process output. Similarly other researchers (e.g. Elbanna & Child, 2007) have argued for the inclusion of intuition as another decision dimension that affects decision process output along with rationality.

For instance one of the major decision process output factors that has been linked positively to rationality by researchers is the decision effectiveness (Dean & Sharfman, 1996). Similar sentiments have been echoed by Elbanna and Child (2007). Again, Elbanna and Child (2007) have linked intuition to the decision process output factor decision effectiveness and showed that there was a positive linkage between intuition and decision effectiveness in high-uncertainty environments. Thus, the linkage between rationality and intuition to decision process output variable decision effectiveness was considered appropriate for this research which is studying the effect of decision dimensions on decision process output in the context of SMEs operating in very dynamic environment. It can therefore be hypothesized that:

- *The use of rationality in the strategic decision making process is positively related to the strategic decision making effectiveness.*
- *The use of intuition in the strategic decision making process is positively related to the strategic decision making effectiveness.*

3.3.2 Relationship between decision magnitude of impact, rationality in decision making and intuition

Researchers have identified that decision dimensions are affected by inputs to the SDMP, such as decision characteristics. For example Papadakis et al. (1998) identified decision magnitude of impact, threats, crises and frequency as decision characteristics that impact decision dimensions rationality/comprehensiveness, financial reporting, hierarchical decentralization, lateral communication, politicization and problem solving dissension. Despite the importance that researchers' have attached to 'decision characteristics' as factors influencing the SDMP, very little research has examined their influence. And, again because many 'decision characteristics' have been identified, it is important that they are examined systematically and that the value of that research is not diluted by trying to examine them all at once. Instead, it is important that multiple studies are conducted that build on each other. Hence in this study, the decision characteristic 'decision magnitude of impact' was chosen keeping in view the SMEs, where hardly any research has been conducted on SDMP. The findings from this research could be further extended by considering the impact of other decision dimensions through future research.

The literature review in this research discussed extensively some of the decision characteristics and their linkage to decision dimensions rationality and intuition, including magnitude of impact, threat and crises and uncertainty, and indicated briefly about the importance other characteristics such as planned versus adhoc and frequency of occurrence/familiarity. Amongst these characteristics, this research builds on the influence of decision magnitude of impact on rationality and intuition. While the inspiration to study the influence of decision characteristic on rationality comes from the model developed by Papadakis et al. (1998) and on intuition from the model developed by Elbanna and Child (2007) not all the decision characteristic factors have been included in this research for the following reasons.

There is a need to link magnitude of impact as a predictor of SDMP effectiveness pertaining to SMEs to gain knowledge on how magnitude of impact as an independent variable can inform managers in the SMEs about the effectiveness of the SDMP thereby helping them in their quest to take adequate precautions before implementing the decisions. Research outcomes in this area are very limited and do not address the electronics, telecommunication and IT industries. Knowledge of this linkage could help these industries in successfully negotiating the dynamic environment. Thus, decision magnitude of impact was considered in this research as an important decision characteristic factor that will influence rationality,

intuition as well as the SDMP to gain further knowledge on the SDMP. Based on the foregoing discussions it can be hypothesised that:

- *Decision magnitude of impact is positively related to the use of rationality in strategic decision-making.*
- *Decision magnitude of impact is positively related to the use of intuition in strategic decision-making.*

3.3.3 Rationale for non-inclusion of other decision dimensions

While there would be very little disagreement on the fact that decisions that are characterised by threat or crisis have a major effect on SDMP, it is clear from the arguments given in Section 2.6.2 that their impact needs to be separately studied in-depth. Such in-depth study would enable a greater understanding on the relationship between threat or crisis and the SDMP dimensions and as antecedents of SDMP. Since researchers feel that a lot needs to be still done in understanding the impact of threats and crisis on SDMP (Jackson & Dutton, 1988) an independent study on the influence of threat and crises is expected to provide clearer outcomes. An investigation on the influence of threat and crises was thus considered to be beyond the scope of this research. This choice is further supported by the fact that there has been very little study on decision magnitude of impact as an antecedent of SDMP though its impact is considered to be very important in the SDMP.

Similarly, based on the findings of the literature review, it was reasonable to conclude that an investigation into the impact of uncertainty as a major variable and an antecedent of SDMP may require a full-scale research effort as a separate research problem, and hence was beyond the scope of this research. Hence, uncertainty as a decision characteristic is not addressed in this research. Other decision characteristics including planned versus ad-hoc and frequency of occurrence/familiarity were also not considered in this research, for similar reasons of scale and scope of the research project.

3.3.4 Relationship between decision dimensions

As far as decision process output is concerned this research predominantly builds on the research efforts of Papadakis et al. (1998) who recommended that further research in linking process dimensions to the decision process output needs to be carried out. Such research is expected to improve the current understanding of the impact of decision process output on the quality of implementation of the decisions. Although very little research has been carried out in examining the impact of decision dimensions and contextual factors on decision process output, the available literature on the subject does indicate that quality of decision process

output, firm commitment to implement the decision and decision making effectiveness need to be examined for their influence on implementation of the decision and the firm performance (Papadakis et al. 1998). Current knowledge on these factors as decision outputs and their dependence on rationality, intuition and contextual factors is very limited. Thus in this research an investigation is conducted on the impact of rationality, intuition and contextual factors on decision process quality, decision process effectiveness and firm commitment to implement the decisions.

Although other factors such as satisfaction have been suggested by researchers, the understanding here is that in the context of the SMEs in the electronics, telecommunication and IT sectors quality of decision process output, decision making effectiveness and firm commitment play a vital role in the implementation of the decisions. Further a focus on quality of decision process output, decision-making effectiveness and firm commitment specifically, is expected to refine the current knowledge on the influence of these factors on SDMP in a systematic manner. Including other factors such as satisfaction could increase the complexity of the research resulting in possible lack of clarity on research outcomes. In addition, the outcome of the current research could be applied in future models that could include factors such as satisfaction. Thus, including other factors in the current research other than quality of decision process output, decision-making effectiveness and firm commitment was considered to be beyond the scope of this research. From the discussions given above, it can be hypothesised that:

- *The use of rationality in the strategic decision making process is positively related to the quality of the strategic decision process output.*
- *The use of rationality in the strategic decision making process is positively related to the firm's commitment to the strategic decision-making process output.*
- *The use of intuition in the strategic decision making process is positively related to the quality of the strategic decision process output.*
- *The use of intuition in the strategic decision making process is positively related to the firm's commitment to the strategic decision-making process output.*

3.4 Influence of internal contextual factor on SDMP

Chapter 2 highlighted that research on strategy has clearly identified environmental factors as contexts that impact organisations, and that internal contexts in organisations and external environmental factors have been found to influence SDMP. This research has chosen firm performance as an important internal context in line with other researchers such as Papadakis et al. (1998) and Elbanna and Child (2007). Although this research was based predominantly

on the model developed by Papadakis et al. (1998), who attempted to link four internal contextual factors (i.e. internal firm characteristics, performance, corporate control and size), the factor firm performance has been chosen for this research due to the following reasons:

- Researchers (e.g. Elbanna & Child, 2007; Fredrickson, 1985) argue that firm performance affects organisational outcomes which include SDMP output.
- Elbanna and Child (2007) argue that there is a positive interaction between rationality and firm performance leading to an influence on decision success.
- Similarly Elbanna and Child (2007) found a negative relationship between intuition and decision effectiveness that was weak for companies with high performance leading to the inference that firm performance contributes to SDMP that involves intuition.
- Lack of firm empirical research on the influence of firm performance on SDMP as the current results found in the SDMP literature are contradictory (Papadakis et al. 1998)

Furthermore, based on the arguments of Fredrickson (1985), it is argued that firm performance affects organisational outcomes. In this research, organisational outcomes have been considered to be organisational performances which in turn has been used synonymously as decision effectiveness which is in line with the arguments of Elbanna and Child (2007). Further, firm performance has been considered to affect positively the decision effectiveness as a decision process output variable which is based on the hypothesis developed by Elbanna and Child (2007). In addition, these arguments have been extended in this research to include other decision process output variables, as reviewed in Section 2.10 namely quality in decision process output and firm commitment. The rationale for including quality of decision process output and firm commitment as decision process output variable alongside decision effectiveness emanates from the literature review provided in Section 2.10. Including these two variables alongside decision effectiveness means that firm performance will affect quality of decision process output and firm commitment. This follows the recommendation of Papadakis et al. (1998) who suggested that impact of decision characteristics on quality of decision process output and firm commitment needs to be tested as part of the SDMP which is invariably affected by internal contextual factors. From the foregoing discussions it can be hypothesised that:

- *Firm performance is positively related to the quality of the strategic decision process output.*
- *Firm performance is positively related to the strategic decision making effectiveness.*

- *Firm performance is positively related to the firm's commitment to the strategic decision-making process output.*

3.5 Influence of external environmental factor on SDMP

Finally with regard to external environmental factors, it was considered important to include environmental dynamism in the research for its impact on SDMP. The rationale behind this choice arose from the fact that the focus of this research is the impact of SDMP on SMEs in the electronic, telecommunication and IT sectors which are heavily subjected to a dynamic external environment (Kazakevitch & Torlina, 2008). While some researchers concur that not much attention has been paid to SMEs in general with regard to the wide variety of contexts and environments associated with these industries (Mintzberg, 1994; Carson & Cromie, 1990) others have emphasised on the need to include turbulent and dynamic environments as important factors in the SDMP (Fredrickson, 1984; Eisenhardt, 1989; Judge & Miller, 1991). Furthermore, research output in this area is seen to be sparse and the limited outcomes have produced contradictory results (Rajagopalan et al. 1997). For instance Priem et al. (1995) argue that comprehensive processes showed that companies perform better in rapidly changing environments where as Fredrickson and Iaquinto (1989) claim that firms adopt rational-comprehensive strategic DMPs in a stable environment. Thus there is a need to study the impact of dynamism on SDMP especially with regard to SMEs that face dynamic environment (Eisenhardt, 1989).

Dynamism in the industry has been shown to affect organisational performances by Eisenhardt (1989). As was mentioned in Section 2.10.1.4 organisational performance has been synonymously used by Elbanna and Child (2007) to indicate decision effectiveness. In addition Eisenhardt (1989) argues that in a fast changing environment fast decisions were made by decision makers and such decisions produced better performance. Thus it can be construed that dynamism in the industry is affecting decision effectiveness (a decision process output variable) positively. Again, researchers (e.g. Fredrickson 1983) believe that both rationality in decision-making and intuition are affected by a dynamic environment. Thus dynamism can be argued to affect the SDMP output that is characterised by rationality in decision-making and intuition.

It is important to note here that while dynamism in the industry has been pointed out to affect decision effectiveness positively (a decision process output variable), quality of decision process output and firm commitment have also been kept alongside decision-making effectiveness. This is in line with the arguments provided in Section 2.10.1 that decision process output should include quality of decision process output and firm commitment as

variable and the recommendations of Papadakis et al. (1998) to include these two as part of the SDMP.

From the foregoing discussions it can be hypothesised that:

- *Dynamism in the industry is positively related to the quality of the strategic decision process output.*
- *Dynamism in the industry is positively related to the strategic decision making effectiveness.*
- *Dynamism in the industry is positively related to the firm's commitment to the strategic decision-making process output.*

3.6 Reasons for not including other environmental factors

3.6.1 Munificence

With regard to munificence, the current available research outcomes show that researchers have tried to establish a relationship between SDMP and firm performance with munificence as a moderator (e.g. Goll & Rasheed, 1997). Others have attempted to use munificence as a moderating variable in linking decision dimensions to strategic decision effectiveness, for example a positive influence of rationality on decision effectiveness under high environmental munificence or negative influence of intuition on decision effectiveness under high environmental munificence (Elbanna & Child, 2007). Dess and Beard (1984) have argued that competitive threat could be linked to munificence and claim that competitive threat is the greatest when munificence is low and vice versa.

The foregoing discussions confirm the impact of munificence on SDMP as a factor of the external environment. They also imply that munificence as an important factor opposing environmental hostility is very significant and requires deeper study with respect to its impact on decision effectiveness without considering the interference or interaction with other environmental factors. Knowledge gained thus could be more useful in terms of understanding the impact of munificence on SDMP variables like for instance rationality, than combining it with other environment factor such as dynamism or complexity because of the necessity to control decision effectiveness more closely than possible now. Especially in the context of SMEs operating in highly dynamic environment, the impact of munificence on decision effectiveness as a separate study could yield deeper insights into the linkage between munificence and decision effectiveness either as a moderating variable or as an independent variable. As indicated by Rajagopalan et al. (1993) this factor needs greater study as hardly any attention has been given to the impact of munificence on SDMP correlates in the SDMP literature. Considering the depth of study that is needed in understanding the relationship

between munificence and SDMP, including munificence at this stage in this research was seen to be beyond the realms of the aim and objectives of this research. Consequently the investigation on the impact of munificence as an external environmental factor on SDMP was deemed more appropriate for future research in its own right.

3.6.2 Hostility

Literature review shows that relatively less attention has been paid to the linkage between environmental hostility and SDMP characteristics (Elbanna & Child, 2007). A few outcomes that are found in the SDMP literature have produced opposite results (Papadakis et al. 1998). Thus a deeper investigation into the effect of environmental hostility as a standalone factor related to SDMP effectiveness could be considered necessary. Considering the fact that a deeper study is needed in understanding the influence of hostility on SDMP and as explained in the previous section with respect to munificence, inclusion of hostility as part of the current research would make the research model very complex and less systematic. This would further lead to difficulties in understanding the effect of decision magnitude of impact on decision process output variables if hostility is included as part of the research. Considering that the focus of this research is dynamic environment which requires complete attention to enable gain deeper insights on its influence on SDMP, it was concluded that including hostility as an environmental factor was beyond the scope of the current research. However hostility has the potential to be included in future SDMP research.

3.6.3 Heterogeneity

The relationship between heterogeneity and decision dimensions has been developed by many researchers but SDMP literature shows that there is no unified theory that has been developed by researchers to link the impact of heterogeneity to a number of factors that affect the SDMP (Delmar et al. 2003). This argument could be extended to many other components affecting SDMP leading to the possible inference that a study of the impact of heterogeneity as an external environmental contextual factors needs a far-more deeper research exclusively. Again, considering the quantum of investigation involved on dynamism as the focal external environmental factor and its influence on the SDMP, including heterogeneity in the model would have given rise to avoidable complexity in understanding the influence of both dynamism and heterogeneity. Furthermore, in order to maintain a systematic approach that would enable the researcher to produce clear research outcomes based on an in-depth study of dynamism and its influence on SDMP, including heterogeneity was considered impertinent at this stage. Accordingly, it was concluded that research that includes heterogeneity as part of the current research was beyond the scope of the current investigation.

3.7 The research relationship model

The foregoing discussions have identified the various constructs needed for this research, their importance to SDMP, the relationship amongst them and the theoretical support for these proposed relationships. The constructs that have been identified for this research are:

- Decision magnitude of impact (decision characteristic factor)
- Rationality in decision making (decision dimension factor)
- Intuition (decision dimension factor)
- Dynamism in the industry (external environment factor)
- Firm performance (internal contextual factor)
- Decision making effectiveness (decision process output factor)
- Quality in decision making process output (decision process output factor)
- Firm commitment (decision process output factor)

Amongst these factors, Section 3.3.2 showed that decision magnitude of impact has been hypothesised to affect rationality in decision-making and intuition positively. Further in Section 3.3.1 rationality in decision-making is hypothesised to affect decision-making effectiveness, quality in decision-making process output and firm commitment positively. Similarly intuition has been hypothesised to affect decision-making effectiveness, quality in decision-making process output and firm commitment positively. In addition dynamism in the industry and firm performance have been hypothesised to affect decision making effectiveness, quality in decision making process output and firm commitment positively. These arguments provided the basis for the construction of the following research relationship model (Figure 3.1) that was to be tested in this research, for addressing the research problems outlined in Section 1.3.

Figure3.1, Research relationship model

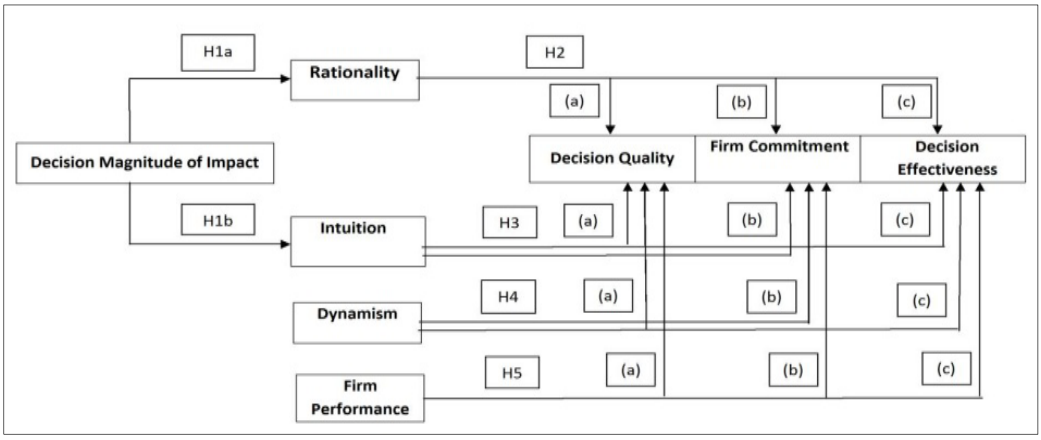


Table 3.1 below provides a summary of the research hypotheses.

Table3.1, Research hypotheses

No.	Hypothesis
	Strategic Decision Characteristic-Strategic Decision Dimension
H1a	Decision magnitude of impact is positively related to the use of rationality in strategic decision-making.
H1b	Decision magnitude of impact is positively related to the use of intuition in strategic decision-making.
	External Environmental Factor-Strategic Decision Process Output
H2a	Dynamism in the industry is positively related to the quality of the strategic decision process output.
H2b	Dynamism in the industry is positively related to the strategic decision making effectiveness.
H2c	Dynamism in the industry is positively related to the firm's commitment to the strategic decision-making process output.
	Internal Environmental Context-Strategic Decision Process Output
H3a	Firm performance is positively related to the quality of the strategic decision process output.
H3b	Firm performance is positively related to the strategic decision making effectiveness.
H3c	Firm performance is positively related to the firm's commitment to the strategic decision-making process output.
	Strategic Decision Dimension (RDM)-Strategic Decision Process Output
H4a	The use of rationality in the strategic decision making process is positively related to the quality of the strategic decision process output.
H4b	The use of rationality in the strategic decision making process is positively related to the strategic decision making effectiveness.
H4c	The use of rationality in the strategic decision making process is positively related to the firm's commitment to the strategic decision-making process output.
	Strategic Decision Dimension (Intuition)-Strategic Decision Process Output
H5a	The use of intuition in the strategic decision making process is positively related to the quality of the strategic decision process output.
H5b	The use of intuition in the strategic decision making process is positively related to the strategic decision making effectiveness.
H5c	The use of intuition in the strategic decision making process is positively related to the firm's commitment to the strategic decision-making process output

3.8 Chapter summary

This chapter has provided the theoretical support needed for developing the research relationship model that was used in this research to provide solutions to the research problems identified in Chapter 1. Further, the chapter has identified various constructs that were used in the model and outlines the relationship amongst the variables. The chapter provides the rationale in linking the variables to formulate the model leading to the methodology chapter that provides the data collection and analysis details.

Chapter 4

Methodology

4 Introduction

Research methodologies adopted by researchers pertaining to the strategic decision-making process field vary. For instance Mador (2000) argues that strategic decision-making process research calls for a holistic approach and exalts that a purely positivist approach alone cannot enable the researcher to succeed in addressing all the underlying problems. However Bourgeois and Eisenhardt (1988) argue that there is no accepted general model to communicate interpretive research meaning positivism is more suitable. In light of such strong and partially contradictory opinions, it was necessary to understand how to choose the most appropriate research methodology. Thus, the following sections review in detail on the most widely used research philosophies in strategic decision-making process research alongside the epistemology, ontology, research approaches and research methods that need to be understood by the researcher before adopting the most appropriate epistemological stance for this research. In addition, the chapter addresses various methodological issues such as development of the research framework, research design and research strategy alongside the data collection and analysis aspects.

The remainder of this chapter is organized as follows: Section 4.1 discusses the research philosophies that could be used in empirical research. Sections 4.2 and 4.3 critically review the research approaches and methods respectively that need to be considered prior to the choice of a particular approach and method. Section 4.4 defines the research framework. The choice of the research method and the rationale behind the choice are explained in Section 4.5. The design of the research as well as research strategy adopted in this research is outlined in Sections 4.6 and 4.7 respectively. The development of the research instrument has been described in Section 4.8. Section 4.9 details the conduct of the pilot survey and its outcomes. Section 4.10 discusses the results of the pilot survey. Section 4.11 comprehensively covers the various aspects related to the main survey while Section 4.12 covers the data analysis aspects. Sections 4.13and 4.14 describe the Structural Equation Modelling and Confirmatory factor analysis that have been adopted in this research to test the hypotheses. Lastly, Section 4.15 explains the ethical considerations taken into account in this research followed by Section 4.16 which summarises the chapter.

4.1 Research philosophies

According to Saunders et al. (2009) research philosophies are related to the development of knowledge as well as understanding the nature of knowledge. While researchers have espoused different philosophies like for instance positivism (Remenyi et al. 1998), interpretivism (Andrade, 2009), realism (Sobh & Perry, 2006) and pragmatism (Tashakkori & Tedlie, 1998), the most widely used research philosophies are arguably positivism and interpretivism (Kim, 2003). Thus, this research will discuss in detail about the positivist and interpretive research philosophies.

4.1.1 Positivism

In general, the positivist philosophy assumes that reality is objective, measurable, and independent of the researcher and the instruments developed by the researcher (Shah & Corley 2006; Partington, 2000). Furthermore adoption of positivist philosophy divorces the research subject from the context, meaning that the researcher is able to reduce bias by attempting to control contextual influences and not include them (Burrell & Morgan, 1979; Giddens, 1993; Orlikowski & Baroudi, 1991). Researchers believe that positivist philosophy does not entail the production of causal laws but requires that the researcher identifies fundamental laws as part of the research process (Partington, 2000; Tsoukas, 1989). Furthermore researchers in strategic management believe that adoption of positivist philosophy to phenomena in social sciences will enable the researcher to explain, predict and control aspects related to research (Lee, 1991). Another important characteristic that is attributed to positivist philosophy by researchers is that this philosophy leads the researcher to either test or modify existing theory thereby enhance the predictive understanding of phenomena (Meekanon, 2007). Additionally, researchers who adopt positivist philosophy normally generate laws through a process of abstraction called the deductive approach with an assumption that there are fixed and pre-existing relationships amongst phenomena under observation (Burrell & Morgan, 1979; Giddens, 1993; Orlikowski & Baroudi, 1991). Alongside the use of deductive approach, positivist research is also seen to include the application of quantitative research method while collecting data (Shah & Corley 2006).

Although in the context of the current research which is strategic decision making process, it is found that most researchers have adopted the positivist research philosophy, this philosophy has been criticized by researchers. For instance, critiques of positivist philosophy claim that decision-making processes are not always observable in an objective manner and hence it may not be appropriate to adopt positivist philosophy (Numangami, 1998). Furthermore, Numangami (1998) argues that it is seldom possible to reduce social processes to absolute laws as capturing and quantifying social realities in formal propositions cannot be

achieved. Numangami (1998) claims that reliability and replicating ability criteria as well as external validity criterion become irrelevant when a law-like regularity is taken upon as evidence to support an invariant law. One has to be careful while choosing the positivist research philosophy for application to subjects such as strategic management, because most of the events related to strategic management may not follow a determined and recurrent pattern. Because these law-like regularities are created only by human beings based on their conduct consciously or unconsciously, such law-like regularities are subjected to individual and collective human reflection and thinking, thus making these law-like regularities to acquire a perishable characteristic (Tsoukas, 1989; Numangami, 1998). These arguments need to be taken into consideration by researchers prior to choosing their research philosophy.

4.1.2 Interpretive research philosophy

According to Schwandt (1994), if a researcher is interested in gaining an in-depth understanding of the complex world of lived experience, especially from the view of the people who live it, then interpretive research philosophy should be chosen by the researcher. Many researchers argue that interpretive research philosophy believes that reality is socially constructed (Cavana et al. 2001; Walsham, 1995a, 1995b). There is a close involvement of the researcher with the phenomenon under study as the researcher acts as the conduit for revealing the reality about the phenomenon (Cavana et al. 2001; Walsham, 1995a, 1995b). In fact Mingers (2001) believes that any researcher who adopts interpretive research will have a close interaction with the participants in the construction of the social world. In interpretive research it is believed that the subjectivity brought out by the researcher's interpretations play a vital role in understanding phenomena and such subjectivity is supported by quality arguments and not by statistical analysis (Garcia & Quek, 1997). Mingers (2001) is emphatic in saying that it is literally necessary to live with the subjects under study and share their experience in order to understand the social world under investigation and derive convincing explanations. In contrast to positivism interpretive research enables the researcher to understand values, beliefs and meanings of social phenomena leading to a situation where in the researcher gains a deep and sympathetic understanding of human cultural activities and experiences (Smith & Heshusius, 1986). Furthermore, interpretive research enables a researcher to reconstruct reality and rather than to discover the reality (Mir & Watson, 2000; Partington, 2000). Additionally some researchers argue that the interpretive research philosophy entices the use of an inductive approach while inquiring about phenomena (Gasson, 2003) and qualitative methods for data collection (Saunders et al. 2009). In the context of the current research it is clearly seen that researchers have adopted interpretive research philosophy in areas related to strategic management, although such researchers are in a minority (Clegg et al. 2004). Thus the researcher needed to determine which one of the

research philosophies should be chosen to address a particular research problem based on sound logic, prior research and knowledge gained through deeper study of the research topic. The next section discusses this aspect.

4.1.3 Epistemology

According to Saunders et al. (2009) epistemology deals with 'what is acceptable knowledge' with regard to a particular discipline of study. Edgar and Sedgwick (2003) argue that epistemology examines questions on the limits and scope of knowledge, how reliable is this knowledge and what could be considered as 'justified' the holding of such knowledge. Edgar and Sedgwick (2003) claim that epistemology analyses the meaning of the word 'knowledge'. These examples on what constitutes epistemology clearly show that the term deals with knowledge and all aspects related to knowledge. According to Crotty (1998), epistemology is the theory of knowledge that underlies the research and argues that objectivism and constructionism are some examples of theory of knowledge. Furthermore, Crotty (1998) argues that the theoretical perspective of knowledge is provided by the research philosophical position adopted by the researcher, which enables the researcher to describe the context for the research. Thus, examples of philosophical positions could be understood as positivism, interpretivism or post positivism (Creswell, 2003).

While the definition and description of epistemology given above enable the researcher to spell out the epistemological stance to be adopted for this research, it can be seen that in the field of strategic decision making process there is a lack of critical reflection on the context surrounding strategic decision-making (Vaara & Kakkuri-Knuuttila, 1999). Researchers believe that the root cause of this ambivalence in the field of strategic management studies is the lack of clarity in the scope and borders that have been defined in this field (Vaara & Kakkuri-Knuuttila, 1999). Furthermore, researchers criticize that strategic management research outcomes are not an internally coherent body of knowledge (see e.g. Knights & Morgan, 1991; Hatch, 1997; Mintzberg et al.1998), which can be considered as one of the reasons for researchers' inability to define a specific epistemological stance.

Despite the serious limitations that have forced many researchers to maintain an ambivalent position on the epistemological stance with regard to strategic management research, there are however specific examples of researchers adopting a particular epistemological stance. For instance Vaara and Kakkuri-Knuuttila (1999), imply that researchers largely adopt a positivist stance in regard to strategic management studies although they have also highlighted a few other studies that have adopted an anti-positivist (interpretive) epistemological stance. In light of such conflicting positions taken by researchers, it becomes important to understand how

one should adopt a particular epistemological stance in research. Leading researchers argue that congruency of the research design needs to be established amongst the ontological, epistemological and methodological levels of enquiry (Proctor, 1998).

In this context researchers argue that the research questions and aims play an important role and a particular epistemological stance is adopted based on the relationship between the knower or the subject (would be knower) and what needs to be known (Guba & Lincoln, 1994). For instance if a researcher would like to know the relationship between the decision maker and the decision made, then it is necessary to premise the research on a positivist or interpretive or constructivist belief prior to conducting the research.

Additionally, Guba and Lincoln (1994) argue that epistemology is also linked to the ontological stance taken by the researcher as well as research method adopted by the researcher. Thus the researcher needs to know how to define the ontological position and choose the research method for his or her research. A discussion on the ontological aspects related to research follows next.

4.1.4 Ontology

Saunders et al. (2009) argue that nature of reality could be understood through ontology. Ontology is a branch of philosophy that deals with the question 'what is' as well as the kinds and structures of phenomena like for instance objects, events, processes, properties and relations concerning every aspect of reality (Smith, 2003). The literature on ontology indicates that in some sense ontology is used as a term to describe the study of what might exist (Smith, 2003). Some researchers use ontology as a synonym to metaphysics which in turn is used to understand the truth behind reality (Smith, 2003).

One of the most important aspects of ontological stands is the need to know whether the researcher's understanding of reality is an objective reality or a subjective reality (Hatch & Cunliffe, 2006). Researchers argue that subjectivism at one end of the reality continuum explains reality only if a human being experiences the reality and give a meaning, and objectivism at the other end of the reality continuum suggests that a reality exists independent of a human being who lives it (Hatch & Cunliffe, 2006). Literature on research philosophies indicates that understanding of the ontological implications determine how a researcher carries out his or her research (Hatch and Cunliffe, 2006).

4.1.5 Objectivism

A researcher is said to be following objective ontology if the researcher and the researched are independent (Saunders et al. 2009). Guba (1990) and Guba and Lincoln (1994) argue that objectivism requires the researcher to be dispassionate and ensure that the research is unaffected by his or her values guiding the reader to the assumption that the findings can be considered to be true as well as generalisable.

Some of the important aspects that need to be considered with regard to objectivism include:

- That objectivism presumes the existence of an external world that is theory neutral (Eriksson & Kovalainen, 2008).
- That data collected by researchers from entities that exist separately from the researcher is affected less by researcher bias leading to more objective understanding of the external reality (Saunders et al.2007)
- Social phenomena under investigation need to be presented in a form that involves statistics rather than in a narrative (Saunders et al.2007)
- That there is a cause and effect relationship (Easterby-Smith et al. 1991).
- That hypothesizing fundamental laws helps in explaining the truth or falsity of these hypothesis using deductions from observations (Hunt, 1993).

Although objectivism as ontology appears to provide a good support to researchers in their investigation in terms of very little bias in the research process and use of statistical methods to provide an understanding of the underlying reality objectively, many researchers criticize the use of objectivism in research. For instance Remenyi et al. (1998) stress on the need to study the characteristics of the situation in which the researcher is conducting the research to understand reality or the reality that is hidden. This implies that the researcher may have to study the phenomenon through observations by grounding himself or herself in the environment rather than interpreting data through statistical means. Similarly many researchers believe that it is necessary to understand a phenomenon rather than just study the cause and effect relationship in order to gain in-depth knowledge about the phenomena and explain it (Easterby-Smith et al. 1991; Hughes & Sharrock, 1997). Furthermore many researchers believe that observations are theory-laden and are not commensurable leading to the argument that objectivity in science is impossible (Hunt, 1993).

Despite such criticisms, objectivism is widely chosen by researchers as their ontological position; most business research has been from a more moderate objective position (Holden & Lynch, 2004). For instance many researchers in the field of strategic decision-making have

believed in deducing the understanding of the phenomena they studied using an objectivist ontology (Elbanna & Child, 2007; Papadakis et al. 1998). Although there is no consensus on whether a researcher should choose an objectivist ontology or not, researchers believe that it is necessary to know 'why to research' and hence determine whether to choose the objectivist ontological position (Remenyi et al. 1998).

There are a number of instances that point towards the need for any researcher to choose the objectivist ontological position in the area of strategic decision making research. For instance, in their exploration on how much do CEOs and top managers matter in strategic decision-making, Papadakis and Barwise (2002) adopted an objectivist ontology. They started with the premise that there exists theory on the role of top management (Lewin and Stephens, 1994) and the process of making strategic decisions (Rajagopalan et al. 1993) and established a linkage between the role of top management and the process of making strategic decisions using statistical tools and interpreting the results objectively based on numbers. They conducted their research on the strategic decision making processes in industrial enterprises in Greece. They believed in the fact that there is a cause and effect link between the role of top management and the process of making strategic decisions. These aspects clearly demonstrate that Papadakis and Barwise (2002) adopted an objective ontological position. Similar examples of other researchers adopting an objective ontological stance could be seen in strategic decision-making literature like for instance Elbanna and Child (2007) and Khatri and Ng (2000).

4.1.6 Subjectivism

Morgan and Smircich (1980) argue that proponents of the polar opposite continuum of objectivism, namely subjectivism, criticize the idea of reality that exists outside oneself. Furthermore such critiques believe that reality is all about imagination. Thus, researchers who believe in subjectivism adopt a stance that social phenomena are created from perceptions of social actors and their actions taken as a consequence of their perception (Saunders et al. 2009). For instance in the area of strategic decision making, it is possible that studies on intuition in decision making behaviour may need to adopt subjective methods to reveal hidden facts about the phenomenon of intuition on strategic decision making. The reason for this is that facts may not be elicited using objective methods due to the involvement of human feeling and thoughts that cannot easily be measured in an objective manner. Furthermore many situations may require a deeper understanding of the phenomenon by using subjective methods such as interpreting the perceptions or experiences in different situations like for instance the varied liking of customers with regard to their preferences on the colour and size of a laptop computer. In these situations, it is not always possible to predict the behaviour of

users unless one studies in depth the behaviour of the customer in an actual situation in order to bring out hidden facts about their behaviour. There are other important aspects related to subjectivism, like for instance:

- Subjectivism believes that human nature is voluntaristic, humankind has freewill and is autonomous (Morgan & Smircich, 1980)
- Proponents of subjectivism argue that humans are intentional beings and use their own experience to determine the shape of the world (Morgan & Smircich, 1980)
- Subjectivists attempt to minimize the gap that could exist between the researcher and the phenomenon being researched (Hussey & Hussey, 1997)
- Subjectivists concentrate more on the meaning of the social phenomenon rather than its measurement (Easterby-Smith et al. 1991; Hughes & Sharrock, 1997)
- Subjectivists believe that phenomena are involved in a continuous process of creation and hence to limit the phenomenon to just cause and effect relationship could be meaningless (Hirschman, 1986)

Apart from the above, researchers believe that subjectivism entails the use of an interpretive philosophy (Hussey & Hussey, 1997), inductive research approach (Bryman, 2004) and qualitative research methodology (Hussey & Hussey, 1997).

However there are many criticisms that are levelled against subjectivism. For instance Holden and Lynch (2004) quoting other authors, argues that contentions such as valid knowledge is intangible and subjective are meaningless. Furthermore, quoting other critiques of subjectivism Holden and Lynch (2004) argues that the phenomena are real and reality can only be discovered through sense observation and measurement. Another criticism that can be levelled against subjectivism is the researcher bias that is inherent in subjectivism as researchers can be driven by their own interests, beliefs, skills and values (Hunt, 1993).

Despite the criticisms many researchers adopt subjective ontological stance due to their belief that subjectivism provides an opportunity to gain knowledge on the experiences, feelings and thought process of human beings. This in turn is expected to bring out hidden knowledge hitherto unknown, for instance Eisenhardt and Zbaracki (1992), who brought out significant conclusions on the strategic decision making process through their meta study on strategic decision making literature. However, researchers believe that most of the research outcomes are based on objectivism indicating that subjectivism is still not the preferred ontological base for researchers (Holden & Lynch, 2004). In fact with reference to research in strategic

decision-making, a majority of researchers have adopted the objectivist ontological position like for instance Elbanna and Child (2007) and Khatri and Ng (2000).

After the choice of their research ontological basis, researchers need next to identify their research approach. Research approaches enable the researchers to determine whether the study of the phenomenon is able to bring out knowledge through for instance induction or deduction. Researchers have to gain knowledge on the approach they have to choose to enable them to derive outcomes that are consistent with their research aim and objectives. Thus the next section discusses the two most widely used research approaches namely inductive research and deductive research.

4.2 Research approach

Classifying research on the basis of purpose of the research, process of the research, outcome of the research and logic of the research enables the researcher to provide a strong rationale on the choice of a research methodology. In this context some researchers have classified the different types of research according to one of the four bases mentioned above (Collis & Hussey, 2009). For instance Collis and Hussey (2009) claim that the purpose of the research could define the choice of the type of research (e.g. exploratory, descriptive, analytical or predictive research). Similarly the logic of research could define whether the chosen research type is deductive or inductive research. While Collis and Hussey (2009) argue that the choice of either deductive or inductive research is entirely based on the logic of the research, Saunders et al. (2009) argue that deductive or inductive research is the first step in the research design and research strategy. Nevertheless, both the arguments appear to lead to a point where the choice of a research approach is an important aspect that must be decided by the researcher at the beginning of the research. Furthermore, Saunders et al. (2009) claim that the most commonly used research approaches are the deductive and inductive research approaches although combined research approach is also adopted by some researchers.

The aforementioned arguments have an important bearing in strategy research as lack of knowledge on the research approach could lead the researcher to choose an improper research approach that in turn could create complications while conducting the research. For instance, in the current research on strategic decision making, it is necessary to link the logic of the research, which is to find out the impact of decision characteristics on decision output, to the research design or strategy. Failing to do so may land the researcher in deriving wrong conclusions due to the choice of an improper research approach. Considering the fact that deductive and inductive research approaches are the two most widely used research approaches, the next sections dwell upon these two research approaches to enable the

researcher to gain knowledge on the type of research approach that could be chosen for the current research.

4.2.1 Deductive research approach

Researchers argue that the deductive approach leads the researcher to develop conceptual and theoretical structure which is tested using empirical observation (Collis & Hussey, 2009). According to Collis and Hussey (2009) deductive approach enables the researcher to move from the general to the particular. For instance, if deductive approach is applied to strategy research where there is a reasonable number of research concepts that have been postulated (e.g. strategic decision making concepts like rational, bureaucratic, incremental, political, avoidance, "garbage can", symbolic and entrepreneurial (e.g. Chaffee, 1985; Hart, 1992; Lyles & Thomas, 1988) then the researcher would focus on bringing out the impact of these generalized concepts on particular situations. In other words the researcher would synthesise generalized concepts (e.g. rational model) and apply them to particular phenomena (e.g. SMEs). While there are advantages in using deductive approach the researcher would be cautioned to note the pitfalls that could be encountered in using deductive approach. For instance researchers argue that deductive research approach is preferred over other approaches as the researcher will be in a position to have broad theoretical categories conceptually clear as these categories are derived from theory or conceptual framework. Furthermore deductive approach leads to generalizing the concepts and could be applied to many different situations (Wong et al. 2006). However the deductive approach has been found to have limitations. Researchers argue that deductive approach assumes that events occur in a linear manner meaning one-step follows the other in a clear and logical sequence (Bryman & Bell, 2007). However in real life there a number of instances in which this may not happen. For example the effect of environmental factors such as advances in technology or competition on the decision making process within a firm may not allow the decision-making process to follow a linear path and there may be instances where decisions are made on an ad-hoc basis and not based on deduction. Similarly researchers argue that with regard to deductive approach, the researcher's view of theory or concepts may alter after the data is collected leading to possible new findings that overlap with already existing findings resulting redundancy. Furthermore the data collected may not fit the research model or hypothesis (Bryman & Bell, 2007). Some researchers even complain that deductive approach may lead to difficulties in the generation of hypotheses as many variables and issues identified could be contextual in nature and may not easily translate into simple correlates (Ghobadian & Gallear, 1997).

Despite the limitations that persist with deductive approach a majority of researchers use the deductive approach in their empirical study. Particularly in the strategic decision making literature many leading authors have adopted deductive approach like for instance Papadakis et al. (1998), Fredrickson (1984), Schaffer et al. (2001) and Gibcus et al. (2004).

Apart from the above some of the other important attributes of deductive research approach include the linkage to the positivist epistemology, objectivist ontology and quantitative research method (Gasson, 2003).

4.2.2 Inductive Approach

According to Bryman and Bell (2007) inductive approach leads to the development of theories as research outcomes. In inductive research approach, general inferences are induced from particular instances (Collis & Hussey, 2009). For instance in strategic decision making process where contextual factors play a leading role (e.g. implementation of Total Quality Management (TQM)), it may be necessary to study the firm in-depth to come to general conclusions prior to decision-making. Ghobadian and Gallear (1997) adopted inductive approach in their study on SMEs with regard to the impact of TQM on the competitive position of SMEs. Many authors believe that inductive approach is the opposite process of the deductive research approach like for instance Collis and Hussey (2009). Furthermore adopting inductive approach will entail the use of qualitative research method for the collection of data (Gasson, 2003). Although there are limitations in using inductive approach in research, researchers find advantages. Advantages of using inductive approach include gaining an insight into the human behaviour and contextual aspects that cannot be deduced through the application of theories as well as understanding situations that cannot be hypothesized and which need the personal observation of the researcher as part of the phenomenon. Limitations of using inductive approach includes researcher bias, lack of generalisability of findings, that it is highly time consuming, and be a high-risk strategy due to a constant threat of lack of emergence of useful data patterns and theory (Saunders et al. 2009).

While inductive approach is seen to offer advantages, what is important is to realize that the choice of the research approach will entirely depend on the research questions (Saunders et al. 2009). Additionally research in strategic management decisions is replete with researchers whose choice of research approach has been deductive, many researchers have previously taken to inductive research to study different aspects in the area of strategic research decision making. For instance Bourgeois and Eisenhardt (1988) adopted inductive research approach while studying strategic decision making process in high velocity environments in four

microcomputer firms and Eisenhardt (1989) used inductive approach in her study on strategic decision making speed in high velocity environments on eight microcomputer firms. Thus it is reasonable to conclude that the researcher needs to understand the implications of choosing the right research approach which in turn will entirely depend upon the research question.

While the foregoing discussions have provided a comprehensive picture of the two widely research approaches that will help the researcher in choosing the right research approach, the next decision that needs be taken is about the choice of the research method (Saunders et al. 2009). Thus, the following sections deal with the most widely used research methods in empirical research.

4.3 Research methods

One of the most important aspects of research is the choice of a research method. According to Wood and Welch (2010) the two widely used research methods are quantitative and qualitative methods whereas Williams (2007) argues that commonly three research methods are used by researchers namely quantitative, qualitative, and mixed methods. Furthermore, there is no consensus amongst researchers on which one of the two mainly used research methods is most suitable for addressing a research problem as some researchers feel that the distinction between the two is no more useful while some others believe that there is a fundamental contrast between the two (Layder, 1993). Although these arguments may cause confusion in the minds of the researchers on the choice of a particular research method, it must be acknowledged that inevitably there is a tendency seen amongst researchers to divide the research methods into two types the first one being quantitative, positivist and objectivist and the second one being the qualitative, interpretivist and subjectivist (Wood & Welch, 2010). Despite the differences that are seen amongst the researchers about the type of research method that could be used for a research, an important aspect of research methods is that it enables the researcher to define the type of data needed to respond to the research question like for instance numerical, textural or both (Williams, 2007).

Considering the above arguments, the researcher recognized the fact that the two most widely used research methods for data collection in empirical research are the quantitative and qualitative research methods. In fact in strategic decision making research it is seen that researchers have adopted both qualitative and quantitative research, like for instance Elbanna and Child (2007) who have used quantitative research method while Akkermans and van Aken (1999) have used case study method. Thus in order to decide on the type of research method that is suitable for this research it is necessary to discuss critically about the two

widely used methods namely quantitative and qualitative. This is presented in the following sections.

4.3.1 Quantitative

Williams (2007) traces quantitative research to 1250 A.D. when researchers needed to quantify data, indicating that quantitative research has a long history. Further Williams (2007) argues that quantitative research method uses numeric or statistical tools as part of the research design. Leedy and Ormrod (2001) claim that quantitative research is specific to surveying and experimentation and it develops upon theories that already exist. In addition researchers associate quantitative research method with positivist epistemology, objective ontology and deductive research approach (Holden & Lynch, 2004).

Some of the important characteristics of quantitative research include that researcher is independent of the researched, data measures reality objectively (Williams, 2007) replicability and generalisability of findings and typically attempt to predict events (Harwell, 2011). Harwell (2011) argues that quantitative research method entails the researcher to ensure objectivity in the findings by setting aside the researchers experiences, perceptions and biases. Additionally, Harwell (2011) explains that quantitative research methods involve the use of instruments such as tests or surveys in the data collection process and relies on theory of probability to examine hypotheses relevant to the research questions being addressed.

According to Creswell (2003) the process of quantitative research method involves collection of data, quantification of information and application of statistical methods to either support or contradict alternate knowledge claims. Furthermore, researcher highlight that quantitative research method uses mathematical models as part of the data analysis (Williams, 2007). A more important fact that needs consideration about quantitative research is that it is the dominant research method used by researchers in empirical study. For instance Bryman (2006) argues that an analysis of articles published in 232 social sciences articles indicated that 82.4% used survey instrument which is a quantitative research method. Hoskisson et al. (1999) also argued that quantitative research tools and methods dominate research in strategic decision-making literature. These arguments lead to the inference that quantitative methods dominate empirical research, in particular strategic decision-making process research.

According to the methodology literature, quantitative research methods are classified as descriptive, experimental and causal comparative (Leedy & Ormrod, 2001). Williams (2007) claims that descriptive research explores the correlation between two or more phenomena and uses observation as the basis to identify the attributes of a particular happening. As far as the

experimental research is concerned Williams (2007) argues that the researcher introduces an intervention into a study group and investigates the treatment of the intervention through measurement of the outcomes of the treatment. With respect to the causal comparative, the researcher investigates the cause and effect relationship between the dependent and independent variables (Williams, 2007). The use of a particular type of quantitative research method depends on the research question being addressed (Ellis & Levy, 2009). There are a number of approaches to quantitative research methods. The approaches used by researcher are provided in Table 4.1.

Table4.1, Common Approaches to Quantitative Research (Sukamolson, 2005)

No.	Approaches
1.	Surveys
2.	Custom surveys
3.	Mail/e-mail/Internet surveys
4.	Telephone surveys
5.	Self-administered questionnaire surveys
6.	Omnibus surveys
7.	Correlational research
8.	Trend analysis
9.	Exploratory research
10.	Descriptive research
11.	Experimental research

There are a number of advantages of using quantitative research method which are presented in Table 4.2.

Table4.2, Advantages of Quantitative Research (Sukamolson, 2005)

No.	Advantages
1.	Provides estimates of populations at large.
2.	Indicates the extensiveness of attitudes held by people.
3.	Provides results which can be condensed to statistics.
4.	Allows for statistical comparison between various groups.
5.	Has precision, is definitive and standardized.
6.	Measures level of occurrence, actions, trends, etc.
7.	Can answer such questions as "How many?" and "How often?"

Despite the many advantages and dominance of quantitative research method in the field of social sciences and strategic management in particular, researchers attribute a number of limitations to it. Some researchers argue that quantitative research method treats people as objects and does not take into account the values and meanings that can be understood to contribute to make individuals as humans and the capabilities they have (Cloke et al. 1991, Smith, 1998). Similarly researchers criticize quantitative method in regard to its ability to lead the researchers to generate value free findings as they argue that researchers being part of the society themselves cannot free themselves from their own values, experiences and motives (Cloke et al. 1991). In fact Cloke et al. (1991) claim that invariably researchers are influenced by their values, experience and motives in their research. Another criticism charged against quantitative research method includes the false sense of objectivity associated with the

research findings as some researchers feel that the separation between the observer and the observed is only artificial and not natural leading to possible bias in the research process (Cloke et al. 1991).

The foregoing discussions highlight both the advantages and limitations of quantitative research method. These discussions clearly point towards the necessity for the researcher to be cautious in adopting quantitative research as the method for this research, and that if the quantitative research method is adopted, the researcher needs to be alert to the many limitations that can affect the research process.

4.3.2 Qualitative research methods

According to Denzin and Lincoln (2000), in the field of sociology qualitative research method was established in the 1920s. From the history it can be seen that quantitative research had already established its roots firmly and when qualitative research started to gain acknowledgement, battle lines were drawn between the two camps (Denzin & Lincoln, 2000). With the result more and more researchers began to adopt the qualitative research method in many disciplines. Researchers associate qualitative research with interpretive epistemology, subjective ontology and inductive research approach (Holden & Lynch, 2004).

According to Denzin and Lincoln (2000) qualitative research comprises a complex set of family of terms that are interconnected as well as concepts and assumptions. Further, Denzin and Lincoln (2000) argue that qualitative research is related to cultural and interpretive studies. Bitsch (2005) argues that qualitative research methods are applied to such areas as those requiring interpretation as well as description of new research issues or issues that need deeper study; where new theory needs to be generated or developed or qualified or corrected; where phenomena need to be evaluated; where there is a need for policy advice and action research; and where future issues need to be researched. According to Mack et al. (2005) qualitative research enables the researcher to understand a given research problem from the point of view of the local population it studies. It elicits culturally specific information and data about values, opinions, behaviours and social contexts of the population under study (Mack et al. 2005).

The main advantages of qualitative research methods include (Mack et al. 2005):

- Ability to bring out the experience of people with regard to a particular research issue in complex textural descriptions.

- Ability to elicit information about the human side with respect to a research issue including behaviours, beliefs, emotions, relationship between individual human beings and opinions that are contradictory.
- Its effectiveness in ascertaining factors include social norms, socioeconomic status, gender aspects, ethnic phenomena and religion which are considered intangible and seen to be not readily apparent on many occasions.

Types of qualitative methods employed by researchers include case study, ethnography study, phenomenological study, grounded theory study, and content analysis (Williams, 2007). Although there is extensive literature available on each one of these research methods, it is beyond the scope of this research to describe each one of them individually. However there are a number of limitations identified by researchers in using qualitative research method. These include (Fielden, 2003):

- Researcher bias is inevitable.
- Bias is likely to arise from different sources and also at any point during the research
- Bias cannot be treated as an acceptable construct in organizational research.
- Researchers need various special skills as well as the mental agility to handle complex situations that may be encountered while considering multiple ways of viewing at phenomena.
- Researchers may need to possess skills outside the dominant research paradigm.

Further Denzin and Lincoln (2000) argue that qualitative researchers produce fiction and not science and allege that such researchers do not have a way to verify their truth statements. A more severe criticism of qualitative researcher is the allegation of positivists who accuse qualitative researchers of failing to make explicit or to critique the moral and political commitments in their own contingent work (Carey, 1989; Guba & Lincoln, 2005).

Thus on the one hand qualitative research method is highly promising in eliciting such information and data that cannot be elicited by quantitative research method, but on the other there are serious limitations that need to be taken into consideration prior to adopting the qualitative research method. With regard to the use of qualitative research method in the field of strategic decision making process it is generally seen that only a few researchers have adopted qualitative research, such as Akkermans and van Aken (1999) who used case study method in their research, while others invariably have chosen the quantitative research method in their research.

After reviewing critically the two dominant research methods that are being widely used in the field of strategic decision-making, a summary comparison of the two methods is provided in Table 4.3.

Table4.3, Comparison of quantitative and qualitative research approaches (Mack et al. 2005)

	Quantitative	Qualitative
General framework	Seek to confirm hypotheses about Phenomena	Seek to explore phenomena
	Instruments used more rigid style of eliciting and categorizing responses to questions	Instruments use more flexible iterative style of eliciting and categorizing responses to questions
	Use highly structured methods such as questionnaires, surveys and structured observation	Use semi-structured method such as in depth interviews, focus groups and participants observation
Analytical objectives	To quantify variation	To describe variation
	To predict causal relationships	To describe explain relationships
	To describe characteristics of a population	To describe individual experiences
		To describe group norms
Question format	Closed-ended	Open-ended
Data format	Numerical (obtained by assigning numerical values to responses)	Textual (obtained from audiotapes, videotapes and field notes)
Flexibility in study design	Study design is stable from beginning to end	Some aspects of the study are flexible (for example, the addition, exclusion, or wording of particular interview questions)
	Participant responses do not influence or determine how and which question researcher ask next	Participant responses affect how and which question researchers ask next
	Study design is subject to statistical assumptions and conditions	Study design is iterative, that is data collected and research questions are adjusted according to what is learned

The foregoing discussions have provided a comprehensive and critical review of the different aspects involved in the research methodology including the philosophical epistemology and ontology, research approaches and research methods. However the choice of a particular research method is an important decision that was made by the researcher to answer the research questions set for this research. Thus the next section describes the choice of the research methodology and method for this research.

4.4 Research framework

According to Crotty (1998) a research framework should address four questions namely what epistemology, what theoretical perspective, what methodology and what method will be used in empirical research. Furthermore, researchers opine that the research methodology is

dependent on the research question that is being addressed (Harwell, 2011). Keeping in view the arguments given here, it is important to recall that the research questions of this research that aim to address the relationship between decision characteristics and decision process output in the context of SMEs in the electronic, telecommunication and IT sectors.

A basic assumption was made at the outset. The assumption was that strategic decision making process in SMEs could be addressed using existing theory and a model could be developed to relate the decision characteristics to decision output. Literature review indicated that an appropriate approach would be to build on existing models, which pointed towards a positivist epistemological stance. This assumption and the stance are in line with previous researchers' assumptions and stance for instance of Papadakis and Barwise (2002) who adopted a positivist philosophical stance in their research in strategic decision-making process. Thus in order to address the research questions a conceptual model was developed (Section 3.7) that indicated a positivist philosophical position.

Further the research questions required that the conceptual model be tested to ensure that the model really addresses the questions. Conceptual models are generally tested using hypotheses. Hypothesizing fundamental laws helps in explaining the truth or otherwise of these hypothesis using deductions from observations (Hunt, 1993) and falls under objective ontology. In addition, the outcome of the study was objective, measurable, and independent of the researcher and the instruments developed by the researcher (Shah & Corley, 2006; Partington, 2000) as the researcher was not grounded in the environment, that is SMEs, which were studied. Thus an objective ontology was found suitable which entailed the researcher to arrive at objective results. Many researchers in the field of strategic decision-making process have emphasized an objective ontology, such as Elbanna and Child (2007) who investigated the strategic decision effectiveness in firms in Egypt. Thus in this research the objective ontology will be used.

After fixing the philosophical limits for this research the next step was to identify the research approach framework. While the literature on research methodology has shown that deductive and inductive research approaches are the most widely used, the research questions in this research indicated the possible use of both. For instance deductive approach enables the researcher to move from the general to the particular (Collis & Hussey, 2009) whereas the inductive approach leads the researcher to develop general theory from a particular situation (Collis & Hussey, 2009). However, in the strategic decision making process research, pertaining to firms, there are a number of research concepts that the researchers have attempted to generalize like rationality, bureaucratic, incremental, political, avoidance,

"garbage can", symbolic and entrepreneurial (Chaffee, 1985; Hart, 1992; Lyles & Thomas, 1988) providing an opportunity to apply them to particular situations. In line with this argument, in this research the researcher built the conceptual model around a model developed by Papadakis et al. (1998) that uses the theory of rationality in the context of manufacturing firms. The model was expanded and a new model emerged that was applicable to the particular context of this research, that is decision making process in the SMEs pertaining to the electronic, telecom and information technology sectors. These arguments point towards the deductive research approach and hence the inductive approach was not employed in this research.

Finally, in order to test the model an appropriate research method was to be selected. Amongst the two widely used methods qualitative and quantitative, in the strategic decision-making process literature, a majority of researchers have used the quantitative research method (e.g. Elbanna & Child 2007 and Papadakis et al. 1998). The main reason for this is the necessity to study a number of units spread over a vast territory, at the same time, to gain an objective understanding of the decision making process, which is not possible using qualitative research which needs the researcher to be part of the environment. A quantitative research method was more suitable as the researcher could collect data from the units for instance using a questionnaire. In line with these arguments, the researcher logically chose the quantitative research method.

From the foregoing arguments it can be seen that this research on SMEs was conducted within the framework of the researcher assuming a positivist epistemological and an objective ontological stance leading to the adoption of a deductive research approach and quantitative research method. However quantitative research methods include several different types that could be chosen for the research. Hence a decision on what type of research method has to use to answer the research questions needs to be explained. This aspect is explained next.

4.5 Choice of the research method

According to Saunders et al. (2009), research purposes that are served by research methods are classified as exploratory, descriptive and explanatory studies. Furthermore, research purposes are those that indicate how the way in which the research questions have been asked would result in a particular type of answer. For instance the answers could be descriptive; descriptive and explanatory; and explanatory (Saunders et al. 2009). Keeping these arguments in view, it is necessary to understand the three different types of research studies to enable the researcher to choose the most appropriate research study for this research.

4.5.1 Exploratory studies

A research problem that is not precisely understood by the researcher and where clarifications are sought to gain new insights could be tackled using the exploratory studies (Saunders et al. 2009). According to Saunders et al. (2009), there are primarily three ways in which exploratory research could be conducted this includes literature review, interview method to solicit views from experts and conducting focus group interviews. Although there are advantages in using exploratory studies, like it is flexible and adaptable to change (Adams and Schvaneveldt, 1991), there is also a possible pitfall which is loss time due to change in the direction of research that necessitates data collection afresh. However Adams and Schvaneveldt (1991) argue that change of direction that arises due to the flexibility, does not mean absence of direction. Thus the researcher needs to be cautious if adopting the exploratory research study.

Furthermore exploratory studies tend to use qualitative research methods like in-depth interviews (Mack et al. 2005). With regard to strategic decision-making process research, it is seen that most often researchers have adopted explanatory studies rather than the exploratory studies, for instance Papadakis et al. (1998). The reason for this could be the necessity felt by the researchers to be sure that their research effort produces outcomes that do not involve any change in direction midway through the research which could be the case if one adopts exploratory research. In strategic decision making process, the research study needs to be clearly focused and result oriented so that precious resources such as time and money are not wasted.

4.5.2 Descriptive studies

Robson (2002) claims that descriptive studies portray accurately the profiles of human beings, events or phenomena. Saunders et al. (2009) argue that descriptive studies are usually forerunners to either exploratory or explanatory studies and claim that this kind of research study more often is an extension an explanatory study. While it is seen that descriptive studies are widely used by researchers in many disciplines, in the field of strategic decision making process descriptive studies have been generally neglected (e.g. Carmeli et al. 2009). There are nevertheless some instances where researchers have used the descriptive statistics in strategic decision-making process research like Papadakis and Lioukas (1996). But researchers emphasise that descriptive studies are not end in themselves but only a means to an end (Saunders et al. 2009) leading to the interpretation that descriptive studies alone are not considered sufficient for empirical research.

4.5.3 Explanatory studies

According Saunders et al. (2009) explanatory studies enable the researcher to establish a causal relationship between variables. Further they claim that explanatory studies focus on studying a phenomenon or problem or situation so that it is possible to explain the relationship between two variables. Quantitative research methods for instance follow in this category although qualitative research methods also could lead the researchers to explain a phenomenon (Saunders et al. 2009). It can be argued that in order to answer a research question, explanatory studies could be used although the use of either quantitative or qualitative research method may depend upon the research question being answered. For instance if one wants to know whether decision quality is affected by decision magnitude of impact in SMEs, it is possible to use quantitative research method by linking two variables and explain the phenomena. On the other hand if a researcher wants to know how decision magnitude of impact affects the decision process quality, then it may be necessary to use a case study method by which actual decision making behaviour of individuals in the decision making process could be studied. Thus the choice of using a particular research method depends on the research question under investigation.

After describing the research types which enable the researcher to understand the purpose behind the research it is essential to understand the different research methods that are being used by researchers in either exploratory or explanatory research studies. According to Saunders et al. (2009) many research types have been identified by researchers which include experiment, survey, case study, action research, grounded theory and ethnography. Choice of the research type is generally termed as the strategy (Saunders et al. 2009). While experiment and survey may fall under the quantitative research method belonging to explanatory studies, the others may be classified under qualitative research belonging to the exploratory studies. A brief explanation of each one of the research types is provided in Table 4.4 below.

Table4.4, Different types of research (Saunders et al. 2009)

No.	Type of research	Purpose	Limitations
1.	Experiment	Widely used in psychology; used to study causal links; link two variables to study whether change in an independent variable produces change in the dependent variable; could be used in both exploratory and explanatory research; used to study two or more groups having planned intervention in the variables; possible to control the experiments; internal validity is better; conducted on known population.	External validity is difficult to establish; experiments are conducted normally in laboratories under controlled environment and hence may not be related easily to real life situations; possibility of generalization lower than field-based experiments; may not be feasible for many management and business research questions; could be conducted only on captive population.
2.	Survey	Usually associated with deductive approach; popular strategy used in business and management research; answers such questions as who, what, where, how much and how many; tend to be used in exploratory and descriptive studies; allow collection of large amount of data from target population; highly economical; uses sampling and questionnaire; allows easy comparison; allows collection of quantitative data; analyse data using descriptive and inferential statistics; can be used to suggest possible reasons for particular relations between variables; produce models depicting relationship between variables.	Sample need to be truly representative without which generalisability will be questioned; time consuming data analysis; lack of good response rate could be a bottleneck; may not be as wide ranging as other methods; progress could be delayed due to non-availability of information on which the research is dependent.
3.	Case study	Used to study a particular contemporary phenomenon within its real life context; multiple sources of evidence are used; contextual factors are taken into account; widely applied in research where rich understanding of the context of the research is needed and the processes used; used in explanatory and exploratory research; combination of data collection techniques could be used.	Lack of clear boundaries between the phenomenon being studied and the context in which it is being studied; gives an unscientific feel; requires more than one unit of analysis; justification on the choice of the type of case study needs to be very strong.
4.	Action research	Emphasises on the purpose of the research, involvement practitioners of research, iterative process and implications beyond the immediate project; focuses explicitly on action; promotes change within organisation; involves diagnosing, planning, taking action and evaluating; involves data gathering and facilitation.	More useful to answer the question how; person undertaking the research needs to involved in the research introducing possible bias; goes beyond the stated objectives of the project which may not be the remit.
5.	Grounded theory	Falls under inductive approach in general; used for theory building using a combination of inductive and deductive approach; useful to predict and explain behaviour; could be used in business and management research to explore a wide range of issues; theory is developed using data generated using from a series of observations.	It is hard; requires experience and creativity; is not perfect; it is messy; requires constant reference to data to develop and test theory failing which the researcher could draw wrong conclusions; researchers need to develop tacit knowledge or feel for good data which may be difficult to perceive.
6.	Ethnography	It is an inductive approach; explains the social world in which people inhabit in a manner the people would like to explain; it is naturalistic; researcher needs to embed in the social world being investigated; new patterns of thought are likely to develop as the phenomenon is being observed continuously; investigate the phenomenon in the context in which it exists; provides insight into particular contexts.	Time consuming; not a dominant research study in the business and management research; difficulties could be there in finding settings or groups matching the research requirements; possible introduction of researcher bias as the researcher is part of the phenomenon under study; needs extended particular observation.

The foregoing discussions provided a comprehensive base to choose the most appropriate research method that was subsequently used in this research. The rationale and the choice of the research method is explained next.

4.5.4 Choice of the research method and the rationale behind the choice

Strategic decision-making process has been studied by researchers in the past although not in depth. Some useful conceptual models and theories have been developed by researchers like Papadakis et al. (1998) and, Elbanna and Child (2007). These conceptual models provide a good starting point to develop and explain new relationships between decision process components in regard to strategic decision-making process. For instance the model that was adopted and expanded in this research was the one developed by Papadakis et al. (1998) which linked two decision process components namely decision characteristic (e.g. magnitude of impact) the independent variable and decision dimension (e.g. rationality) the dependent variable. However another component of the decision making process namely decision process output (e.g. decision process effectiveness) was not considered by Papadakis et al. (1998) in their model but had suggested that further investigation in this direction was needed. The researcher investigated further this process and based on a comprehensive literature review of the strategic decision-making process found that decision characteristics could determine the decision process output, mediated by decision dimensions. Based on this investigation the researcher decided to expand an already existing model and was aiming to explain the phenomena rather than exploring the phenomena. Thus this research used explanatory study where variables were linked to explain the relationship between the dependent and independent variables. This is in line with past research like for instance the research conducted by Papadakis et al. (1998) in the manufacturing sector in Greece.

Furthermore, the research was conducted in the SME sector and the decision processes in many SMEs were studied. In this situation it was necessary to use a method by which the researcher could collect data from a large number of SMEs and carve out a good representative sample from the larger population. At this point two issues needed attention that is a research method that can enable the researcher to collect data in an efficient manner and sampling. One of the most efficient methods found in Table 4.4 given above that would enable the researcher to collect data from a large sample was the survey method. Using survey method, the researcher could distribute a close-ended questionnaire to SMEs after arriving at a sample size that was considered appropriate. Furthermore this method was also the preferred method in most of the prior strategic decision-making process research (e.g. Papadakis et al. 1998). In view of the foregoing argument the explanatory study was found to be most suitable for this research that used the survey method.

4.5.5 Survey research method

According to Creswell (2003) a number of steps that are involved in the research process are needed to address the research questions and hypotheses. The main steps involved in the survey design process are (Creswell, 2003):

4.5.5.1 Purpose of survey research

According to Babbie (1990), the purpose of survey design could be the generalization from a sample to the whole population under study that enables the researcher to infer on some characteristic, attitude or behaviour of this population. In this research the sample population was drawn from the population of decision makers ranging from the managerial level to the chief executive level, in SMEs pertaining to the electronic, telecommunication and IT sectors. The SMEs were spread over four countries namely Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait and United Arab Emirates. The survey was conducted to understand the how the decision taken by the decision makers and its magnitude of impact influence the decision process effectiveness when the decision makers use rationality and intuition as part of the process.

4.5.5.2 Why the survey method was preferred

According to Creswell (2003) the preference for survey method emanates from the advantages it offers in data collection from a sample set of subjects belonging to a large population. In this research, sample set of SMEs were chosen for collection of data which belonged to a large population of several thousand SMEs. Cost, time and effort needed to be economized during the process of data collection as the SMEs were located in four different countries. Survey provides a cost effective and efficient method of collection of data using survey questionnaire. Hence in comparison to other methods of data collection the survey method offered the most advantages leading to its preference for this research.

4.5.5.3 Time horizon

According to Creswell (2003), there are two time horizons namely cross sectional and longitudinal that are normally referred in research processes that use survey method. Cross-sectional research indicates that the data is collected at one point in time whereas the longitudinal study refers to collection of data over an extended period of time where data is collected more than once at different intervals of time (Saunders et al. 2009). In this research, strategic decision-making process involved the examination of the decisions that were made in SMEs at one point of time as time was a constraint in data collection. For instance dynamic environment which is a factor in decision-making process affects the decision making process over a period of time and this constraint needed the researcher fix a finite point of time for

data collection. Otherwise data had to be collected at different points of time as changes in the environment had the potential to affect strategic decision-making process at frequent intervals. The latter process would require a phenomenally long period of time to study the strategic decision making process which was beyond the scope of this research, but is an option for future research. The dynamic environment needed the assessment of the strategic decisions made over a three-year period in each SME in order to examine the strategic decision process output in a consolidated manner. This meant that the effects of dynamism were assessed at one point of time taking into account the three year impact on the strategic decision making process cumulatively. This is in line with previous research.

4.5.5.4 Form of data collection

According to Creswell (2003), it is necessary to identify the form of data collection and argues that there are four types namely self-administered questionnaire, interviews, structured record reviews like financial information and structured observations. Keeping in view the methods followed in previous research like Elbanna and Child (2007), where self-administered questionnaire has been used for data collection, this research also used a self-administered questionnaire. The advantages involved low cost, efficient and does not need the researcher to be present at each SME to collect data. The self-administered questionnaire has a weakness as sometimes the questions in the questionnaire may not be worded correctly (Saunders et al. 2009) in which case the respondents may find it difficult to understand the questions leading possible misinterpretation of the question. Considering these aspects the researcher took adequate caution through pre-tests in finalizing the questionnaire prior to using the self-administered questionnaire form of data collection. After having discussed about the research process, the research design developed for this research is now discussed.

4.6 Research design

According to Sekaran (2003), research design provides a way forward by which essential data can be collected and analysed to arrive at a solution to the research questions. Furthermore, Sekaran (2003) argues that research design considerations include the purpose of study, type of study, study setting, unit of analysis, time horizon of study, extent of researcher interference with the study, data collection and data analysis.

The purpose of the study has already been discussed in Section 4.5.4. Next, according to Sekaran (2003), there are two types of study namely causal and correlational study. This research is a correlational study as it outlines the important variables linked to the research questions and does not outline the cause and effect relationship although certain regression analyses and path analyses could provide hints on the causal links between the variables.

Further, since this research is essentially correlational in nature, it was conducted in non-contrived organizational settings. The strategic decision-making process decisions in the SMEs were studied using the data collected from the natural work environment of the SMEs using the questionnaire. SMEs in the electronic, telecommunication and IT industries were approached as they represented industries that are subjected to highly varying or turbulent external environment. The unit of analysis is the decision maker in a firm in the SME sector. Each response from the decision makers was treated as a data source. Cross-sectional study was used in this research. This has been already discussed in Section 4.5.5.3. In addition, since the research was conducted in the SMEs, there was hardly any interference by the researcher with the normal functioning of the SME and consequently the research was free of researcher bias.

Again, in order to test hypotheses and the variables associated with the hypotheses data related to the variables need to be collected. Primary and secondary data were collected for this research. A data collection instrument was developed to collect data. A separate discussion on the data collection aspects is provided in Section 4.11.3. At this stage data collected for this research was statistically analysed to test the hypotheses. Details of the data analysis are given in Section 4.12.

4.7 Research strategy

Research strategy involves the choice of a particular method of research. As has been already mentioned in Section 4.5 as a research strategy survey methodology was chosen for this research as it was considered the most appropriate for data collection from the SMEs. Furthermore, since the population of SMEs was very large distributed over Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait and United Arab Emirates, sampling was used as the strategy in this research. Alternatively had the population been small it would have been possible to attempt to collect data from every member of the population, which is not the case in this research. With regard to the strategy on data analysis, statistical tests were conducted which are described in detail in Sections 4.12, 4.13 and 4.14. Primary data was collected through the self-administered questionnaire, while secondary data was obtained from previous research. Secondary data are those that already exist and need not be collected by researchers whereas primary data do not exist and need to be collected by researchers (Sekaran, 2003).

4.7.1 Questionnaire method for survey

A questionnaire according to Sekaran (2000, 2003) is a tool using which the researcher enables the respondents to record their responses to a pre-designed set of questions that have

answers with closely defined alternatives. Important reasons for using the questionnaire in this research are:

- It is an efficient mechanism for data collection especially in field studies (Sekaran, 2003)
- Quantified information is needed for this research as a source of data regarding a particular population (Ticehurst & Veal, 2000) namely decision makers in the SMEs in the electronics, telecommunication and IT sectors.

In addition to the above reasons, there are advantages of using questionnaires which include lower cost of administering the questionnaire, the possibility of administering the questionnaire simultaneously with large number of individuals, less time consuming than other methods such as interviews and easy to administer in comparison to other methods such as interviews which require some skills Sekaran (2000, 2003). There are problems in using questionnaires as well. For instance Hussey and Hussey (1997) argue that confidentiality can be an issue in administering questionnaires.

After considering the pros and cons of using the questionnaire, the researcher adopted the questionnaire method taking precautions such as ensuring that participants were fully informed about the anonymity, confidentiality, purpose and the voluntary nature of the participation. This decision is in line with previous research in strategic decision making field as many researchers have used the questionnaire method (Papadakis et al. 1998; Elbanna & Child (2007) and Carmeli et al. 2009).

Another important aspect that needs attention is the mode of administering the questionnaire: whether the questionnaire will be personally administered or sent by mail or posted on a website or assigned to a professional organization the job to administer the questionnaire (Saunders et al. 2009; Radaelli & Fritsch, 2012). Each one of these methods has its own advantages and disadvantages. In this research for the pilot survey the questionnaires were administered personally as the number of respondents approached was small while for the main survey a consulting organization was appointed to collect data. Details of these data collection methods are discussed in Section 4.11.3.

4.8 Development of the survey instrument

According to Creswell (2003), development of the survey instrument requires careful consideration on a number of aspects that include:

- arguments on whether the instrument was needed to be specifically designed for this research, or if a modified existing instrument is more suitable,

- information regarding the validity and reliability measures already established if it is based on a previously tested instrument,
- details of the sample population on which the earlier instrument was used, major content sections such as the items type of scales used and covering note used to administer the questionnaire,
- plans for administering the questionnaire.

While adhering to the above, the researcher also took the advice provided by Sekaran (2003), who argues that the instrument being developed should focus on the wording of the questions, categorizing of the variables and general appearance of the questionnaire. Ultimately, the instrument must ensure that the researcher collects data for answering the research objectives (Zikmund, 2003).

To begin with the items used in the instrument were based on the instruments developed by other researchers which include Nooraie (2008), Papadakis et al. (1998), Dean and Sharfman (1996), Elbanna and Child (2007), Khatri and Ng (2000), Akgun et al. (2008), Paswan et al. (1998), Schilit and Paine (1987), Dean and Sharfman (1993), Carmeli et al. (2009) and Dincer et al. (2006). The reason why contribution from many authors have been used in this research for developing the survey instrument is that the research model in this research is unique and was developed based on the concepts and relationship between variables identified by them. As such while integrating the theories and concepts already developed by other authors, it was logical to extract the previously validated items or a relevant section of the instrument developed by them to be used in the instrument developed for this research, details of which are provided in Table 4.5.

Table4.5, Details of authors from whose research work survey instrument has been developed

No.	Number of items	Variable measured	Scale	Author/s
1.	8	Decision magnitude of impact	5-point Likert scale	Papadakis et al. (1998)
2.	4	Rationality in decision making	5-point Likert scale	Dean and Sharfman (1996) and Elbanna and Child (2007)
3.	5	Intuition	5-point Likert scale	Khatri and Ng (2000) and Pretz and Totz (2007)
4.	9	Dynamism in the industry	5-point Likert scale	Akgun et al. (2008) and Paswan et al. (1998)
5.	6	Firm performance	5-point Likert scale	Elbanna (2009) and Khatri and Ng (2000)
6..	5	Quality of the decision process output	5-point Likert scale	Schilit and Paine (1987)
7.	4	Organisational commitment	5-point Likert scale	Dincer et al. (2006)
8.	5	Decision making effectiveness	5-point Likert scale	Dean and Sharfman (1996), Elbanna and Child (2007) and Carmeli et al. (2009)

The items or sections extracted from already developed instruments mentioned above were modified to suit the requirements of the current research in terms of the subjects from whom the data was collected as well as the need to address the research questions and test the hypotheses.

All the items or questions that were part of the instrument were in English language and were carefully worded to ensure that participants in the survey did not experience any difficulty in answering the questions as well minimize any bias that may creep in during the design stage. Although Arabic is the local language of communication in the territory where this research was conducted, English was chosen as the language due to the following reasons:

- The target population comprised decision makers beginning with middle management level upwards. This population was considered to have a good grasp of English language. Especially when one considers the electronic, telecommunication and IT fields industries, it is generally seen that English is the main language that is used commonly.
- The level of education of the participants was also expected to be high enough to clearly understand the questions in English language.
- It was felt that the original language should be used in the instrument in order to retain the exact meaning of the terms required to be conveyed to the participants as translation might alter the meaning. This could also impact the outcome of the survey. However minor modifications deemed necessary were made where absolutely necessary to enable easy understandings for the respondents without changing the underlying meaning of the questions.

The instrument was divided into two sections to gather data. Section 1 addressed the respondent characteristics and Section 2 addressed general issues related to the study constructs (Ticehurst and Veal 2000). In addition, as argued by Creswell (2003), a covering letter was prepared to provide useful information to the respondents. This information included an introduction to the questionnaire, objectives of the questionnaire, explanation about the PhD study at Brunel University, UK, about the anonymity as well as confidentiality that will be maintained and that the data will be used solely for the purpose of this research. This letter is provided in Appendix II.

A 5-point Likert scale was used in Section 2. Likert scale is a widely used scale to measure opinions and attitudes of people like 'not committed' to 'very committed' or 'very similar' to 'very different'. A summary of the scales used is provided below.

4.8.1 Section 1

This section dwelt on descriptive statistics related to the respondents' data. Data on six demographical aspects namely gender, place of residence, age, years of managerial experience, level of education and position held in the company were collected. This section provides an idea about the participants.

4.8.2 Section 2

This is the main section and was divided into sub-sections A to F. Sub-section F was further divided into three sections F (I) to F (III). Each one of these sections was devoted to a variable measurement and a discussion on them follows.

4.8.2.1 Scale for Decision Magnitude of Impact (DMI)

This section measured the decision characteristic variable Decision Magnitude of Impact (DMI) and acted as the predictor of decision-making process output variables (decision-making process effectiveness, decision-making process quality and commitment of the decision makers) in SMEs, through the mediating decision dimension variables, rationality and intuition. This relationship was based on the theories explained in Chapters 2 and 3. The scale was developed based on the already validated scale developed by Papadakis et al. (1998). The instrument comprised eight items to measure the variable. The respondents were asked to rate the extent of the impact that strategic decisions have had on eight areas related to their organization over three years that had past as on the day of their answering the questionnaire. These eight items included profit, quality of service/ products, total production, cost, sales, market share, call for changes in existing program and organizational adjustment required to serve the decision. The 5-point Likert scale range used was no impact=1, mild impact=2, moderate impact=3, great impact=4 and very great impact=5.

4.8.2.2 Scale for Rationality in decision making (RDM)

This section is relevant to the measurement of the mediating variable rationality in decision-making, an important variable that has been used for developing the model as a decision dimension variable. This variable is an important part of the strategic decision making process in SMEs and mediates between decision characteristic (DMI) and decision making process output variables (decision-making process effectiveness, decision-making process quality and commitment of the decision makers) which are the dependent variables. The theory behind the mediating aspects of rationality in decision-making has been extracted from Chapters 2 and 3. The variable was measured using a 5-point Likert scale and was in line with the measures developed by previous researchers. The scale was adopted based on the instrument developed by Elbanna and Child (2007). Respondents were asked to rate how rational their firm usually was in making important strategic decisions with regard to four aspects namely

gathering relevant information, analyzing relevant information, using analytic techniques and focusing attention on crucial information. The five points in the scale were Very non-Comprehensive=1, Non-Comprehensive=2, Neither=3, Comprehensive=4 and Very Comprehensive=5.

4.8.2.3 Scale for Intuition

Intuition has been considered as a variable that affects decision process output and decision characteristics in SMEs. Theory explaining its mediating role between decision characteristic variable DMI and decision-making process output variables (decision-making process effectiveness, decision-making process quality and commitment of the decision makers) is based on Chapters 2 and 3. The scale for the variable was based on the original scale developed by Elbanna and Child (2007). The wordings in the questions were modified to suit the requirements of this research related to SMEs. Respondents were asked to provide their opinion with regard to the role intuition played while decisions were made in their firm. Three aspects were covered namely personal judgement, gut feelings and past experience. The five points in the scale were Very little=1, Little=2, Neither=3, Great deal=4, Very great deal=5.

4.8.2.4 Scale for Firm Performance (FP)

This scale measures the internal context within the firm that is necessary to be considered as part of the strategic decision making process. This scale was adapted from the instrument developed by Elbanna (2009). Firm performance has been found to be an independent variable in strategic decision making process literature and has been shown to affect the decision making process output (decision making process effectiveness, decision making process quality and commitment of the decision makers) in Chapters 2 and 3. Respondents were asked rate the performance of their firm in comparison to the firms of similar size and scope using six criteria on a 5-point Likert scale. The six criteria set were Long-run level of profitability, Growth rate of sales or revenues, Return on assets, Efficiency of operations, Public image and goodwill and Quality of product. Each one of these criteria was measured using the points Much Worse=1, Worse=2, No Difference=3, Better=4, Much Better=5.

4.8.2.5 Scale for Dynamism in the industry (Dyms)

Dynamism is considered as an independent variable affecting the strategic decision making process. The scale has been adapted from the earlier work of Akgun et al. (2008). Respondents were asked to indicate the changes seen in the industry served by their firm over three years with respect to the date of answering this questionnaire (i.e. dynamism in your industry) on nine items namely the mix of products/brands carried in the industry, the sales strategies in the industry, the sales promotion/advertising strategies in the industry, the

competitor's mix of products/brands, the competitor's sales strategies, the competitor's sales promotion/advertising strategies, the consumer preferences in product features, the consumer preferences in brands, the consumer preferences in product quality/price. Each one of these items was measured using a 5-point Likert scale. The measuring points in the scale were Very similar=1, Similar=2, Neither similar nor different=3, Different=4, Very different=5.

4.8.2.6 Scales for Decision process output

Relying upon Chapter 2, decision process output has been considered to comprise three variables namely decision-making process effectiveness, decision-making process quality and firm commitment (dependent variables). How the scales for measuring decision-making process effectiveness, decision making process quality and firm commitment to the decision making process have been developed has been described in the following sections.

4.8.2.7 Scale for Quality of the decision process output (QODPO)

This variable has been measured by an instrument adapted from Schilit and Paine (1987). In reality the scale developed by Schilit and Paine (1987) enables the identification of the stage in the decision making process, which activities moved upward. This can be interpreted in terms of quality for which support is provided by Chapters 2 and 3. That is to say that quality of the decision-making process output can be indicated in terms of aspects that include the degree of precision of goals achieved while analyzing the situation, generating alternative choices, evaluating alternative choices, integrating decisions and making final decision (Schilit & Paine, 1987). In order to measure the quality of the strategic decision making output respondents were asked to indicate the degree of precision of goals usually achieved in their firm in the five stages namely Situation diagnosis, Alternative generation, Alternative evaluation, Decision integration and Making of the final decision. The wordings in the scale developed by Schilit and Paine (1987) were modified to suit the requirement of the current research although the underlying meaning remained the same. At each one of the stages decision making process output quality was measured using a 5-point Likert scale. The measuring point in the scale were Quite imprecise=1, Imprecise=2, Neither=3, Precise=4, Quite precise=5.

4.8.2.8 Scale for The firm's (organisation's) commitment (FC)

Firm commitment has been measured using the scale derived from the instrument developed by Dincer et al. (2006). The variable was measured using four items namely Specification of corporate objectives/aims, Specification of business objectives/aims, Generation of strategic decisions and Evaluation of strategies decisions. Respondents were asked to indicate the organizational commitment level in their firm usually, as a measure of the decision process

output. Each one of the five firm commitment items was measured using a 5-point Likert scale. The measuring points were Not committed=1, Less committed=2, Neither=3, Committed=4, Very committed=5.

4.8.2.9 Scale for Decision making effectiveness (DME)

This variable has been measured as an outcome of the decision making process in terms of aspects that include the right choice of a decision, successful achievement of the objectives of a decision (these two questions were adapted from the work of Elbanna & Child, 2007), expected revenue, fixing estimated highest retail price and the speed at which the firm could introduce its new products/services into the market (these three questions were adapted from the work of Carmeli et al. 2009). Respondents were asked to indicate the overall effectiveness of the strategic decision making process over three years with respect to the date of answering the questionnaire in terms of five items mentioned in the previous sentence. The measurement scales developed by Elbanna and Child (2007) and Carmeli et al. (2009) formed the basis for developing the measurement scale for DME which was a 5-point Likert scale. The five items were measured using points Highly ineffective=1, Ineffective=2, Neither=3, Effective=4, Highly effective=5, on the measurement scale.

Some of the important points that need to be noted here are that the scales that have been developed for purpose of this research are adaptations of the original scales. There will be variations between the originally developed scaled and the adapted scale which was needed for the purpose of this research. Secondly this instrument was sent to three experts two of them being academics, one a language expert and another, a practitioner. Some suggestions in terms of wording and order of the questions were received which were incorporated and the instrument was made ready for pre-testing.

4.8.3 Pre-test of the survey questionnaire

According to Creswell (2003), pilot testing of the survey is an important step to establish content validity of an instrument and improve the questions, format and scales. Pre-testing the survey instrument is a small-scale trial in itself prior to the main survey (Sapsford & Jupp, 2006) and should be carried out on a sample that is similar in characteristic to the final population on whom the questionnaire will be administered. Another important purpose of pre-testing is the refinement the questionnaire will undergo, leading to reduction in problems if any, for the respondents, while answering the questions (Saunders et al. 2009). With regard to the actual size of the sample from whom data was to be collected, some researchers suggest that 25 or 50 subjects are acceptable (Zikmund, 2003). Furthermore Bell and Steel (2005) suggests that pilot survey should be used for the purposes given in Table 4.6.

Table4.6, indicates the purpose of pilot survey (Bell and Steel, 2005)

No.	Purposes served by the pilot survey
1.	Assess the length of the time it takes for a respondent to answer the questionnaire
2.	Ascertain the clarity of the instruction
3.	Find out which questions if any were unclear or ambiguous
4.	Find out which questions, if any the respondents felt uneasy about answering
5.	Ascertain whether in the opinion of respondents there were any major topic omissions
6.	Examine whether the layout was clear and attractive
7.	Find any other comments are provided by the respondents.

The pilot survey in this research was administered to a population of 50 decision makers belonging to the electronic, telecommunication and IT industries in the SME sector in Bahrain. For the sake of classification of firms as small and medium enterprises, the criterion suggested by Khunthongjan (2009) which is that any firm with less than 50 employees is considered as a small-scale enterprise and any firm between 50 and 200 to 250 was considered as medium. Similar classifications have been used in GCC countries by certain government organizations (Hertog, 2010). Although other criteria such as turnover are used by researchers to classify SMEs, it was difficult to get published or confidential information from the firms approached by the researcher to get the data on turnover which made it difficult to classify SMEs on the basis of turnover. Thus for the pilot survey all the firms approached were having employees less than 200. Out of the 50 questionnaires that were sent out in person, 40 valid responses were received which amounts to 80% response rate. In each one of the firms either the owner was the decision maker or the manager of the firm acted as the decision maker. No one belonging to a position lower than this position was approached. The pilot survey was conducted in Bahrain during November 2011 over a period of a month.

Reliability and validity tests were conducted on the responses received. Based on the responses and the feedback received from experts some modifications were carried out on the questionnaire which include adding two questions to the sub-section 'C' which is that part of the instrument measuring the variable Intuition, and modifying the wordings and explanations were added to all the sub-sections under Section 2. The detailed reliability and validity analysis of the data collected through pilot survey are provided next.

4.9 Results of Pilot survey

The data collected from the pilot survey was coded and fed into SPSS v18, a software package widely used by researchers in performing statistical analysis. Preliminary data analysis was carried out in terms of mean, standard deviation, reliability and validity. Since the main focus of the pilot analysis is to examine the content validity of the instrument and improve the questions, format and scales the following sections provide the reliability and validity analysis of the data collected through the pilot survey.

At this point it must be clarified here that choice of mean as a measure to test the reliability and validity of a Likert scale is a practice used in data analysis. Although some suggest the use of median and mode when using Likert scale (for instance Mogey, 1999) as Likert scale is considered to be an ordinal scale, Brown (2011) argues that it is not uncommon that mean is used as a measure of central tendency in data analysis because Likert scale is considered as an interval scale also. Here attention is drawn to two attributes of responses collected using Likert scale as tool. For instance Likert data is an attribute that is numerical in nature and is in the form of number assigned to Likert-type items that enable the researcher to express a > (greater than) relationship although how much greater is not understood (Boone & Boone, 2012). In addition Clason and Dormody (1994) argue Likert-type items are single questions that employ some characteristic of the original Likert response alternatives. Besides, while using Likert-type items, where multiple questions might be used by the researcher as part of the research instrument, the researcher is not likely to combine the responses from the items into a composite scale. This situation indicates that Likert-type items fall into ordinal scale measurement and median or mode or both are used as central tendency measurements (Boone & Boone, 2012).

In contrast the second attribute namely Likert scale data is used as an interval measurement scale. In this situation the scale comprises a series of Likert-type items (usually for or more) that are combined or put together into a single composite score or variable at the data analysis stage. Combination of items provides a quantitative measure of an attribute such as character of a person. At this stage the researcher is keen to know about the composite score or the variable only. Where calculated composite scores are used to create Likert-scale items analysis usually carried out using interval measurement scale and in such an event central tendency and standard deviation are measured using mean (Boone & Boone, 2012).

The above discussions clarify where median and mode or mean needs to be used while analysing data collected from respondents using Likert scale. It is clear from the above discussion that if Likert scale data and not Likert-type data is used then mean could be used which is the case in this research. Hence it is justifiable to use mean as the measure of central tendency and standard deviation in this research.

4.9.1 Preliminary analysis of the data collected as part of the pilot survey

As part of the preliminary data analysis two important tests were conducted. The first one is the reliability analysis of the data. According to Ticehurst and Veal (2000), reliability analysis provides the researcher with the knowledge on whether the research could be repeated at a later date or with different samples. The second one is the validity of the data. Validity,

according to Ticehurst and Veal (2000), is the extent to which the collected data truly measures the phenomenon under study. These two tests enable the researcher to make decisions on whether the research instrument can be taken further to conduct the main survey.

4.9.2 Reliability analysis

One of the most widely used tests of reliability analysis is the inter-item consistency of reliability determined by Cronbach's coefficient alpha. This measures the consistency of the responses provided by the subjects to all the items in the instrument or under a construct. In essence it measures the correlation between those items and the degree to which items are independently measuring a construct. Reference measures used by researchers for Cronbach's alpha varies between 0.6 to 0.8, with below 0.6 considered as poor, 0.7 considered as acceptable and 0.8 considered as good (Sekaran, 2000). Although there is no standard rule on the acceptability of a reference value, for this research a figure of 0.7 was chosen. Thus data was considered reliable if Cronbach's alpha measured is either equal to or better than 0.7. The maximum however cannot exceed 1.0 and as Cronbach's alpha approaches 1.0 it is considered that reliability is good (Robinson et al. 1991a, 1991b).

The subjects of the pilot were managers and above in SMEs in the Electronics, Telecommunication and IT sectors in one of the Gulf Cooperation Council countries namely Kingdom of Bahrain. The data was collected during the month of November 2011. Table 4.7 provides the consolidated analysis of the results.

Table4.7, Internal consistency measure 'Cronbach's alpha' for the items in the pilot instrument

No.	Construct	No. of questions	Items	Cronbach's alpha (Reliability measure) should be >0.7
1.	Decision Magnitude of Impact	8	Q1-Q8	0.837
2.	Rationality in Decision Making	4	Q9-Q12	0.678
3.	Intuition	3	Q13-Q15	0.546
4.	Firm Performance	6	Q16-21	0.813
5.	Dynamism in the Industry	9	Q22-Q30	0.9
Decision Process output				
6.	Quality of the Decision Process Output	5	Q31-A35	0.821
7.	Firm Commitment	4	Q36-Q39	0.74
8.	Decision Making Effectiveness	5	Q40-Q44	0.813

Cronbach's alpha for all the constructs except for rationality in decision-making and intuition exceeded 0.7. Cronbach's alpha for rationality in decision-making was reported as 0.678, which although less than 0.7 is very close to 0.7. Similarly Cronbach's alpha for intuition was reported as 0.546 which is below the reference value of 0.7. However one of the reasons that could be attributed to this situation is the lower sample size as Cronbach's alpha has been found to be affected by population size (Spiliotopoulou, 2009). A decision on what should be done to improve the two reliability measures that are below the reference value, was deferred

by the researcher at this point in order to verify the validity of the data so that a more comprehensive solution could be found out.

4.9.3 Validity

Validity of the data provides an estimate of the extent to which the collected data measures the phenomenon under study. In empirical research many types of validity measures have been used including content validity, criterion-related validity and construct validity (Sekaran, 2003). While these measures are applicable to both pilot and main survey, the purpose of measuring these validity measures at the pilot survey stage is to ensure that any difficulty that arises in terms of the content, wordings, format or scale required at this stage could be addressed well before the main survey. Pilot survey provides a very good opportunity to the researcher to identify potential problems related to content, format, scale and wording of the questions in the instrument. Any oversight at this stage could lead to potentially difficult situations at a much advanced stage where it may be too late to resolve the problems. Thus preliminary validity analyses were performed.

4.9.4 Content validity

Also referred to as face validity, content validity enables the researcher to examine the association between the individual items and the concept with the help of experts in the field as well as the pilot survey (Hair et al. 2006). In the field of strategic decision making it became necessary to assess the contents of the questionnaire as well as the correspondence between the questions and the concept or construct, through ratings by experts in the field as well as academicians so that any modifications and corrections needed could be incorporated prior to the pre-test. Three persons, one academic, one an expert, and a researcher in the field were approached to scrutinize the questionnaire. Minor revisions were made to wordings. Then the pre-test was carried out. After conducting the content validity then the construct validity was tested.

4.9.5 Construct validity

Construct validity measures the extent to which the instrument measures the phenomenon truly. According to Iacobucci (2010) construct validity includes assessment of convergent, discriminant and nomological validity. Some researchers argue that it is possible to assess construct validity by factor analysis (Hair et al. 1992). However most researchers, for instance Bertsch (2012), argue that construct validity is best assessed using convergent and discriminant validity. According to (Zikmund, 2003), convergent validity and criterion validity are identical and are measured through correlational analysis. Convergent validity is a measure that correlates positively with other measures (Iacobucci, 2010). In fact Hair et al.

(2006), argue that reliability is an indicator of convergent validity. In strategic decision-making process research, researchers have used construct validity as an important measure to assess the extent to which an item measures the phenomenon it purports to measure for instance Elbanna and Child (2007). In order to measure construct validity, researchers have used certain minimum values as reference like inter-item correlations of items under a construct to exceed 0.3 and item-to-total correlations to exceed 0.5 (Robinson et al. 1991a). Similarly reference levels of correlations have also been suggested by some researchers in terms of a range of correlation like 0.1-0.29 as small correlation (both positive and negative values), 0.3-0.49 as medium correlation and 0.5-1.0 as large correlation. Thus for this research at the pilot survey stage, construct validity was measured taking into account the abovementioned reference values. Details of the validity analysis are discussed next.

SPSS package was used to compute the validity estimates of Cronbach's alpha, item-item correlation and item-total correlation. Table 4.8 provides the SPSS output. With respect to each construct the following analysis is provided.

Table4.8, Construct validity for pilot survey data

No.	Construct	No. of questions	Items	Cronbach's alpha (Reliability measure) should be >0.7	Validity		Remarks
					Item to item correlation should be >0.3	Item to total correlation should be >0.5	
1.	Decision Magnitude of Impact	8	Q1-Q8	0.837	0.091 to 0.673	0.458 to 0.712	Low to high correlation
2.	Rationality in Decision Making	4	Q9-Q12	0.678	0.23 to 0.592	0.365 to 0.659	Low to high correlation
3.	Intuition	3	Q13-Q15	0.546	-0.052 to 0.617	0.091 to 0.651	Low to high correlation
4.	Firm Performance	6	Q16-21	0.813	0.265 to 0.628	0.462 to 0.709	Low to high correlation
5.	Dynamism in the Industry	9	Q22-Q30	0.9	0.249 to 0.796	0.483 to 0.811	Low to high correlation
Decision Process output							
6.	Quality of the Decision Process Output	5	Q31-A35	0.821	0.257 to 0.658	0.427 to 0.695	Low to high correlation
7.	Firm Commitment	4	Q36-Q39	0.74	0.273 to 0.639	0.421 to 0.688	Low to high correlation
8.	Decision Making Effectiveness	5	Q40-Q44	0.813	0.354 to 0.634	0.563 to 0.667	Medium to high correlation

While the correlation between the items was found to be in the range of low to high (except for the items under the construct Decision Making Effectiveness, which indicates medium to

high correlation), one of the main reasons for this phenomenon at this stage appeared to be the low sample size. Other reasons could be the lack of validity of the data which is discussed next.

Decision Magnitude of Impact: The reliability of the items was good, exceeding the reference value of 0.7. However there was one correlation value between Q1 and Q7 which was 0.091 (Table 4.9). There were four other correlations between items that were less than 0.3 although with three out of the four showing correlations closer to 0.3. Thus there were two options available to decide on the validity of the items. One was to delete the items. The other was to go ahead with the items to the final survey and test the validity with a higher sample size where correlation between the items was expected to improve. It was decided that the researcher will go ahead with the items to the final research before taking a decision to delete the items.

Table4.9, Inter-Item Correlation Matrix (Q1 – Q8)

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Q1	1.000	.234	.285	.272	.566	.546	.091	.272
Q2	.234	1.000	.418	.339	.309	.322	.424	.572
Q3	.285	.418	1.000	.465	.276	.401	.489	.579
Q4	.272	.339	.465	1.000	.126	.422	.548	.352
Q5	.566	.309	.276	.126	1.000	.508	.236	.378
Q6	.546	.322	.401	.422	.508	1.000	.342	.500
Q7	.091	.424	.489	.548	.236	.342	1.000	.673
Q8	.272	.572	.579	.352	.378	.500	.673	1.000

Rationality in Decision Making: The reliability value stood at 0.678 which was very close to the reference value of 0.7. Additionally the inter-item correlation showed that except for the correlation between Q9, Q10 and Q12 the remaining were above the reference value 0.3. However considering the fact that the sample size was only forty, it was proposed that all the items be retained for measuring the construct Rationality in Decision Making as the correlation could significantly improve with higher sample size. Although in Table 4.8, it is seen that the correlation between the items ranged between low and high, Table 4.10 clearly indicated that Q12 was the item that was having low correlation with two of the items and the others were correlated above medium level. Thus the researcher retained all the items for measurement of Rationality in Decision Making in the main survey.

Table4.10, Inter-Item Correlation Matrix (Q9 – Q12)

	Q9	Q10	Q11	Q12
Q9	1.000	.335	.407	.230
Q10	.335	1.000	.359	.208
Q11	.407	.359	1.000	.592
Q12	.230	.208	.592	1.000

Intuition: The reliability value stood at 0.546 which was short of the reference value of 0.7 fixed for this research, indicating moderate reliability. The researcher attributed this to the

lower number of samples used in the pilot study. However Table 4.11 which depicts the inter-item correlation indicated poor correlation between items. While the correlation between Q13 and Q14 was high, the correlation between Q13 and Q15 as well as Q14 and Q15 were not significant. However though it was possible to still retain Q15 with respect to Q13 assuming that the correlation could improve with higher sample size, the correlation between Q14 and Q15 was showing negative relationship which is contrary to the results achieved by Khatri and Ng (2000) which indicated a positive relationship. Again the reliability value achieved by Khatri and Ng (2000) was not high although they have accepted 0.6 as the reference value. Considering the fact that Cronbach's alpha is another indicator of correlation amongst the items, it is reasonable to conclude that the correlation amongst the items measured by Khatri and Ng (2000) is lower. Thus the researcher had the option to either delete Q15 which was showing poor correlation between Q13 and Q14 or investigate the reasons for the poor correlation and negative relationship. One of the possible causes for this behaviour between the items was attributed to possible the lack of understanding of the meaning 'past experience' in the question Q15 related to intuition as the pilot survey was distributed amongst very small enterprises in the computer, electronics and IT industries. It was proposed that in order to maintain the required number of 3 items to measure Intuition as suggested by Khatri and Ng (2000) as well as Elbanna and Child (2007) and see their performance with a more organized and larger number of samples in the main survey; the three items were retained and tested in the main survey. The risk that was taken by the researcher was that the item Q15 could still not be useful. On the other hand, if the subjects understand the question well which was the case expected, then the situation could be turned around. If Q15 failed to be a measure, then based on the final results achieved in the main survey the researcher could take a decision to drop it. Finally, although Table 4.11 indicated that the inter-item correlation ranged between low and high, it can be seen that the correlation between Q13 and Q14 was high leaving Q15 as the item that was the cause of concern leading to lower correlation between it and the other two items Q13 and Q14.

Table4.11, Inter-Item Correlation Matrix (Q13 - Q15)

	Q13	**Q14**	**Q15**
Q13	1.000	.617	.230
Q14	.617	1.000	-.052
Q15	.230	-.052	1.000

Firm performance: The reliability value stood at 0.813. All items were correlated in the range of medium to high (> 0.3) (Table 4.12) except for the items Q16 and Q20 which showed a correlation of 0.265. This problem could be due to the small sample size. Thus with regard to this construct the researcher proposed that all items will be retained as part of the instrument that will be used in the main survey.

Table4.12, Inter-Item Correlation Matrix (Q16 – Q21)

	Q16	Q17	Q18	Q19	Q20	Q21
Q16	1.000	.419	.351	.328	.265	.537
Q17	.419	1.000	.439	.195	.515	.441
Q18	.351	.439	1.000	.513	.460	.475
Q19	.328	.195	.513	1.000	.343	.441
Q20	.265	.515	.460	.343	1.000	.628
Q21	.537	.441	.475	.441	.628	1.000

Dynamism in the industry: Cronbach's alpha was computed as 0.9 which showed very good reliability. Similarly correlation between items measuring the construct were in the range of medium to high (> 0.3) except for the one between Q23 and Q25 (0.249) as also between Q22 and Q27 (0.259) (Table 4.13). Considering the fact that correlation could improve further if the sample size were to be increased it was proposed to keep all items as part of the instrument that will be used in the main survey.

Table4.13, Inter-Item Correlation Matrix (Q22 – Q30)

	Q22	Q23	Q24	Q25	Q26	Q27	Q28	Q29	Q30
Q22	1.000	.443	.404	.429	.461	.259	.510	.467	.585
Q23	.443	1.000	.479	.249	.634	.393	.527	.490	.607
Q24	.404	.479	1.000	.588	.522	.362	.475	.453	.502
Q25	.429	.249	.588	1.000	.407	.360	.483	.599	.556
Q26	.461	.634	.522	.407	1.000	.407	.523	.565	.555
Q27	.259	.393	.362	.360	.407	1.000	.501	.407	.307
Q28	.510	.527	.475	.483	.523	.501	1.000	.770	.796
Q29	.467	.490	.453	.599	.565	.407	.770	1.000	.795
Q30	.585	.607	.502	.556	.555	.307	.796	.795	1.000

4.9.6 Decision process output

4.9.6.1 Quality of the decision process output

Cronbach's alpha figure stood at 0.821 indicating good reliability. Further referring to Table 4.14 it can be seen that all the items had good correlation ranging between medium and high correlation (> 0.3) except for the correlation between Q32 and Q35 (0.257). It was expected that this value could improve further with a higher sample size. Thus all the items measuring this construct were been retained for use in the main survey.

Table4. 14, Inter-Item Correlation Matrix (Q31 – Q35)

	Q31	Q32	Q33	Q34	Q35
Q31	1.000	.418	.645	.545	.525
Q32	.418	1.000	.304	.417	.257
Q33	.645	.304	1.000	.519	.658
Q34	.545	.417	.519	1.000	.535
Q35	.525	.257	.658	.535	1.000

4.9.6.2 Firm commitment

The value of Cronbach's alpha stood at 0.74 and indicated good reliability of the instrument. With regard to correlation between items (Table 4.15) it was seen that correlation between Q36 and Q37 as well as Q39 were just below the acceptable level of 0.3 whereas the correlation between the other items were above 0.3 indicating medium to high correlations.

Thus considering the fact that the correlations could improve further if the sample size was increased, the researcher proposed to retain all the items for measuring the construct in the main survey.

Table4.15, Inter-Item Correlation Matrix (Q36 – Q39)

	Q36	Q37	Q38	Q39
Q36	1.000	.273	.465	.285
Q37	.273	1.000	.399	.409
Q38	.465	.399	1.000	.639
Q39	.285	.409	.639	1.000

4.9.6.3 Decision making effectiveness

At 0.813 Cronbach's alpha indicated good reliability. Also all the items showed medium to high correlation (> 0.3) (Table 4.16). Hence all the items were retained as part of the instrument in the main survey.

Table4.16, Inter-Item Correlation Matrix (Q40 – Q 44)

	Q40	Q41	Q42	Q43	Q44
Q40	1.000	.525	.472	.404	.583
Q41	.525	1.000	.454	.463	.354
Q42	.472	.454	1.000	.467	.634
Q43	.404	.463	.467	1.000	.470
Q44	.583	.354	.634	.470	1.000

4.10 Discussions on the result of the pilot survey

The foregoing findings from the pilot survey on the reliability and validity aspects of the survey questionnaire were analysed and discussed in depth with the three experts, one an academic, another a strategist and a third researcher as well as some pilot study respondents. Based on this action certain modifications were made to the survey questionnaire details of which follow.

The covering letter was modified in order to provide a more meaningful and understandable explanation about the purpose of the questionnaire. It was also refined with regard to grammatical aspects.

- Headings were added to Sections 1 and 2 which read as "Section1: Demographic questions" and "Section2: Strategic Decisions" respectively.
- In Section 2 explanations about each construct were added against each construct so that respondents could better understand the meaning of the constructs prior to answering the questions.

- In Section 2 under each sub-section, the portion preceding the set of questions was made bold to make a clear distinction as the beginning portion for each question. For instance the phrase "While making decisions in your firm" under section "C" is the beginning portion for each one of the questions Q13 to Q17 which was made bold. This was done to indicate that the beginning portion applies to all the questions under the sub-section "C". This action was implemented against all the sub-sections under Section 2.
- Wordings in general were adjusted to ensure better and easy understanding of the questions by the respondents so that there was no difficulty or ambiguity while answering the questions.
- In particular, under Section 2, sub-section "C", wordings in Q14 and Q15 were slightly modified with explanations provided for two phrases, "gut feeling" and "past experience". The questions read as follows:
  - Q14: to what extent senior managers depend on gut feeling? ("Gut feeling" could mean the managers' instinct).
  - Q15: how much emphasis is placed on past experience? ("Emphasis placed on past experience" means the decision made by managers using their previous experience in a similar situation).
- Additionally, under Section 2, sub-section "C", two more questions were added as it was felt that three questions were not sufficient enough to achieve reliability and validity values above the reference values for the intuition construct. This inference was made based on the results obtained in the pilot survey which showed problems with regard to Cronbach's alpha (0.546) and inter-item as well as item-total correlations (Table 4.11). Apart from the above, expert advice also pointed in this direction. Adding more items to a construct is expected to improve the results (Narayan & Cassidy, 2001).
- Lastly under Section 2, sub-section "D" the scale was modified as 1 = much worse; 2 = worse; 3 = no difference; 4 = better; 5 = much better, based on the advice of the experts. This was necessary to make the scale consistent with the language of the question as well as what it purported to measure which was firm performance.

After incorporating the necessary modifications, the finalized instrument was ready to be distributed to the sample population chosen for the main survey (Appendix I).

4.11 Main survey

In order to conduct the main survey and as described in Sections 4.11.1 and 4.11.2 below the target population and sample size need to be identified. Apart from the above mentioned

aspects, data collection procedure as well as data analysis details aspects needed discussion and are also provided thereafter.

The research question requires the researcher to find out factors that affect the SDMP process dimensions, SDMP process dimensions that affect the decision process output in terms of effectiveness and other factors that affect decision process effectiveness in the SME service sector context. The focus is on the electronic, information technology and telecommunication service sector. The territory in which the research was conducted was four Gulf Cooperation Council (GCC) countries. A major phenomenon that could be observed in the GCC is the lack of manufacturing units that produce products in electronics or IT or telecommunication sectors but there are firms that provide services. For instance, in all the GCC countries there are telecommunication service providers. In Bahrain there is a company called Bahrain Telecommunication Company (Batelco) that provides telecommunication services to the citizens. Similarly in Kuwait there is a telecommunication service provider by name Zain, in United Arab Emirates (UAE) there is a telecommunication service provider by name Etisalat and in Saudi there is a telecommunication service provider namely Viva. Although these companies are large scale enterprises, around them there are a number of ancillary units that provide support services, for instance SMEs that sell cellular phones to the consumers and offer after sales services although the cellular phones are not manufactured in this region but imported. These units could be covered under both electronics and telecommunication sectors as there is an overlap of both the technologies. Other examples could also be given with regard to electronic and telecommunication products and services offered by SMEs including wireless modems for internet services, laptop computers that are used for a variety of telecommunication purposes such as voice over internet, tablets, flash memories and the like. Here there is a convergence of IT also. For instance, where modem is being sold it can be seen that modems involve electronics, telecommunication and IT disciplines. The same can be argued of laptop computers. Thus overall it can be seen that in the GCC there are a number of SMEs that offer services both retail and wholesale. However choosing SMEs who could participate in the survey needed a sampling process because of the large number of such enterprises found in the GCC countries. This aspect has been discussed in the following section.

4.11.1 Population and sample size

The research involves the selection of two different types of population namely the SME industries in the electronic, information technology and telecommunication sector and the people involved in strategic decision making in those industries. There was a need to identify what industries can be classified as SMEs in the electronic, information technology and

telecommunication sector (this aspect has been discussed under Section 4.8.3) and in what proportion of these industries need to be chosen to make the sample representative. Next, within those industries sample set of industries were to be chosen. These aspects have been discussed in the following paragraphs.

Similarly, with regard to the people, the target population chosen for data collection was the decision makers in those industries mentioned above. The participants were classified under five levels and occupied the positions ranging from Middle Managers to CEOs with in-between positions identified as Senior Manager, General Manager and Managing Director. This classification was arrived at based on a review of job descriptions and management level positions that are offered by a variety of companies and the responsibilities associated with those positions. For instance according to the website www.collegegrad.com (2014) top management executives includes chief executives or vice presidents of companies who are partial owners and have profit-sharing privileges and supervise subordinate managers. In many SMEs the top management consists of managing directors also (Kassim & Sulaiman, 2011). Similarly www.collegegrad.com (2014) explains that middle managers are those who oversee the activities of one department or sometimes client related activities (all of them) related to one or more clients. Middle managers are also sometimes designated as general managers and senior managers in some SMEs (Simmering, 2006; ~~The Brightwater Group~~ Anon, 2013). One of the main responsibility of these managers in the middle management and top management positions is decision making including strategic decision making (Simmering, 2006). Hence it can be justified that the participants chosen for this research were appropriate for providing responses to the survey questionnaire.

4.11.2 Sample size

According to Sekaran (2003) appropriate sample size is considered to be important by researchers in empirical research to enable the researcher to generalize the findings by establishing the representativeness of the sample. Furthermore many authors have suggested sample size requirements as a thumb rule, examples of which are given in Table 4.17.

Table4.17, Comparison of sample size requirements for large populations

Author/s	Size of population	Sample size/percentage	Remarks
Roscoe (1975)	--	Size-30-500	For most research
		Size-Minimum 30	For sub-samples
		Preferably 10 times or more in comparison to the number of variables in the study	Applicable to multivariate research
Gay (1987)	--	Size- 50	Very poor
		Size- 100	Poor
		Size- 200	Fair
		Size- 300	Good
		Size- 500	Very good
		Size- 1000	Excellent
Comrey and Lee (1992)	0-100	100%	10% of large populations and 20% of small populations as minimums
	101-1,000	10%	
	1,001-5,000	5%	
	5,001-10,000	3%	
	10,000+	1%	

While there are formulas for calculating the sample size, researchers believe that such formulas are applicable only when the size of the population is small, say for instance less than 5000 (UNFCCC/CCNUCC, 2012). The reason for such an argument arises from the fact that there will be hardly any difference between the sample size calculated exactly using a formula or an approximation introduced in the formula (for instance thumb rule figures) (UNFCCC/CCNUCC, 2012). Thus for this research where the size of the total population was estimated at about 10,000 SMEs in the electronic, telecommunication and IT industries spread over four countries, the rule of thumb figure of 500 sample size was chosen. This is supported by the data given in Table 4.17. The estimation of 10,000 SMEs in the electronic, telecommunication and IT sectors as the size of the population was made based on extrapolation of the overall figures of the SMEs in each country and the number of known SMEs in this sector in Bahrain. The details of the number of SMEs reported in the Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait and United Arab Emirates are provided in Table 4.18.

Table4. 18, SME, Hertog (2010)

2007 Data				
No.	Country	Total number of SMEs	Number of SMEs in the electronic, telecommunication and IT sectors	Extrapolated estimate of SMEs in the electronic, telecommunication and IT sectors based on Bahrain figure of 500
1.	Kingdom of Bahrain	40,000	500	-
2.	Kingdom of Saudi Arabia	700,000	Not available	8,750
3.	Kuwait	33,000	Not available	500
4.	United Arab Emirates (Dubai)	85,000	Not available	1,000
Total				10,250
Note: Extrapolation with respect to 500 SMEs in the electronic, telecommunication and IT sectors in Bahrain was done as follows: If Bahrain is having 500 SMEs in the electronic, telecommunication and IT sectors out of an overall SME figure of 40,000, the Kingdom of Saudi Arabia could be assumed to have 8,750 SMEs in the electronic, telecommunication and IT sectors. The rationale behind this is that 700,000 SMEs in the Kingdom of Saudi Arabia is 17.5 times higher than Bahrain. Thus SMEs in the electronic, telecommunication and IT sectors where considered to be 17.5 higher than the Bahrain figures of 500. That this 17.5 x 500 = 8,750. Similar arguments could be provided with respect to Kuwait and United Arab Emirates (Dubai)				

Another important aspect is the sampling method that needs to be adopted for this research. According Saunders et al. (2009) there are two basic types of sampling namely probability and non-probability sampling. Probability sampling also termed as representative sampling is associated with inferences made on entire population based on a representative sample drawn from the population. Probability sampling is widely used in survey research. Non-probability sampling is referred to as non-random sampling which involves selection of samples based on subjective judgment of the researcher. An example of research where non-probability sampling is used is the case study research where a small sample of subjects is chosen to make in-depth study (Saunders et al. 2009). However in this research probability sampling was used as it is survey based research where the sample size itself is very high, representing the decision makers in the SMEs and was of the order of nearly 500. While there are different types of sampling techniques that could be used under probability sampling, like simple random sampling, systematic sampling, stratified random sampling, cluster sampling and multistage sampling (Saunders et al. 2009), this research adopted the simple random sampling method. The rationale behind choosing this method arises from the need to collect data from a population that is identified, listed, large, accurate and easily accessible. In addition only one person each from a firm was requested to provide the response and this person could be anyone who was holding a position in the top or middle management level as mentioned in Section 4.11.1.

Further to selecting the sample size, representativeness of the sample was ensured, by collecting data from SMEs belonging to three different industries namely electronic,

telecommunication and IT where decision makers were holding similar positions although some of the characteristics of the industries varied. For instance electronic industry has mainly product-based business activities with support services, whereas the telecommunication and IT industries have both product-based and service-based business activities. Another important aspect is that data was collected from four different countries with different business environments which provides representativeness of the sample population with regard to the overall population. After determining the sample size, the next step was to understand precisely how the data would be collected for this research.

4.11.3 Data collection

There are two types of data, primary and secondary, that were collected for this research (Sapsford and Jupp, 2006). Primary data are those which are new and collected specifically for the purpose of the research, whereas secondary data those that have been collected already for a different purpose but find utility for the current research (Saunders et al. 2009). Secondary data for this research was collected from already published reports and journal papers. Primary data was collected through the research instrument developed for this research.

The target segment was the electronic, telecommunication and IT industries in the SME sector. The territory chosen was the four GCC countries as noted above. Since it was not easily possible for the researcher to go in person to the industries located in the countries, a professional consulting firm in the Kingdom of Bahrain was assigned the task of distributing the research instrument to the list of industries in these countries and collect them back. The consultancy firm was chosen because of three reasons. The first one was that they had a facility to reach SMEs in the four countries chosen. The second was they had a database of firms in the GCC region which included SMEs in the electronic, information technology and telecommunication sector. Thirdly the consultancy firm was headquartered in Bahrain and it was possible to have smooth coordination with the consultants.

The role of the consultancy firm was to collect primary data using the research instrument developed by the researcher. The firm was used as an outsourced professional consulting surveying agency in Bahrain. The consultancy firm was given the target sample size of subjects from whom data was required to be collected as 500. The consultancy firm approached industries through e-mail, spread over four countries, Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait and United Arab Emirates and were randomly chosen. The consulting company used appropriate data bases of companies and directories to carefully select SMEs in the electronic, telecommunication and IT industries, and that they did not

contact the companies until the researcher was happy that sampling frame was appropriate. The respondents sent the completed questionnaire back to the consulting firm by e-mail it was the responsibility of the firm to ensure that the response are carefully collected and passed on to the researcher without any interference or tampering with the responses. The consultancy firm acted as a channel for the researcher to collect data and facilitated data collection by following up with the firms. Through this process the consultancy firm was able to fetch data for the researcher. Through this process the number of valid responses received and used for this research stood at 464.

Data was collected between January and March 2012. The final number of valid responses collected by the consulting firm was 464. The complete details regarding the number of responses received from each one the four countries, demographic details and others are provided in Appendix III. The collected data provides comprehensive information about the number of participants occupying different levels as well as the distribution of subjects across the countries. The main advantages of employing a professional consulting firm for collecting data were better response rate, collection of data in a shorter period of time, wider reach, dependable, and the researcher is independent of the subject from whom data is being collected. The main drawback was the cost involved in hiring the firm. However considering the wider reach, time frame in which the data was collected and effort saved by the researcher in physically approaching the various firms in different countries, the cost borne by the researcher in using the services of the consulting firm turned out to be economical.

With regard to the response rate of 464, it can be said that this number falls very close to 500, a sample size recommended by many authors (Table 4.17). Thus 464 responses were considered to be an appropriate response rate that enabled the researcher to answer the research questions.

The foregoing discussions cover the data collection aspects pertaining to this research. After collecting the data through the main survey, the next step involved was the data analysis. The following section discusses the data analysis aspects in detail.

4.12 Data analysis

In order to analyse the data, Software Package for Social Sciences (SPSS) version 18 was used. (SPSS) is a widely used tool by researchers to perform statistical data analysis. A variety of statistical data analyses could be performed using SPSS that included descriptive statistics analysis, missing data analysis, presence of outliers, normality check of data distribution and presence of multicollinearity.

In addition to SPSS, AMOS (Analysis of Moments Structures) version 18 was used to perform CFA, model analysis (model estimation), model evaluation (model fit) and model path analyses (Abramson et al. 2005). AMOS is a widely used statistical tool in computing structural equation modelling (Arbuckle, 2010). In addition AMOS has the capability to analyse mathematically as well as pictorially. AMOS Graphics builds measurement and structural models as well as inbuilt capability to test, modify and retest both specified models and alternate models. Equivalence of groups or samples and testing of hypotheses are also possible using AMOS. Keeping these aspects in mind many researchers have used and suggested use of AMOS in empirical research (Arbuckle & Wothke, 1999; Ullman, 2001). Furthermore AMOS automatically uses the data file that is open in SPSS Statistics (Arbuckle, 2010).

4.12.1 Data coding

According to Pallant (2011) it is necessary to prepare a codebook in order to enter the information or data collected from the research instrument into SPSS. There are two steps involved in preparing the codebook which are variable definition and labelling of each one of the variables and allocating numbers to every one of the possible responses. The information generated thus could be recorded in a computer file (Pallant, 2011). In this research all the variables in the research instrument were listed using abbreviated variable names as required in SPSS as well as the codes of the responses. The detailed variable and coding list is provided in Appendix IV.

4.12.2 Data edition

The data file created for the purposes of analysis using SPSS was edited in order to check for errors in data entry, omissions, uniformity as well as completeness of data entered into SPSS. Frequency distribution command in SPSS was used to accomplish this. Descriptive statistics enabled the researcher to screen the data against each variable leading to verification of whether the responses coded as numbers were out of range. Minor errors were found in data entry using frequency analysis, which were corrected and the data was ready for further analysis. Only one SPSS data file was maintained throughout the research.

4.12.3 Descriptive statistics

According to Pallant (2011), descriptive statistics provide a useful method of verifying whether certain assumptions made before analyzing data statistically are met or not. Such assumptions include:

- checking for normality,
- that variables are measured using interval or ratio (continuous) scales,

- that participant in the survey provides responses on both independent and dependent variables,
- observations are independent of one another and
- relationship between two variables is linear.

Descriptive statistical measures that could be used to check the assumptions include minimum, maximum, frequency, percent, mean, standard deviation, skewness, kurtosis and Pearson correlation (Pallant, 2011). Some of the advantages a researcher can gain by using descriptive statistics include description of the characteristics of the sample, examining the variables for non-conformity to assumptions used during the statistical analysis process and enabling the researcher to answer specific research questions (Pallant, 2011). Complete discussion on the descriptive statistics is provided in Chapter 5 under Section 5.2.1.

The assumptions that have been made for this research include that the variables were measured using interval (continuous) scales, the data distribution was normal, participants in the survey provided responses on both independent and dependent variables, observations were independent of one another and the relationship between two variables was linear. These assumptions are in line with the assumptions suggested by other researchers like Pallant (2011). With regard to the assumptions made for this research the following details provide how they have been addressed within this study.

The first assumption that the variables were measured using interval (continuous) scales, have been addressed under Section 4.8.2 and Appendix I where it can be shown that the questions were measured using a 5-point Likert scale which is considered as an interval scale. Hence the first assumptions can be considered to be satisfied. Discussion on the normality test of the data is provided under Section 4.12.6. Discussion on the assumption that participants in the survey provided responses on both independent and dependent variables is provided in Chapter 5 under Section 5.2. Discussion on the assumption that observations were independent of one another is covered under the Section 5.7 on discriminant validity.

The researcher prepared the data to ensure that there are no missing data and presence of outliers is addressed. These two aspects are necessary conditions for using AMOS.

4.12.4 Missing data

Missing data have an important role to play in the accuracy of the results obtained through statistical analysis. For instance missing data could impact the sample size and have the potential to reduce adequate samples to inadequate samples (Hair et al. 2006). Furthermore

missing data have been identified as a problem in structural equation modelling using AMOS like problems in fitting the model (Arbuckle, 2005). Thus it was necessary to test whether there are any missing data in the data file. Whether data were missing was checked using frequency reports generated by SPSS, as is provided in Appendix V. It can be seen that data was complete and there was no missing data.

4.12.5 Outliers

Many statistical methods like regression used in empirical research are sensitive to outliers (Janssens et al. 2008). Outliers are extreme values that may or may not be part of the original data (Saunders et al. 2009) as well as members of the population that the researcher intends to sample (Tabachnick & Fidell, 2007). The immediate cause of concern that arises due to this is that the range over-estimates the spread of data leading to possible misspecification of the model.

Common ways of measuring outliers in empirical studies include estimating the Mahalanobis distance and examining Boxplots. SPSS could be used to determine outliers using Mahalanobis distance as well as Boxplots (DeCarlo, 1997). According to Hodge and Austin (2004) Mahalanobis distance measure is widely used and is one of the most accurate methods used in multivariate analysis to detect outliers. However some authors argue that Mahalanobis distance may pose difficulties under certain conditions which include outliers that are grouped into one or more clusters, separated from the sample (Juan & Prieto, 1997). Similarly Boxplots have been widely recommended by researchers to ascertain outliers although some researchers have cautioned against its limitations (Seltman, 2012). For instance Seltman (2012) argues that Boxplots are an exploratory technique and are based on judgements rather than clear numerical measurements. Seltman (2012) argues that boxplot outliers may or may not be mistakes and many mistakes may not also be included making the estimation of number of outliers inaccurate. Furthermore boxplots are criticised to be dependent on sample size (Seltman, 2012). Considering the abovementioned arguments, it was concluded that measuring Mahanabolis distance is a more accurate way of detecting outliers. Thus in this research outliers were detected using Mahalanobis distance.

The SPSS outputs related to Mahalanobis distance calculated for each one of the variables is given in Table 4.19. The procedure involved checking how many of the responses under each construct whose measured Mahalanobis distance were beyond a certain reference value. The reference value is determined using the Chi-square statistics. Chi-square statistics tables are standard tables that provide Chi-square statistic (D2) depending on the degree of freedom (df) of the construct and p-value of significance. The table provides Chi-square statistic against

three different p-values namely p=0.05, p=0.01 and p=0.001. df is calculated as a figure which is equal to the total number of items under a construct (Tabachnick & Fidell, 2007). For instance the number of items under the construct DMI is 8. The df for DMI is 8. Thus for a df of 8 the Chi-square statistics table was consulted. Since Chi-square statistic can be computed for three different values of p, it is possible to provide three different Chi-square statistic for a df of 8. That is D2 can be 15.51 (p=0.05) or 20.09 (p=0.01) or 26.13 (p=0.001). It must be pointed out here that a widely used p-value as reference for computing Chi-square statistic is 0.001 (Tabachnick & Fidell, 2007).

The Mahanabolis distance measure was calculated using regression method in SPSS. Firstly the mean value of each one of the variables was computed using SPSS. For instance the mean value of DMI is the sum of the average value of the responses for each one of the items divided by 8 and was coded as MEANDMI in SPSS. MEANDMI was regressed with the eight items that measured DMI. Using this process it was possible to calculate the Mahanabolis distance for DMI. The same steps were repeated for other variables.

According to researchers the Mahalanobis distance for any variable under a construct if exceeds the Chi-square statistic (D2) value extracted from the Chi-square statistics table for a particular degree of freedom, then outlier is supposed to exist. For instance the df for DMI is 8. From the Chi-square statistics table it was found that the D2 value at a p=0.001 as 26.13. Thus the Mahalanobis distance for DMI with respect to any one of the 464 responses should not exceed 26.13 if there are no outliers. Mahalanobis distance measure obtained from the SPSS output for DMI did not show any single response exceeding 26.13.

In this context from the Table 4.19 it can be seen that the maximum number of outliers that was reported by SPSS was 12 for the construct DYMS. The minimum number of outliers reported was zero for the construct DMI. The number of outliers detected with regard to DME and FC were one and two respectively. For the remaining constructs the number of outliers present varied between four and eight. Overall it was found that the number of responses that were found to be outliers as measured by Mahalanobis distance was low. According to Janssens et al. (2008) if the number of outliers is few then the outliers could be left as part of the dataset as they are not likely to affect the data analysis. As a corollary it can be said that if the number of outliers is large then separate analysis of the outliers needs to be carried out. This was not the case in this research. Hence it was concluded that the presence of outliers in the current research would impact the overall results of the data analysis and these outliers were left to remain as part of the dataset for further analysis.

Table4.19, Outliers

	Construct	No. Of items	D2 (0.00)	DF	Items Exceeding Mahalanobis Distance
1.	Mean DMI	8	MAH-8 = 26.13	8	Nil
2.	Mean RDM	4	MAH-7 = 18.47	4	120, 157, 180, 347
3.	Mean INTUITION	5	MAH-1 = 20.52	5	49, 193, 271, 347
4.	Mean FP	5	MAH-2 = 20.52	5	64, 94, 176, 193, 222, 225, 226, 347
5.	Mean DYMS	9	MAH-3 = 27.88	9	26, 85, 165, 193, 219, 224, 226, 253, 300, 312, 328, 375
6.	Mean DQODP	5	MAH-4 = 20.52	5	100, 104, 114, 116, 175, 331, 386
7.	Mean FC	4	MAH-5 = 18.47	4	138, 377
8.	Mean DME	5	MAH-6 = 20.52	5	143

After ascertaining the presence of outliers and ensuring that their presence does not affect the research outcomes, the next step was to verify whether the data collected are normally distributed, a condition essential for performing Confirmatory Factor Analysis.

4.12.6 Normality

For structural equation modelling, availability of normal data is an important requirement (Teo, 2009). Furthermore, non-normal data can result in the data analysis being biased (Kennedy & Bush, 1985). Moreover, non-normal data can impact the efficiency of the statistical estimator as efficiency is linked to the replicability of an estimator (Zumbo, 1994).

Normality, a test of distribution of data about the normal, was tested using Kurtosis and Skewness measures (Hair et al. 2006) as well as examining the histograms obtained using SPSS. Skewness provides an understanding of the symmetry of the distribution while kurtosis provides an idea about the peakedness (positive kurtosis) of the distribution (Pallant, 2005) or flatness (negative kurtosis) of the distribution of data with respect to the normal distribution (Kenny & Keeping, 1962). With regard to skewness, positive values indicate a shift of the data distribution to the left while negative values indicate a shift to the right. According to Holmes-Smith et al. (2006) skewness and kurtosis values less than one can be neglected while values between one-to-ten indicate moderate non-normality and values greater than ten indicate severe non-normality.

Skewness and kurtosis were tested based on the above-mentioned arguments of Holmes-Smith et al. (2006) and Weisstein (2004). Furthermore some researchers argue that a value between -1 and +1 for both skewness and kurtosis is acceptable (Muthén & Kaplan, 1985) while Kline (2005) argues that skewness and kurtosis values should not exceed absolute values of 3 and 10 respectively. Hair et al. (1998) argue that skewness below two and kurtosis below three are acceptable values. However, widely researchers agree that ideally if data are normal then skewness and kurtosis will both approach zero value (Daud et al. 2011). Based

on these arguments SPSS output was examined. It was found that except for questions Q28 and Q29, for all others the skewness and kurtosis values were within +/-2 and +/-3 respectively. In the case of Q28 kurtosis was 3.4 and Q29 it was 5.6. These two questions were kept under observation and used in subsequent data analysis to find out how they affect the data analysis before taking any decision. The outcome of the data analysis with regard to using Q28 and Q29 in the model is provided in Section 5.7.2. The SPSS output is attached for reference (Appendix VI).

Further to assessing the normality of the data, the next step involved considering other important steps involved in the data analysis. While the following discussions are aimed at Multicollinearity, Structural Equation Modelling (including Confirmatory Factor Analysis - CFA), Unidimensionality and Common method bias, these discussions are brief and are on the theoretical aspects only. The actual data analysis aspects are covered comprehensively in Chapter 5 that follows, which discusses the details of the data analysis of the main survey.

4.12.7 Multicollinearity

This parameter was checked using correlation amongst the variables. AMOS was used to assess this measure. According to some researchers multivariate techniques are effective only if dependent variables are correlated moderately else the problem of collinearity is said to exist. For instance according to Pallant (2005), correlations around 0.8 or 0.9 can cause collinearity while Hayduk (1987) considers values around 0.7 or 0.8 are causes for concern. However in this research sample correlation value between two indicators exceeding 0.80 were considered as cause of concern with indicators showing correlation exceeding 0.80 standing to be deleted. In this research sample correlations were examined for all the variables using SPSS output and variables that exceeded 0.8 were deleted. A detailed discussion on the collinearity effect and the outcome of the analysis including identifying those items that were the cause of multicollinearity and what was done about them, is provided under Section 5.7.4.

4.12.8 Method bias

Common method bias is said to occur when the measurement instrument introduces systematic variance into the measures (Doty & Glick, 1998). For instance, if data on variables, both independent and dependent, are collected from the same respondent method bias could be introduced. This bias can be attributed to the design of the data collection instrument and could be overcome by varying the format of the instrument by clearly delineating the sections (Podsakoff et al. 2003). A common method used by researchers to test the presence of common method bias is the Average Variance Extracted (AVE) statistical

test (Merrilees et al. 2011). A detailed discussion on the outcome of the AVE test is provided in Section 5.18.

4.13 Structural Equation Modelling (SEM)

According to Janssens et al. (2008) Structural Equation Modelling is a technique employed to estimate a set of regression equations simultaneously. SEM is a combination of factor analysis and regression analysis (or path analysis) (Janssens et al. 2008; Hox & Bechger, 1998). Hox and Bechger (1998) argue that SEM offers a very common and suitable framework for analysing data using statistics. SEM is purported to include many traditional multivariate procedures like for instance factor analysis, regression analysis, discriminant analysis and canonical correlation (Hox & Bechger, 1998).

According to Abramson et al. (2005), SEM combines the power of factor analysis as well as multiple regression test models about research topics. Factor analysis is used to reduce a set of variables to a smaller set of underlying factors and enable the researcher to ascertain the variables that load on each one of those underlying factors. Akin to factor analysis, multiple regression enables the researcher to determine the set of independent variables that predict or explain a specific dependent variable and to what extent its variance is predicted by those independent variables (Tabachnick & Fidell, 2001). However, Abramson et al. (2005) argue that SEM goes beyond the capability of factor analysis and multiple regression analysis. It enables the researcher to test expected relationships between set of variables and factors on which they are likely to load, a feature which it executes in addition to its capability to perform factor analysis and hence considered as a confirmatory tool (Byrne, 2001; Kline, 1998).

Furthermore, SEM enables researchers to explain the variation in the dependent variables due to a variation in independent variables like with multiple regression analysis. However, unlike in multiple regression analysis, it also models the direction of interaction between variables within the multiple regression analysis. Moreover while modelling many regression equations simultaneously which includes use of moderators or mediators if necessary (Byrne, 2001; Kline, 1998), SEM goes even further and allows researchers to test alternative model structures as well as relationships between constructs and variables (Byrne, 2001; Kline, 1998; Ullman, 2001). Other characteristics of SEM include its ability to test whether the same model can be applied across groups and identify reliability and error terms (Byrne, 2001; Ullman, 2001).

The main aim of SEM is to identify a model that facilitates the researcher to make theoretical sense of the model as well as to examine whether the model is a good fit to the data (Kline, 1998). SEM also aims at identifying whether the model is parsimonious (Arbuckle & Wothke, 1999; Ullman, 2001) although it is essential that model is supported by theoretical underpinning or previous research (Abramson et al. 2005). In addition, the main idea behind SEM is that it allows a correspondence between the model covariance matrix and sample covariance matrix to be as close as possible leading to the estimation of the research model.

Despite the many advantages that can be attributed to SEM, still some researchers caution against the tremendous optimism one may have about using SEM. For instance one of the advantages that is attributed to the use of SEM is the possibility to derive causal interpretation of the results obtained from SEM (Hox & Bechger, 1998). The reason being, SEM essentially depends on correlational data and interpreting the final model as a causal model could be a serious error of judgement because there is nothing in SEM that can transform a correlational data into causal judgements (Cliff, 1983). Another criticism that can be levelled against SEM is that assumptions have to be made while using SEM and these assumptions need to be tested prior to applying SEM lest the results are not dependable (Abramson et al. 2005). For instance normality of data used in SEM to develop models is an important assumption that a researcher makes prior to applying SEM. If data are not normal, then the outcome from the application of SEM could be questionable.

Despite the criticisms, SEM is still seen as a very potent tool in statistical analysis and modelling. The researcher took into account the limitations of applying SEM to this research and has taken the required precautions to ensure that the results obtained from SEM are appropriately interpreted and data are properly screened prior to their use. Here it is worthwhile to know about some of the characteristics and steps involved in applying SEM to this research. An important characteristic of SEM is the language or terminology used in SEM. Table 4.20 provides the details.

Table4.20, SEM language and terminologies

No.	Term	Interpretation	Author /s
1.	Observed variable (Manifest variable)	Variables that are measured effectively like using a Likert scale. These are referred to as items or questions. They are also referred to as indicators.	Janssens et al. (2008); Abramson et al. (2005)
2.	Non-observed variable (latent variable)	These variables are not measured directly. These variables are measured or estimated based on the score for and the variance of the observed variable.	Janssens et al. (2008)
		Latent variables are those which are theoretical constructions of manifest variables. Latent variables equate to factors in factor analysis.	Abramson et al. (2005); Arbuckle and Wothke (1999); Byrne, (2001); Joreskog (1977, 1993); Kline (1998); Ullman (2001)
3.	Endogenous variables	Variables that are of interest and are explained within the constraints of the model being tested.	Byrne (2001); Kline (1998)
		These variables equate with dependent variables in multiple regression analysis.	Byrne (2001); Joreskog (1993)
4.	Exogenous variables	Variables used to explain relationships within the model.	Byrne (2001); Kline (1998)
		These variables equate with independent variables in multiple regression analysis.	Byrne (2001); Joreskog (1993)
5.	Non-recursive models	Models that have bidirectional "causal" relationships, that is, feedback loops, correlated error terms, or both.	Arbuckle and Wothke (1999); Byrne (2001); Kline (1998); Ullman (2001)
6.	Recursive models	Variables that have unidirectional "causal" relationships and independent error terms.	Arbuckle and Wothke (1999); Byrne (2001); Kline (1998); Ullman (2001)
7.	Moderators	Variables that interact with the relationship of one variable's impact on another's.	Baron and Kenny (1986)
8.	Mediators	Variables that affect the relationship between two other variables. Mediators come between two variables such that the first variable has an indirect effect on the second variable, through its direct effect on the mediator.	Baron and Kenny (1986)
9.	Error term	Non-observable; determine the unique variance of a variable.	Janssens et al. (2008)
10.	Double pointed arrows	Indicate correlations and covariances.	Janssens et al. (2008)
11.	Single pointed arrows	Indicate causal effects	Janssens et al. (2008)

Other characteristics of SEM include its ability to estimate parameters that include direct effects, means, intercepts, variances and covariances (Byrne, 2001). In addition Joreskog (1977) argues that SEM allows the researcher fix these parameters to a pre-assigned value or set them equal to other parameters as constraints or can be freely estimated.

Furthermore there certain steps that are involved in applying SEM in model estimation. These include specification of the model, identification of the model, selection of the measures, collection of data, data cleaning and preparation, analysis of the model and its evaluation, and re-specification of the model (Kline, 1998).

The entire application of SEM and the outcomes derived are provided in Chapter 5. Many researchers in the field of strategic decision-making process have successfully used SEM as an important technique for instance Papadakis et al. (1998) and Elbanna and Child (2007). Such leading researchers have used SEM to develop, estimate and measure models as also provide causal links using the outcomes derived from SEM. The researcher is in line with such previous research efforts in applying SEM to the current research.

After discussing in detail about the process of data analysis which includes various steps involved as well as the technique used in measuring the research model, it is important to gain knowledge on an important process called Confirmatory Factor Analysis (CFA), an essential component of SEM. Details on how CFA contributes to this research are provided next by taking appropriate support from the relevant literature.

4.14 Confirmatory Factor Analysis (CFA)

Albright and Park (2009) argue that factor analysis in general is a method used in statistics to unearth a small set of unobserved variables, also called latent variables or factors, which can explain for the covariance among a larger set of observed variables, also referred to as manifest variables. According to Jackson et al. (2009), CFA is a powerful tool used in statistical data analysis to investigate the nature of and relations amongst non-observed variables, for instance rationality, decision magnitude of impact, intuition, decision process effectiveness and the like. Brown (2006) argues that CFA has been widely used as an analytical tool by many researchers to develop as well as refine research instruments, examining construct validity, determine method effects and assess factor invariance across time horizons (e.g. cross-sectional or longitudinal) and contexts (e.g. various groups). According to Carmines and Zeller (1979) factor analysis can be used to assess the reliability and validity of the instrument scales.

These arguments clearly indicate that CFA could be used as a tool for this research where the researcher has developed a research relationship model having both observed and latent variables and has a need to analyse the model statistically, evaluate its fitness to data and test hypotheses. The fitness of the model is expected to enable the researcher to answer the research questions. CFA provides the necessary support to the researcher in achieving the

above. CFA is part of the larger family of SEM and many researchers claim that CFA has an essential role to play in path analysis or structural analysis of models (Brown, 2006; MacCallum & Austin, 2000).

Furthermore, researchers have pointed out that CFA is used as the first step while applying SEM, in assessing whether the measured manifest variables truly reflect the desired latent constructs, which is followed by the assessment of the structural model (Thompson, 2004). Brown (2006) asserts that problems noticed in many cases of models derived using SEM are due to issues concerning CFA, meaning that CFA is an important component of SEM. In fact many researchers (e.g. Atuahene-Gima & Li, 2004; Richardson & Ndubisi, 2003) in the field of strategic decision making process have used CFA as an important tool in developing and testing empirical models confirming the fact CFA acts as an important statistical tool for the current research, for instance Elbanna and Child (2007).

While CFA has been argued to be an important tool in evaluating models and testing hypothesis, there are limitations that have attributed to CFA. For instance Jackson et al. (2009) argue that if adequate care is not taken in justifying choice of the population from which samples are drawn, then the results of CFA could suffer due to problems related to external validity of the models. Similarly, assumptions related to collected data, for instance the assumption that data meet multivariate normality criteria, if not correct then such a problem could lead to overestimation of chi-square statistic, a measure used to assess the fitness of data to the model (Powell & Schafer, 2001). Thus, while noting down these limitations that plague CFA, the researcher has applied CFA to this research taking necessary precautions on board. A detailed data analysis related to CFA for this research has been provided in Section 5.7.

4.15 Ethical considerations

That the empirical research conducted by the researcher should follow certain ethics which implies certain code of conduct or expected societal norms in the conduct of the researcher has become an integral part of every research study. Ethical behaviour includes conduct of the researcher while collecting data, behaviour of the participants who provide the data, behaviour during data analysis as well as generating results and presentation of the inferences based on the interpretations and dissemination of findings. Ethical behaviour permeates all levels in the research process. The ethics governing the behaviour also governs how the participants are dealt with and how information is kept confidential (Sekaran, 2000). Furthermore, the researcher is expected to have permissions from the participants in order to conduct the research prior to its commencement. As part of the ethics the researcher is

expected to explain about the research to all the subjects which includes the role of the participants so that participants can participate voluntarily.

The researcher took care that all of the above were satisfied prior to the commencement of the research. The researcher appointed a consulting organisation to distribute the questionnaire and collect data from the subjects as the data was to be collected across a wide geographical area. There was an undertaking given by the consulting organisation (Appendix II) to follow the ethical requirements mentioned above strictly while distributing, collecting and returning the completed questionnaires maintaining full confidentiality and integrity. There was a written obligation on the part of the consultant not to retain any questionnaire collected from the participants and repatriate every collected questionnaire to the researcher faithfully which was done.

The questionnaire was distributed by the consulting organisation through e-mail and contained information to each one of the subjects. Each one of the participant was explained about the research through the covering note attached to the self-administered questionnaire and sufficient care was taken to inform the participants about the voluntary nature of the participation, freedom to answer the questions or decline and withdraw from the survey at any time if a subject felt so.

In addition, the first page informed the participant about the purpose of the research, the aim of the research and a declaration by the researcher that the data collected from the subject would be kept in strict confidence and used only for the purpose of the research and not be used for any other purpose. The researcher ensured that anonymity of the participants was maintained as the questionnaire does not ask for the name of the participant to ensure that the identity of the participant was kept confidential.

With regard to the ethical behaviour of the participant, the participants had a duty to be truthful and honest in their responses (Sekaran, 2000). The self-administered questionnaire had multiple-choice questions that were designed to be simple, easily understood and in English language. Also the participants were required to answer the questions electronically to ensure that the collected data is accurate and clear as there is no manual intervention in the data entry stage. The researcher ensured integrity throughout the data analysis process which included accurate reporting of the analysed data, faithful representation of facts and ensuring that the data analysis was not distorted.

4.16 Chapter Summary

This chapter has provided detail about the research philosophies widely used and discussed in the methodology literature pertaining to empirical research. Apart from the epistemological and ontological aspects the chapter has provided a comprehensive and critical discussion on the research approaches and research methods used by researchers in particular in the field of strategic decision-making. In addition the chapter has provided the rationale for the choice of the quantitative research method that employs the survey research method for this research. The research framework has identified the research method to be used, the data collection method, population targeted, the context and the territory in which the research has been conducted. The research design section provides details on sampling process and the steps involved in the research process including time horizon aspects, units of study, data collection, types of data collected and data analysis aspects. The research strategy section details out the survey research method employed for this research and the survey questionnaire developed for data collection. As part of the data collection process, the section on pre-test has provided full details on the pilot survey, its outcome and its impact on the main survey. Further to this, a comprehensive discussion on data analysis has been provided, which discusses how the main survey was conducted and what data analysis procedure was used. This chapter thus sets the basis for the detailed data analysis performed on the data collected through the main survey in the next chapter, Chapter 5.

Chapter 5

Data analysis

5 Introduction

This chapter addresses the issue of data analysis of the data collected through the main survey. Section A addresses preliminary analysis including (1) descriptive statistics, (2) testing of the reliability of the instrument using Cronbach's alpha and, (3) testing the validity using internal consistency of the measures, inter-item and item-total correlation. Section B addresses the main analysis including (1) construct reliability (2) validity-checking the content validity of the instrument, convergent validity of the constructs and discriminant validity of the constructs, (3) determining the optimum set of variables needed for the model using CFA, (4) testing the initial model using SEM, (5) examining the structural aspects of the model based on path analysis using SEM, (6) model identification, (7) model re-specification, (8) testing of hypotheses (9) assessing the unidimensionality of the model and (10) examining the presence or absence of method bias. Lastly, conclusions provide an overall summary of the chapter. While Section A provided the reliability and validity at the preliminary stage which enabled the researcher to proceed with the main analysis, Section B enabled the researcher to analyse, re-specify and test the research relationship model as well as test the hypotheses. The structure of this chapter is as follows. Data analysis includes two Sections A and B. Section A covers preliminary analyses of descriptive statistics and demography under Section 5.1, reliability in Section 5.2 and validity under Section 5.3. Apart from these content, convergent and discriminant validity measures have been addressed in Sections 5.4, 5.5 and 5.6 respectively. In Section B covers the main analysis under Section 5.7, model analysis under Section 5.8. It also introduces the integrated strategic decision making process model under Section 5.9 alongside discussing various statistical tests under various sections (Section 5.10-5.17). The chapter summary is provided in Section 5.18.

5.1 Section A: Preliminary Analysis

5.1.1 Descriptive statistics

The research on strategic decision-making process in the SMEs in the electronic, telecommunication and IT industries was studied in 464 firms spread over four countries in the GCC. Decisions makers at levels varying between middle managers and CEO were approached and given a survey questionnaire that elicited data that was used to measure the latent variables. In the following sections the responses related to the descriptive namely gender, place of residence, age, years of managerial experience, level of education and position held by the respondent in the company were analysed.

5.1.2 Gender

The number of male respondents was significantly larger in comparison to the female respondents, with the percentage of female respondents who participated in the survey being less than 5% of the total respondents. It is reasonable to assume that the decision making process is not influenced by gender and gender assumes the attribute of a constant.

5.1.3 Place of residence

Although data related to place of residence were collected, the aim of the researcher was to collect data across the Gulf Cooperation Council (GCC) countries to ensure that strategic decision-making process is not affected by place or country as a variable.

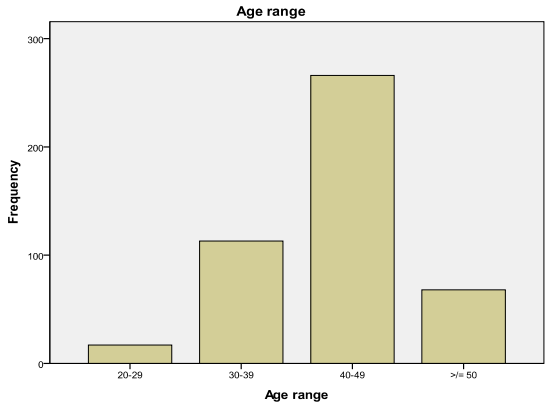
Table5.1, Data on Place of residence as a demographical parameter

No	No. of Respondents	Place of Residence
1.	50	Kingdom of Bahrain
2.	172	Kingdom of Saudi Arabia
3.	79	Kuwait
4.	163	United Arab Emirates

Table 5.1 provides an idea about the number of participants who responded to the survey in each one of the four countries which shows that the respondents are widespread across the countries, enabling the researcher to conduct research without the necessity to identify place as a context.

5.1.4 Age

Figure5.1, Age range of participants

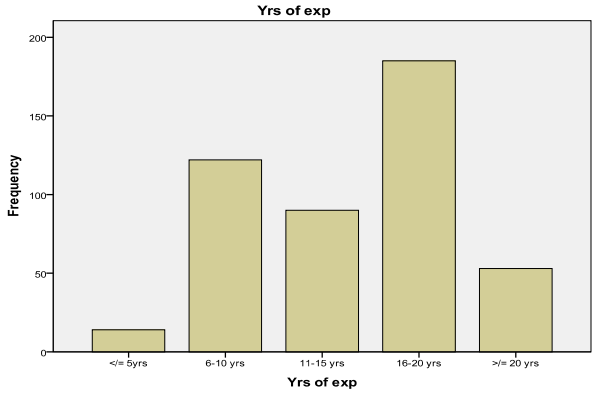


The survey elicited response from respondents belonging to different age groups with most of the respondents belonging to the age group 40-49 (Figure 5.1). While respondents belonging to the other age groups were proportionately less, overall there was a spread amongst different age groups of the managerial staff who participated in the survey. Age as a factor therefore is not considered to affect the decision making process as the range of the age of respondents is

seen to vary widely between 30 and >50 years. Thus it can be assumed that decisions are made regardless of age as a factor and age can be treated as a constant.

5.1.5 Years of managerial experience

Figure5.2, Years of managerial experience



From the Figure 5.2 it can be seen that the range of years of experience is widespread meaning that decision making processes involved persons with a minimum of five years of experience to over 20 years of experience. Thus the data collected from the respondents provides variety in terms of the number of years of experience the respondents have. That is to say, those decisions are made by managers regardless of the years of experience they have. Therefore it is reasonable to assume that the responses collected are free from the impact of years of experience as a factor.

5.1.6 Level of education

Figure5.3, Level of education

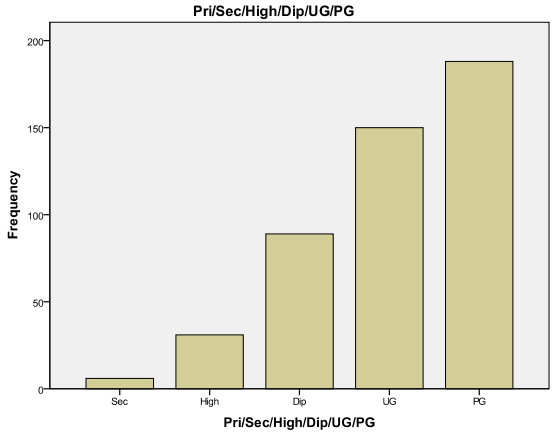
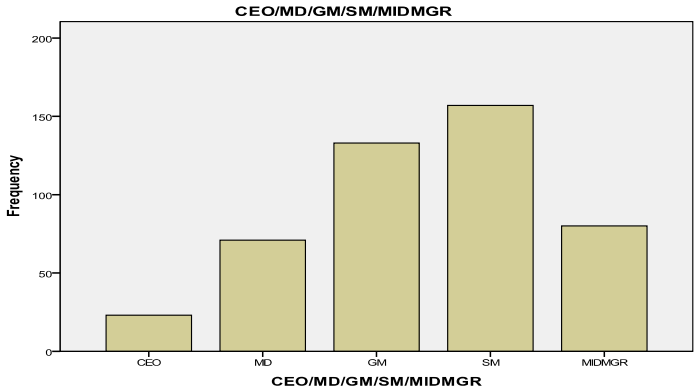


Figure 5.3 indicates that the majority of respondents have postgraduate degrees with nearly a similar number of respondents being undergraduates. The respondents are therefore well educated with the majority of them having a higher education background. The responses from such an elite set of respondents provide strength to the research as it is expected that the

respondents have understood the questions well prior to giving their responses, as well as having the required experience to answer the questions. However involvement of these respondents in the strategic decision making process is not seen to be restricted to just one set of educated respondents. Since responses have been obtained also from secondary education certificate holders and diploma holders it is reasonable to conclude that education level is not a factor that determines the decision making process. Regardless of the educational qualifications, managers are able to make decisions.

5.1.7 Position held by the respondent in the company

Figure5.4, Position held by the respondent in the company



It is possible to expect that the position held by the respondent in the company could impact the decision making process. However Figure 5.4 shows that the majority of respondents who have participated in the survey fall under the Senior Manager (SM) category followed closely by the General Manager (GM) category. This may be due to the fact that SMEs could be have only one decision maker, at the top of the structure, usually the owner (Hambrick & Snow, 1977; Hill & Wright, 2001; Etemad, 2004). Furthermore in the absence of any research outcome that indicates that there is a well-defined decision-making process in SMEs (Gibcus et al. 2004) it is not possible to conclude that positions play a major role. Hence it is reasonable to infer that positions could be assumed to be constants as positions do appear to be affecting the decision making process and can be considered as factors not affecting the SME sector especially in the electronic, telecommunication and IT sectors. A unique feature of this research is that research in the field of strategic decision-making process in the GCC is being conducted for the first time. Thus the results of this research are likely to be the forerunner for future research.

5.2 Preliminary analysis of reliability

All interval scale items used in the questionnaire were tested for internal consistency using Cronbach's alphas. Values of alpha greater than 0.8 was considered good and that between

0.7 and 0.8 was considered as acceptable. In general researchers agree that alpha values exceeding 0.7 are acceptable (Hills, 2005; Tabachnick & Fidell, 2007). Based on the above, reliability values generated by SPSS (Cronbach's alpha) were examined against the abovementioned values and the values of all items under each construct were found to be higher than 0.7 indicating acceptable reliability with a minimum of 0.789 for Dynamism in the industry (refer Table 5.2).

Table5.2, Summary of reliability and validity values

Construct	α >0.7	Reliability results	Inter Item >0.3		Item - Total >0.5	
			Lowest	Highest	Lowest	Highest
Decision magnitude of impact	0.921	Good	0.342	0.771	0.581	0.819
Rationality in decision making	0.874	Good	0.543	0.782	0.667	0.825
Intuition	0.878	Good	0.374	0.953	0.522	0.808
Firm performance	0.918	Good	0.558	0.902	0.726	0.836
Dynamism in the industry	0.789	Acceptable	0.076	0.654	0.318	0.607
Decision process output constructs						
Quality of the decision process output	0.863	Good	0.414	0.822	0.558	0.760
Firm's (Organisation's) commitment	0.915	Good	0.652	0.813	0.781	0.839
Decision making effectiveness	0.909	Good	0.544	0.815	0.697	0.843

In fact the reliability values were found to be better than the ones achieved during the pilot survey (Table 5.3) except for the construct Dynamism in the industry whose value slightly reduced, but was nevertheless higher than 0.7. Thus the data collected for this research can be considered to be reliable. The high reliability values indicate that items under a construct (or the concept) are positively correlated to each other. This can also be interpreted that the items under each construct are independent measures of the same construct or concept, thus indicating accuracy of measurement in the survey (Sekaran, 2003).

Table5.3, Comparison of Cronbach's alpha values between the pilot survey and the main survey

No.	Constructs	Cronbach's alpha (pilot survey)	Cronbach's alpha (Main survey)
1.	Decision magnitude of impact	0.837	0.921
2.	Rationality in decision making	0.678	0.874
3.	Intuition	0.546	0.878
4.	Firm performance	0.813	0.918
5.	Dynamism in the industry	0.9	0.789
Decision process output constructs			
6.	Quality of the decision process output	0.821	0.863
7.	Firm's (Organisation's) commitment	0.74	0.915
8.	Decision making effectiveness	0.813	0.909

Furthermore, inter-item and item-to-total correlations were also considered to assess the internal consistency of the items used in this research. According to some researchers inter-item correlation values are acceptable if they exceed 0.3 while item-to-total correlation values should exceed 0.5 (Robinson et al. 1991). In fact one of the researchers namely Cohen (1988) suggests a classification of correlation values for easy understanding of their meaning, which are:

- Correlation values, both positive and negative, in the range of 0.10 to 0.29: Small correlation.
- Correlation values, both positive and negative, in the range of 0.30 to 0.49: Medium correlation.
- Correlation values, both positive and negative, in the range of 0.50 to 1.0: Large correlation.

For this research internal consistency of the instrument was measured using the abovementioned values as reference. Table 5.2 provides the inter-item and item-to-total correlations. It can be seen from the Table 5.2 that all inter-tem and item-total correlations for all constructs except Dynamism in the industry are above 0.3 and 0.5 respectively. The inter-item correlation output from SPSS for Dynamism in the industry is provided in Table 5.4.

Table5.4, Inter-item correlation for the construct Dynamism in the industry

Inter-Item Correlation Matrix									
	DYNAMISM24	DYNAMISM25	DYNAMISM26	DYNAMISM27	DYNAMISM28	DYNAMISM29	DYNAMISM30	DYNAMISM31	DYNAMISM32
DYNAMISM24	1.000	.495	.391	.225	.364	.219	.260	.340	.212
DYNAMISM25	.495	1.000	.647	.156	.466	.314	.271	.077	.111
DYNAMISM26	.391	.647	1.000	.223	.405	.342	.214	.189	.169
DYNAMISM27	.225	.156	.223	1.000	.143	.076	.497	.330	.635
DYNAMISM28	.364	.466	.405	.143	1.000	.551	.243	.122	.091
DYNAMISM29	.219	.314	.342	.076	.551	1.000	.168	.089	.067
DYNAMISM30	.260	.271	.214	.497	.243	.168	1.000	.444	.654
DYNAMISM31	.340	.077	.189	.330	.122	.089	.444	1.000	.540
DYNAMISM32	.212	.111	.169	.635	.091	.067	.654	.540	1.000

In the case of the construct Dynamism, items contributing to low inter-item correlation were (Dynamism 27, Dynamism 29, Dynamism 30, Dynamism 31 and Dynamism 32). If these items were to be deleted the inter-item, correlation improved. The SPSS output which shows the inter-item correlation if these items are deleted is provided in Table 5.5. The reason for deleting these items was based on the judgement of the correlation between these items and the rest as indicated in Table 5.4.

Table5.5, Inter-item correlation for the construct Dynamism in the industry after deleting items

Inter-Item Correlation Matrix				
	DYNAMISM24	DYNAMISM25	DYNAMISM26	DYNAMISM28
DYNAMISM24	1.000	.495	.391	.364
DYNAMISM25	.495	1.000	.647	.466
DYNAMISM26	.391	.647	1.000	.405
DYNAMISM28	.364	.466	.405	1.000

Although Table 5.4 indicated that the internal consistency of the construct Dynamism in the industry could improve, the items were not deleted at this stage. The reason being was because if the items were to be deleted at this point, it will be based more on the judgment of the researcher and not on a rigorous analysis of data. Since more rigorous tests like confirmatory factor analysis were to be conducted (presented later in this chapter), the items were retained for further investigation.

An important corollary that can be brought out at this point is that the results of Cronbach's alpha (Table 5.5), a measure of internal consistency, are supported by the actual internal consistency measures derived from the inter-item and item-to-total correlation (Table 5.2). After discussing the reliability aspects of the data and the instrument, the next step was to assess the validity of the instrument at the preliminary level.

5.3 Preliminary analysis of validity

Three different validity criteria were applied in this research based on the guidance provided by earlier researchers, namely content validity, criterion validity and construct validity (Sekaran, 2003). All the three validity criteria were applied in this research to establish the validity of the data.

5.4 Content validity

According to Hair et al. (2006) content validity could be tested by assessing the correspondence between the individual items under a construct and the underlying concept through ratings provided by experts in the field as well as pre-testing through a pilot survey. In this research the initial questionnaire was sent to three experts in the field and was modified prior to the pilot survey. Based on the pilot survey the items under each construct were reviewed by three experts and contents were adjusted again before the main survey. Thus the content validity was achieved.

5.5 Convergent validity

Another important validity criterion is the convergent validity or criterion validity (Zikmund, 2003). According to some researchers convergent validity in a way also establishes construct validity (Straub et al. 2004). Some researchers argue that convergent validity is exhibited when each one of the items used in the measurement scale correlate strongly with the latent construct it measures (Gefen & Straub, 2005) indicating that correlational analysis could be used to measure convergent validity. Hair et al. (2006) highlight that high correlations point towards the scales measuring their intended theoretical constructs. However low inter-item

correlations could be retained as these relationships can be examined during the SEM analysis and further decisions on retaining the items causing low correlation could be taken.

With regard to the validity of the instrument at the preliminary stage the convergent validity which is one way of measuring the construct validity was measured. This is in line with the arguments given in Section 4.9.5. Again as explained in Section 4.9.5 correlational analysis provides the convergent validity. High correlations between items indicate that the scales are measuring the concept being measured (Hair et al. 2006). Inter-item correlations measured for all constructs (Table 5.2) were higher than 0.3 (reference value) except for the construct Dynamism in the industry. The lowest inter-item correlation recorded was 0.076 for Dynamism in the industry. This construct was identified by the researcher to be further investigated to understand the reasons behind the low correlation amongst its items. Furthermore, the item-to-total correlation for all constructs were higher than 0.5 (reference value) except for the construct Dynamism in the industry. The minimum item-to-total correlation for Dynamism in the industry was measured as 0.318. This construct was identified by the researcher to be further investigated to know why there is low item-to-total correlation. Although preliminary investigation provided in Section 5.2 pointed towards some of the items under the construct Dynamism in the industry as causing the problems, these items along with other items having low correlation needed to be investigated further as part of the SEM provided under Section 5.7 and appropriate decisions were made at that point. At this stage, while minor deviations in the correlation values of items under Dynamism in the industry are noticed, overall it can be inferred that the instrument meets the convergent validity criterion.

5.6 Discriminant validity

Discriminant validity was used to determine the construct validity and was checked using Confirmatory Factor Analysis (CFA). Discriminant validity is another method to measure the construct validity (Zikmund, 2003). Detailed discussion on discriminant validity is provided under Section 5.7.3 later in this chapter.

A summary look at the discussions above indicate that the constructs identified for this research to develop a model to achieve the research aim and objectives are able to stand the scrutiny of statistical tests of reliability and validity at the preliminary stage except for some items under the construct Dynamism in the industry. Although items under Dynamism in the industry require detailed investigation, at the constructs level it can be seen that the preliminary results provide the basis for conducting further tests as part of the research model.

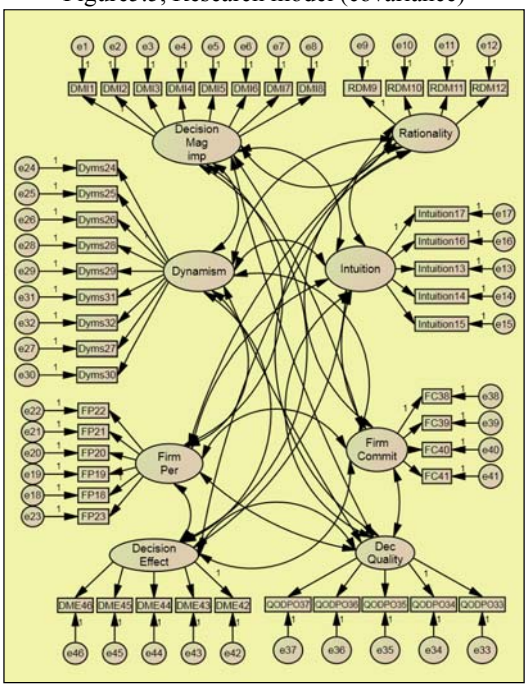
Thus the researcher was able to proceed to the next level of rigorous statistical analysis provided in Section B.

5.7 Section B: Main analysis

The previous section brought out significant factors that affect the strategic decision making process in SMEs. This section investigates the influence of decision characteristic variables on SDMP dimension constructs, how SDMP process dimensions affect the SDMP output in terms of effectiveness and what other factors affect SDMP effectiveness as well as related hypotheses.

In order to address the abovementioned issues, the research relationship model developed (refer Chapter 3) was tested. The outcome of the tests was used to redefine the model by assessing the fitness of the model to the data through statistical methods. It is expected that the redefined model along with the interpretations will help managers in SMEs in the electronic, telecommunication and IT industries to apply the model in their respective firms. Consequently the managers will be in a better position to take effective decisions through an assessment of the magnitude of impact of the decision on the firm and its linkage to rationality and intuition as well as the impact of external environment factors and internal contexts on the SDMP effectiveness. The application of the model is further expected to support managers in these SMEs to link SDMP output in terms of quality as an associate factor of SDMP effectiveness and encourage the firms to be committed to the SDMP output.

Figure5.5, Research model (covariance)



This examination was done using SEM about which Section 4.13 provided a briefing, a technique suggested by many researchers (e.g. Hair et. al., 2006; Schumacker & Lomax, 1996). The covariance model that was tested using AMOS is given in Figure 5.5 above.

5.7.1 Constructs of the model

The model developed for this research comprised eight latent constructs. Out of these three were exogenous constructs and five were endogenous constructs. Detailed explanation on latent, exogenous and endogenous constructs was provided in Table 4.20. Defining latent, exogenous and endogenous constructs was based on the literature review. Each construct was measured by at least four items, with a maximum of nine. For instance the latent construct Decision magnitude of impact had eight items (observed variables) namely DMI1 to DMI8. The detailed list of constructs used in this research is provided in Table 5.6.

Table5.6, Constructs of the research model

Construct	Number of Items	Items	Code	Definition
1*	8	DMI 1 – DMI 8	DMI	Decision Magnitude of Impact (Decision dimension).
2*	6	FP 18 – FP 23	FP	Firm Performance (Internal context affecting decision process output).
3*	9	Dyms 24 – Dyms 32	Dyms	Dynamism in the industry (External factor affecting decision process output).
4**	4	RDM 9 – RDM 12	RDM	Rationality in decision making (Decision dimension).
5**	5	Intuition 13 – Intuition 17	Intuition	Intuition (Decision dimension).
Decision Process output				
6**	5	QODP 33 – QODP 37FC	QODPO	Quality of the decision process output (Decision process output).
7**	4	FC 38 – FC 41	FC	Firm Commitment (Decision process output).
8**	5	DME 42 – DME 46	DME	Decision making effectiveness (Decision process output).
* Exogenous Construct ** Endogenous Construct				

A detailed list of coding of the observed items and the constructs they belong to is provided in Appendix VII.

The eight constructs were measured by a total of 46 items out of which 23 represented exogenous and 23 represented endogenous (Table 5.6). SEM was performed by two steps. The first step involved the evaluation of the measurement model that enabled the researcher to ensure that the observed variables used to measure the exogenous and endogenous constructs were adequate enough. The second step involved the measurement of the structural

model and its assessment which provided the relationship between the constructs. Such a two-step approach is suggested by researchers like Kline (1998).

At this point the researcher re-states the need to use CFA as part of the data analysis. As has been mentioned in Section 4.14, the reliability and validity of a research instrument could be measured using factor analysis. Particularly, factor analysis can be used to unearth a small set of unobserved variables, also called latent variables or factors, which can explain for the covariance among a larger set of observed variables. This step is needed to facilitate the measurement of internal consistency as well as the validity of a set of measures rather than a single variable. Thus in order to move from the observed variable measures to the measurement of reliability and validity of common latent constructs that account for the observed variables, construct reliability and validity need to be tested (Bollen, 1989). Such a testing is needed to gradually move towards the estimation of model parameters that are required to analyse, estimate and identify the model for this research. Additionally, it is necessary to ensure that the model which is reliable is also valid as it is possible that sometimes researchers find themselves in a situation where in a model is reliable but not valid (Holmes-Smith et al. 2006). CFA allows the researcher to conduct both construct reliability and validity in order to satisfy the conditions that there is covariance between the latent variables and manifest variables, and such a relationship is reliable and valid.

In the research relationship model developed for this research, latent variables have been identified as Decision Magnitude of Impact (decision characteristic), Dynamism in the industry (external factor affecting decision process output), Firm performance (internal context affecting decision process output), Rationality in decision making (decision dimension), Intuition (decision dimension), Decision Making Effectiveness (decision process output), Quality of the Decision Process Output (decision process output) and Firm Commitment (decision process output). Each one of these constructs account for a certain number of observed variables details of which were given in Table 5.6. In order to know that these observed variables are indeed measuring the latent variables there is a need to test the construct (latent variables) reliability and validity. The next step that follows is the measurement of the construct reliability.

5.7.2 Construct reliability

Construct reliability measures the extent of variance that is accounted for by the latent construct with respect to an observed variable that measures the latent construct (Schreiber et al. 2006). For instance, the construct reliability of RDM is the extent RDM accounts for the variance observed in each one of the observed variables RDM 9, RDM 10, RDM 11 and

RDM 12. Lack of good reliability could mean that the observed variable may not be a reliable measure of the construct leading to errors in the estimation of the model. One of the ways construct reliability is measured is by measuring the squared multiple correlations (SMC) (between items as well as constructs). Other methods that could be used include inter-item and item to total correlations, composite reliability and average variance extracted (Jassen et al, 2008). While item-item and inter-item correlations have already been tested at the preliminary data analysis stage (Section 5.2), SMC was used as part of the CFA which is in line with the procedure adopted by other researchers (Johari et al. 2011). SMC is the square of the standardised loading of the observed variable on the latent construct. Reference value set for SMC is that it should not be lower than 0.3, a value suggested by Holmes-Smith et al. (2006) as acceptable although values exceeding 0.5 are considered good by them. Table 5.7 indicates that the SMC values for all the eight latent constructs identified for this research are above the limits mentioned above except for a few items under the construct Intuition and Dynamism in the industry.

Table5.7, Squared Multiple Correlations: (Group number 1 - Default model)

Items	Estimate
DMI1	0.648
DMI2	0.73
DMI3	0.647
DMI4	0.686
DMI5	0.737
DMI6	0.613
DMI7	0.413
DMI8	0.319
RDM9	0.482
RDM10	0.754
RDM11	0.789
RDM12	0.639
Intuition13	0.955
Intuition14	0.948
Intuition15	0.268
Intuition16	0.302
Intuition17	0.472

Items	Estimate
FP18	0.529
FP19	0.525
FP20	0.589
FP21	0.681
FP22	0.822
FP23	0.78
Dyms24	0.403
Dyms25	0.501
Dyms26	0.442
Dyms27	0.184
Dyms28	0.34
Dyms29	0.201
Dyms30	0.275
Dyms31	0.149
Dyms32	0.182

Items	Estimate
QODPO33	0.315
QODPO34	0.482
QODPO35	0.582
QODPO36	0.732
QODPO37	0.755
FC38	0.709
FC39	0.794
FC40	0.668
FC41	0.756
DME42	0.765
DME43	0.824
DME44	0.723
DME45	0.487
DME46	0.577

Five items in all were found to have lower SMC in comparison to the reference value of 0.3. These items were Intuition15 (0.268), Dyms27 (0.184), Dyms29 (0.201), Dyms30 (0.275), Dyms31 (0.149) and Dyms32 (0.182). This output has been obtained from AMOS version 18. Items whose SMC were lower than 0.3 could be deleted in order to improve the construct reliability of the constructs. Thus the six items were deleted and the resulting SMC values for all the constructs indicated that these values are above 0.3 which can be seen in Table 5.8.

Table5.8, Squared Multiple Correlations: (Group number 1 - Default model)

Items	Estimate
DMI1	0.648
DMI2	0.73
DMI3	0.648
DMI4	0.688
DMI	0.735
DMI6	0.613
DMI7	0.413
DMI8	0.318
RDM9	0.479
RDM10	0.752
RDM11	0.791
RDM12	0.64

Items	Estimate
Intuition13	0.956
Intuition14	0.948
Intuition16	0.3
Intuition17	0.469
FP18	0.53
FP19	0.529
FP20	0.59
FP21	0.683
FP22	0.819
FP23	0.776
Dyms24	0.367
Dyms25	0.718
Dyms26	0.528
Dyms28	0.317

Items	Estimate
QODPO33	0.307
QODPO34	0.473
QODPO35	0.58
QODPO36	0.737
QODPO37	0.762
FC38	0.708
FC39	0.795
FC40	0.668
FC41	0.756
DME42	0.764
DME43	0.825
DME44	0.723
DME45	0.487
DME46	0.578

The meaning of the reliability values could be understood with respect to the following example. The SMC for FP21 is 0.683. This means that the question "Compared to firms similar in size and scope to your firm, how does your firm compare on efficiency of operations over a three year period during which strategic decisions were made?" is accounted for by the construct Firm Performance to the extent of 0.683. That efficiency of operation is correlated to firm performance is logical to expect.

Similar explanations could be provided for those items that have not significantly correlated to the corresponding latent factor or construct it is purported to measure. The items were Dyms30 (0.275), Dyms31 (0.149), Dyms32 (0.182), Intuition15 (0.268), Dyms27 (0.184), Dyms29 (0.201), Dyms30 (0.275) and Dyms32 (0.182). It can be seen that deleting these items have not changed the measuring instruments' reliability with a minimum of four items per construct being still maintained.

The foregoing arguments have clearly shown that the construct reliability for the instrument has been established. Further to establishing the construct reliability, the next step is to assess the discriminant validity of the instrument.

5.7.3 Discriminant validity

Validity of a measure in general refers to the accuracy of the measure, and is said to be valid when it is a true representation of the factor or construct or variable that is intended to be measured (Holmes-Smith et al. 2006). In particular, discriminant validity measures the extent to which two constructs in a model differ, for instance the extent to which correlation between two constructs differ and whether the difference is significant (Janssens et al. 2008). In fact Holmes-Smith et al. (2006) argue that a large correlation between latent variables for instance

exceeding 0.8 or 0.9 suggest deficiency in discriminant validity. In this research discriminant validity was assessed using CFA. In CFA, four steps are involved in assessing the discriminant validity which are (a) examining the correlations amongst the latent constructs (Holmes-Smith et al. 2006) (b) examining the residual covariance (Fernandez & Moldogaziev, 2011) and standardized residual covariance between two indicators or items measuring the constructs (Joreskog & Sorbom, 1984) (c) testing the pattern and structure coefficients to confirm that the constructs in the measurement model are empirically distinguishable (Holmes-Smith et al. 2006) and (d) verifying whether the covariance model fits the data (Eom, 2008). Each one of these tests was tested using AMOS Version 18 software package and the discussions on the AMOS output are provided in the following sub-sections.

5.7.4 Sample correlations

As a first step the sample correlations amongst the items was examined to test the correlation among the latent constructs. According to Holmes-Smith et al. (2006) correlations between any two items if exceeds 0.8 it is recommended to delete one of the two items to ensure that there is no multicollinearity. This reference standard was followed in this research. The AMOS output on sample correlations for the research model is provided in Appendix VIII which indicates that no correlation is exceeding 0.8 except the one between QODPO36 and QODPO37 which stood at 0.82. This figure of 0.82 is marginally higher than the reference value of 0.8 that is by 0.02. This excess in correlation is negligible and hence all items were retained for further testing in this research. The correlations indicate that no multicollinearity exists, meaning that all items measure the intended concepts they are expected to measure distinctly.

5.7.5 Residual covariance and Standardised residual covariance

The next step was to test the residual covariance and standardized residual covariance between any two items in the model. Covariance between two items or indicators indicates the extent to which two items or indicators share the variance (Joreskog & Sorbom, 1984). Residual covariance indicates the value got by subtracting the values of model-implied covariance matrix from the values of the residual covariance matrix (Bedeian, 2007). This is achieved using AMOS. The suggested values by researchers lie in the range -0.1 to +0.1. This is one of the tests that can confirm that the items distinctly measure what they are purported to measure (Bedeian et al. 1997). Any value falling outside this range needs to be investigated and the corresponding item that contributes for this problem needs to be removed.

AMOS was run on the model that was derived after deleting items based on the tests SMC and sample correlations indicated in Sections 5.7.2 and 5.7.4, which follow. The residual covariance values obtained are provided in Appendix IX. Items that contributed to values lying outside were identified and the following items were deleted in order to improve the residual covariance values: DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45. The residual covariance output from AMOS after deleting the items is given in Appendix X. The resultant residual covariance output from AMOS still showed four values between items outside the range -0.1 to +0.1. The items contributing this are given in Table 5.9. An inspection of the figures in Table 5.9 clearly show that these values are very close to -0.1 or +0.1. Hence it can be inferred that the remaining items are measuring the concepts they are supposed to measure.

Table5.9, Residual covariance after deleting (DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45)

Items	Residual variance
DMI5-FP19	-0.114
DMI1-Intuition13	-0.102
Dyms24-QODPO36	0.109
DMI4-FP21	0.11

The next test that was conducted was the measurement of standard residual covariance using AMOS. A standardized residual covariance between two items or indicators is the ratio of the residual covariance to the estimate of its standard error (Joreskog and Sorbom, 1984). According to researchers, in a model that is correct, most standardized residuals should not exceed an absolute value of 2 (Wong & Dean, 2005). Some researchers, for instance Abderrahman et al. (2012) (who have cited the example of Colle, 2006), haveprovided a more accurate standardized residual covariance absolute value of 2.58 that should not be exceeded in CFA. Thus for this research an absolute standardized residual covariance of 2.58 has been chosen as the reference. The standardized residual covariance output from AMOS is provided in Appendix XI. The pairs of items that contributed to some measures of standardized residual covariance exceeding the absolute value of 2.58 are provided in Table 5.10.

Table5.10, Pairs of items with standardized residual covariance measure exceeding the absolute value of 2.58

Items	Standard Residual Covariance
DMI1-Intuition13	-2.587
Dyms24-QODPO36	2.992
DMI4-FP21	2.635

The three pairs of items in Table 5.10 that have higher standardized residual covariance value than the reference absolute value of 2.58 were considered not to affect the model fitness to data by the researcher, an argument which is supported by Kline (2011). In fact Kline (2011)

claims that standardized residual covariance values exceeding the reference values are common in large data sets leading to the dependence on the unstandardised residual covariance values that fit the model. Thus for this research both the residual covariance output and standardized residual covariance output obtained from AMOS was considered acceptable and in addition support the argument that the items are measuring the concepts they are believed to represent.

In addition to assessing the correlations between the indicators, next discriminant validity between the constructs was tested using the correlations amongst the constructs. The correlation between the latent constructs obtained from AMOS for the model in Figure 5.5 is provided in Table 5.11. According to Holmes-Smith et al. (2006) a large correlation between latent variables, for instance exceeding 0.8 or 0.9 suggest deficiency in discriminant validity. From Table 5.11 it can be seen that no two constructs are correlated beyond 0.9 with the highest value of correlation found between Firm Commitment and Decision making effectiveness (0.871), indicating that discriminant validity exists. If one interprets this finding, it means that each one of the constructs in the research model is distinct and does not measure concepts other than the one they are expected to measure. For instance decision magnitude of impact does not measure rationality as a concept instead measures the theoretical concept of magnitude of impact of decisions only.

Table5.11, Correlations: - Default model

			Estimate
Decision_Mag_imp	<-->	Firm_Commit	.426
Decision_Mag_imp	<-->	Dec_Quality	.441
Decision_Mag_imp	<-->	Decision_Effect	.406
Decision_Mag_imp	<-->	Firm_Per	.469
Rationality	<-->	Dynamism	.549
Rationality	<-->	Firm_Commit	.770
Rationality	<-->	Dec_Quality	.722
Rationality	<-->	Firm_Per	.720
Dynamism	<-->	Firm_Commit	.559
Dynamism	<-->	Dec_Quality	.606
Dynamism	<-->	Firm_Per	.579
Dynamism	<-->	Decision_Effect	.564
Firm_Per	<-->	Firm_Commit	.710
Firm_Per	<-->	Dec_Quality	.701

			Estimate
Firm_Commit	<-->	Decision_Effect	.871
Firm_Commit	<-->	Dec_Quality	.829
Decision_Effect	<-->	Dec_Quality	.787
Rationality	<-->	Intuition	-.269
Decision_Mag_imp	<-->	Intuition	-.115
Dynamism	<-->	Intuition	-.039
Firm_Commit	<-->	Intuition	-.165
Firm_Per	<-->	Intuition	-.162
Decision_Effect	<-->	Intuition	-.110
Dec_Quality	<-->	Intuition	-.215
Decision_Mag_imp	<-->	Dynamism	.473
Firm_Per	<-->	Decision_Effect	.680
Decision_Mag_imp	<-->	Rationality	.512
Rationality	<-->	Decision_Effect	.693

5.7.6 Parameter and structural coefficients

After analyzing the correlation, residual covariance and standardised residual covariance, the next step was to assess the parameter and structural coefficients. According to Kline (2013) pattern coefficients are interpreted as coefficients in standard multiple regression, particularly in factor analysis. Structure coefficients are the estimated correlation between an observed variable and an unobserved variable (Kline, 2013). Furthermore Kline (2013) argues that when factors or latent variables are independent then standardized pattern coefficients will be

equal to the corresponding structure coefficient that pertains to a factor. In addition pattern coefficients for items are expected to be zero for all relationships between the items and the factor they are not supposed to measure as there is no direct path connecting the item and the factor (Kline, 2013). For instance the pattern and structure coefficients for items DMI1 and DMI2 will be the same as both of them are measuring the same concept decision magnitude of impact. However the pattern coefficient for DMI1 and DMI2 with respect to rationality in decision-making will be zero as there is no direct path between DMI1, DMI2 and rationality in decision making as a factor.

As far as measuring the structure coefficients are concerned, AMOS was used and the results were obtained using the "all implied moments" from AMOS (Holmes-Smith et al. 2006) under the report name "Implied (for all variables) Correlations (Group number 1 - Default model)" (Appendix XII). Thus referring to Appendix XII it can be seen that structure coefficients for all items under a constructs are higher than the rest of the items for the same construct. For instance the structural coefficient for the item QODPO37 is 0.915 for the construct 'Decision Quality' in Appendix XII whereas the structure coefficient for the item FP18 is 0.562. In addition, as explained above in the previous paragraph, pattern coefficient for QODPO37 for the construct 'Decision Quality' is same as 0.915 whereas for all other items linked to for the construct 'Decision Quality' it is zero like for instance FP18. These arguments lead to the interpretation that the items show discriminant validity (Kline, 2013).

The meaning for the abovementioned arguments is that the items under each construct are able to measure the construct they are purported to measure. For instance items DMI1, DMI2, DMI3, DMI4 and DMI5 are clearly measuring the construct Decision magnitude of impact and none else. The same arguments apply for the remaining constructs and the items that measure them. After assessing the pattern and structural coefficients, the next step was to ascertain the fitness of the covariance model to the data which is the final step in CFA.

5.7.7 Fitness test of the covariance model

Fitting the data to the model is a standard practice used by researchers while employing CFA in empirical research related to strategic decision-making process, like for instance Papke-Shields and Malhotra (2001). Model fit determines the degree to which a covariance model fits the sample data (Schermelleh-Engel et al. 2003). Schermelleh-Engel et al. (2003) argue that there are no well-established rules or instructions by researchers on what are the minimum requirements that need to be met for an adequate fit. Evaluating the model fit is an important step followed by researchers in specifying the final model (Schermelleh-Engel et al. 2003).

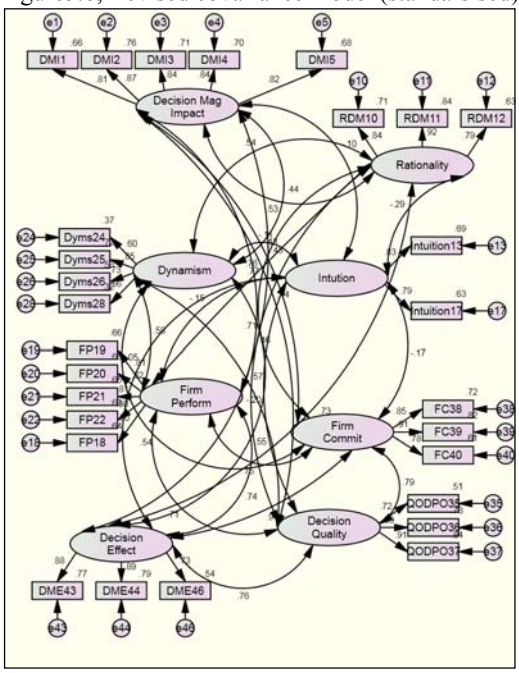
Some of the general measures used by researchers to test the fitness of the model to the data include Chi-square ($\chi 2$) specified at a certain Degree of Freedom (DF) and p- value (not less than 0.05 required to reject the null-hypotheses), CMIN/DF ratio ($\chi 2$) measurement, Goodness Fit Index (GFI), Adjusted GFI (AGFI), Normed Fit Index (NFI), Incremental Fit Index (IFI), Tucker–Lewis Index (TLI), Comparative Fit Index (CFI), Relative Noncentrality fit Index (RNI), Root Mean Square Error Approximation (RMSEA) and Root Mean Residual (RMR). All though researchers have come up with many different indices to assess the fitness of the model to the data as mentioned above, it has been seen that not all the indices are measured or ensured that they are satisfied by researchers. The general practice appears to be to fit the model to the data using as many indices as possible and there is no consensus amongst researchers on how many of these indices need to be used in any research (Schermelleh-Engel et al. 2003). In fact Schermelleh-Engel et al. (2003) argue that there is a general opinion amongst researchers that a researcher should avoid reporting all fit indices that are in use and there is a widespread disagreement on just which one of these indices needs to be reported for a particular research. In light of these arguments, the researcher proposed to report $\lambda 2$/df measurement, GFI, AGFI, NFI, IFI, TLI, CFI, RMSEA and RMR measures. Table 5.12 provides information about commonly used indices and the recommended values that could be taken as reference for empirical research.

Table5.12, Commonly Reported Test Statistics used to evaluate Model Fit (Arbuckle and Wothke, 1999; Byrne, 2001; Kline, 1998; Schreiber et al. 2006)

Test Statistics	Abbreviation	Critical Value	Interpretation
Chi-squared Tests			
Chi-squared goodness of fit test.	CMIN ($\chi 2$)	Chi-squared= n.s.	Good fit to the justified model.
Normal chi-squared test.	CMIN/df	(Chi-squared/df) ≤ 3	Good fit to the justified model.
Test Statistics Using Independence Matrix			
Goodness or fit index.	GFI	0.9 < GFI < 1	Good fit to the justified model.
Adjusted goodness of fit index.	AGFI	0.9 < AGFI < 1	Good fit to the justified model.
Standardized root mean squared residual.	SRMR	0 < SRMR < 0.05	Good model fit.
Normed fit Index	NFI	0.9<NFI<1.0	Percent improvement over null model.
Tucker-Lewis Index	TLI	0.9<TLI<1.0	Percent improvement over null model.
Comparative fit Index	CFI	0.9<CFI<1.0	Percent improvement over null model.
Incremental fit Index	IFI	0.9<IFI<1.0	Percent improvement over null model.
Root mean square error of approximation	RMSEA	0 < RMSEA < 0.08	Good model fit.
Root mean square residual	RMR	Smaller the better	0 indicates perfect fit
Standard RMR	SRMR	≤ 0.8	Good model fit

For this research the following reference values extracted from Table 5.12 have been used:- GFI ≥ 0.9; IFI ≥ 0.9; CFI ≥ 0.9; TLI ≥ 0.9; CMIN/DF ≤ 3 at a p-value > 0.05; RMR as small as possible (close to zero) and RMSEA ≤ 0.1.

Figure5.6, Revised covariance model (standarsised)



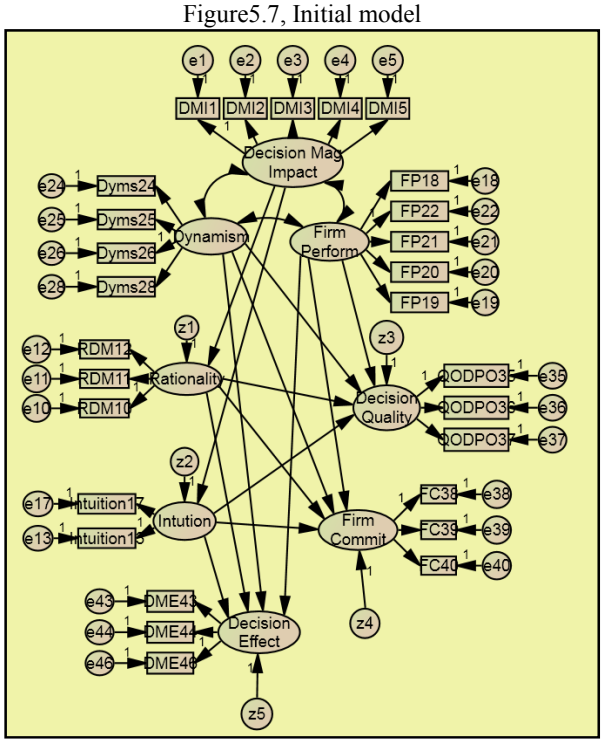
CMIN/DF=3.351 (p-value=0.000);
RMR=0.035; GFI=0.847; RMSEA=0.071
NFI=0.891; IFI=0.921; TLI=0.907; CFI=0.921

The covariance model obtained from AMOS given in Figure 5.6 provides the details on the model fit indices. It can be seen that out of the eight indices provided five indices are meet the reference values set for this research. That is to say that IFI=0.921; TLI=0.907 and CFI=0.921 are above 0.9. RMR=0.035 is very low and RMSEA=0.071 is lower than 0.1. While CMIN/DF=3.351 (p-value=0.000) is not found adequate enough to reject the null hypothesis because of p-value being significant at 0.000 which is much lower than the reference value of 0.05, GFI=0.847 and NFI=0.891 are close to the reference value of 0.9. The lack of fitness seen in CMIN/DF and GFI is not likely to significantly affect the model as the model has already been found to fit with the more commonly used indices RMR, RMSEA, IFI, TLI and CFI. In fact Schreiber et al. (2006) argue that TLI, CFI, and RMSEA are the indices preferred by authors for one-time analyses. If one agrees with this argument, then it can be inferred that the covariance model developed for this research fits the data.

The implication of the foregoing statistical analyses is that the statistical tests have enabled the researcher to determine the optimum set of constructs and item that measure them which can stand the test of scrutiny. This model was now ready for further analysis using SEM. There are primarily two steps in SEM at this stage that leads the researchers to specify their final model. They are model analysis (also called model estimation) and model evaluation (also called model fit) (Abramson et al. 2005). Prior to analyzing the model it is necessary to

specify the initial model. The initial model is provided in Figure 5.7 which is derived from the covariance model depicted in Figure 5.6.

Figure5.7, Initial model



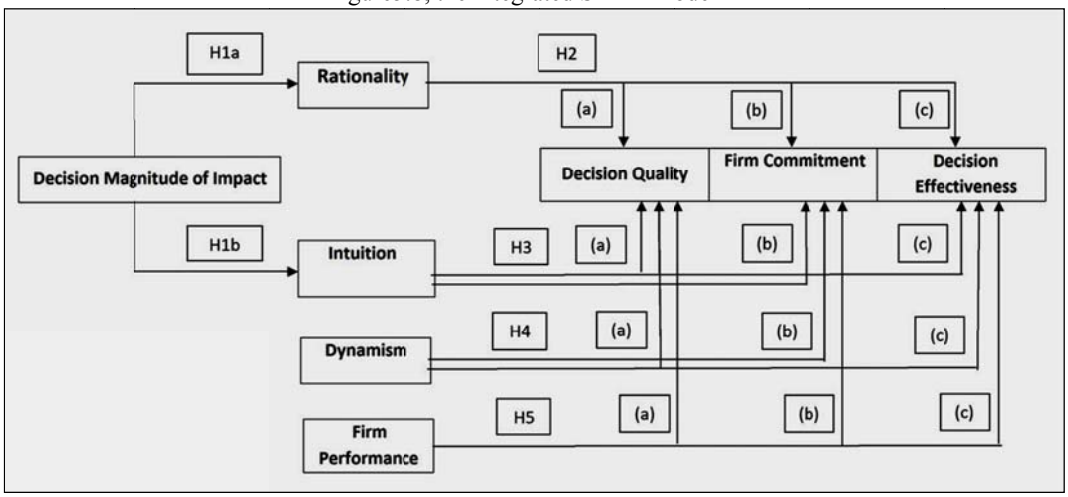
5.8 Model Analysis

According to Kline (1998), model analysis involves the use of an estimation procedure through which the researcher tests whether the research model fits the data or not. A commonly used estimation procedure by researchers in empirical research is the Maximum Likelihood (ML) procedure for SEM (Kline, 1998). The reason for using ML procedure in fitting the model to the data is its ability to provide statistically robust results regardless of the fact that the data are complete or some data missing, notwithstanding the situation that the data are normally distributed or otherwise (Little & Rubin, 1987). AMOS uses ML procedure in the model estimation procedure. Thus for this research ML procedure will be used. Prior to estimating the model a brief description of the model is provided next.

5.9 The Integrated Strategic Decision Making Process (SDMP) Model

The model that will be estimated was derived from a critical review of the SDMP literature and the theoretical support elicited from the literature review provided in Chapter 2. Further, the theories, concepts and models that contributed to the development of the model were identified and a theoretical framework was developed that provided the basis to define the conceptual limits for the model. Figure 5.8 provides the model developed for this research and has been named as the Integrated SDMP model.

Figure5.8, the integrated SDMP model



The model in Figure 5.8 shows that a set of three latent constructs (exogenous constructs) namely Decision Magnitude of Impact (DMI), Firm Performance (FP) and Dynamism in the industry (Dyms) have been shown to affect five other latent constructs (endogenous constructs) namely Rationality in decision making (RDM), Intuition (Intuition), Decision making effectiveness (DME), Quality of the decision process output (QODPO) and Firm Commitment (FC). The main focus was the relationship between DMI as a decision characteristic variable and decision-making effectiveness as a decision process output variable, mediated by rationality and intuition as decision dimension variables. This relationship was investigated with regard to the SMEs in the electronic, telecommunication and IT industries. In addition, being a strategic decision making process, impact of external and internal environments were needed to be brought in as strategic decision making processes are necessarily affected by environment as a variable. This aspect has been explained in detail in Sections 3.4 and 3.5. Furthermore literature review in Chapter 2 shows that the external environment in the electronic, telecommunication and IT industries are characterized by an environment that is turbulent and constantly changing. The latent construct Dynamism in the industry (Dyms) was shown to represent the external environment that affects the SDMP. Similarly the Firm Performance (FP) has been considered as the internal context of the firm on which the strategic decision making process depends. Both Dyms and FP have been shown to affect the decision process output based on prior research explained in the literature review in Chapter 2.

Thus the model in Figure 5.8 will be analysed using the data collected for this research and provided the basis for testing the hypotheses developed for this research (see Table 3.1). The hypotheses posited Table 3.1 needed to be tested as part of the model analysis (model estimation) process. Model analysis itself is part of the path analysis of the structural model

which in turn is part of the SEM process. Further, in the model estimation procedure using AMOS two solutions were generated as part of the path analysis. One was the unstandardised model solution and the other was the standardised model solution (Abramson et al. 2005). The differences between the standardised and unstandardised model solutions are given in Table 5.13.

Table5.13, Differences between the unstandardized and standardised solutions produced by AMOS (Using ML procedure (Arbuckle and Wothke (1999) and Kline (1998))

Parameter estimate	Standardised output	Unstandardised output
Unanalyzed associations between exogenous variables	Pearson's correlations	Covariance coefficients
Direct effects on endogenous variables	Regression beta-weights	Unstandardised regression coefficients
Variances endogenous variables (and hence their converse, error variances)	Squared multiple (i.e., R2)	Unreported
Variances of exogenous variables (and hence their converse, error variances)	Unreported	Variances

AMOS produces and displays the unstandardised and standardised models with the parameter values displayed on it. In the unstandardised models, regression weights, covariances, intercepts and variances are displayed in the path diagram. In the standardised model the standardised regression weights, correlation and squared multiple correlations are displayed. Further standardised model output from AMOS is independent of units in which all variables are measured while unstandardised output is based on each variables own metric. Standaridised output can be compared across variables while in unstandardised output comparability across variables is not possible (Abramson et al. 2005). Standardised output is not affected by choice of identification constraints while unstandardised output is affected by choice of identification constraints (Arbuckle, 2005).

Furthermore, Kline (1998) classifies regression beta weights in the standardised output with absolute values of 0.1, 0.3 and 0.5 as having small, moderate and large effects respectively making it easier to use standardized output in interpreting results. However considering the fact that standardized output yields the endogenous variable variance through the use of SMC and the unstandardised output provides the exogenous variable variance directly on the model displayed, researchers suggest that it is worthwhile to report both outputs. Based on the aforementioned discussions, although the researcher has reported both unstandardised and standardized output in this section, the interpretations of the results are based on the standardised output. Thus the next step is the report the SMC coefficients of the initial model which is the first step in the estimation of the model.

5.10 Squared Multiple Correlation

The initial model named as the "Integrated model for SDMP" outputs are provided in Figures 5.9 (unstandardised) and 5.10 (standardised). These models were used for further analysis in this research.

Figure5.9, Integrated model for SDMP (unstandardised)

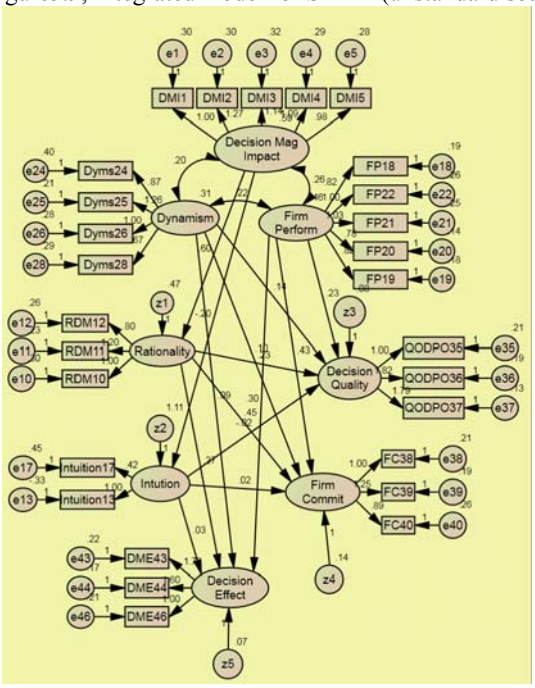
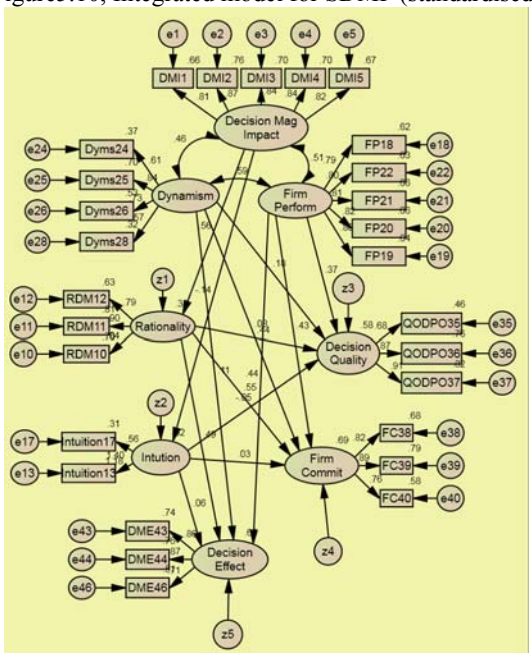


Figure5.10, Integrated model for SDMP (standardised)



SMC is synonymous with the R2 statistic used in multiple regression analysis. Furthermore SMC is independent of any units of measurement (Arbuckle, 2010) and AMOS provides SMC for each endogenous variable. For instance in Figure 5.10, the SMC for the endogenous variable rationality is shown as 0.3 which indicates that 30% of variance in rationality is accounted for by exogenous variable DMI. Thus as explained in the previous section, SMC provides a basis for testing the fitness of the model.

Further to identifying the benefits of using SMC in the model analysis the next step taken was to check whether the model could be identified. According to Abramson et al. (2005) a model could be identified theoretically if there is a unique solution possible for it and every one of its parameters. Model identifiability is an important criterion to be met while applying SEM software as otherwise the software will fail to converge (Abramson et al. 2005). In a situation where there is no unique solution produced by the model, it is necessary to re-specify the model so that it can be identified (Kline, 1998 and Ullman, 2001).

Researchers suggest three tests to establish an identified model. The first one is to check whether the model is recursive. The second one is to check for the presence of multicollinearity. The third one is to check whether the number of parameters identified in the model is more than required or adequate or less as researchers claim that there is a limit to the number of parameters fitted in SEM (Abramson et al. 2005).

AMOS provides reports on whether model is recursive. SPSS provides the facility to check the presence of multicollinearity. AMOS also provides details on the number of parameters fitted in the model along with the number of additional constraints that are required to assess the model. Using reports generated by AMOS it is possible to identify different parameter fitments in the model and the use the reports to determine whether the model is saturated (just identified) or over-identified or under-identified models that have bearing on the number of parameters. In fact Kline (1998) argues that under-identified models have more number of parameters when compared to the number of distinct variances and covariances in the corresponding covariance matrix; over-identified models have fewer parameters when compared to the number of distinct variances and covariances in the corresponding covariance matrix; and just-identified models have the maximum number of parameters that is possible that can be contained in a model. The reports on the three tests mentioned above related to model identification are discussed next.

Recursive models are uni-directional. The initial research model (Figure 5.10) was tested using AMOS. The report from AMOS indicates that the model is recursive. Next discussion

on the existence of multicollinearity of the data was already provided in Section 5.7.4. SPSS output showed that there was no existence of multicollinearity in the data as the correlation amongst the items in the covariance model provided in Figure 5.5 meet the requirement that the values do not exceed 0.8 (Appendix VIII).

Further to the above, the model was checked to know whether the number of parameters identified for the model were over identified or under identified or just identified as part of the model identification procedure. Ullman (2006) recommends the use of the following formula which determines the number of data points in a model using the number of observed variables.

$$\text{The number of data points} = \frac{p\,(p+1)}{2}$$

p = the number of observed variables in the model.

Thus for the research model in Figure 5.9, where the number of observed variables is p=28 the number of data points can be computed as:

Number of data points = 28(28+1)/2 = 28 x 29/2 = 406.

According to Ullman (2006) the condition for identifying a model is that the number of parameters in the model should be lower than the number of data points. The number of parameters in model is equal to the sum of the number of regression coefficients (in Figure 5.10 the regression coefficients are those indicated by the single headed arrows between the latent variables and the observed variables as well as those linking the latent variables. That is to say 28+14=42), number variances (the number of observed variables, that is 28) and the number of covariances (amongst the latent variables, that is 3). Therefore the number of parameters is 42+28+3 = 73. It can be seen that the number of data points estimated for the model as 406 is greater than the number of parameters estimated as 73. It can be therefore concluded that the model is identified. The above results can be compared with the output from AMOS which is provided in Table 5.14 where the bold number 73 indicates the number of parameters of the default model which is the research model and the bold number 406 indicates the number of data points which is nothing but the number of parameters that could be achieved if the model is the just-identified (saturated) model.

Table5.14, number of parameters and number of data points (CMIN fitness output from AMOS)

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	73	1504.786	333	.000	4.519
Saturated model	406	.000	0		
Independence model	28	9903.891	378	.000	26.201

At this point it can be concluded that the researcher could retain all the observed and latent variables in the model as the research model had been identified for further testing. The next test was testing the model fitness which needs to be conducted before analyzing the significance of the various relationships between the exogenous and endogenous variables through path analysis.

5.11 Model fitness

Model fitness is a method by which the researcher is able to evaluate the identified model (Kline 1998) prior to the commencement of the path analysis. AMOS was used to assess the model fitness. According to many researchers, evaluation of the identified model involves four steps which include assessing the measure of parsimony, assessing the identified model by comparing to a baseline model, testing the goodness fit of the identified model and related measures, testing the minimum sample discrepancy function and population discrepancy measure assessment (Arbuckle 1999, 2005; Bollen & Long, 1993; Browne & Cudeck, 1993; Byrne, 2001, 2006; Holmes-Smith, 2000; MacCallum, 1990; Mulaik et al. 1989; Steiger, 1990). It must also be borne in mind that model evaluation is considered to be a difficult and unsettled issue in SEM (Arbuckle, 2005). However the researcher evaluated the identified model based on the abovementioned steps. Each one of these steps is discussed next.

5.12 Measures of parsimony

According to Weston and Gore (2006) one of the goals of SEM is to find the most parsimonious summary of the interrelationships amongst the variables in a model. However researchers argue that parsimonious models could lead to lack of goodness fit of the model (Preacher et al. 2008). Mulaik et al. (1989) argue that researchers should achieve a model by checking how parsimonious a model is with a high goodness fit.

Furthermore, Weston and Gore (2006) argue that greater the degrees of freedom in comparison to the number of parameters, more parsimonious is the model. Thus in this research the number of parameters in the model was compared with the degrees of freedom. The AMOS report in Table 5.15 on the number of parameters and the degrees of freedom for the identified model in Figure 5.10 clearly indicates that there a far fewer parameters (73) when compared to the degrees of freedom (333). Thus it is possible to infer that the model is parsimonious. However, it is necessary to examine the goodness fit of the model.

The goodness fit of the identified model in Figure 5.10 was tested using the goodness fit indices selected by the researcher with the explanation provided in Section 5.7.7 as the basis. AMOS provided the goodness fit indices for the identified model in Figure 5.10, which

happens to be the default model. AMOS compares the default model with two baseline models namely the saturated and independence models. According to Schermelleh-Engel et al. (2003), saturated model is the model in which the number of free parameters are equal to sum of the number of variances and covariances in the model leading to a λ2 = zero. The independence model is a restrictive model and assumes that the observed variables are free of any error, that all factor loadings are made equal to one and that all variables are not correlated. Usually λ2/df in an independence model is very large (Schermelleh-Engel et al. 2003). The goodness fit was tested using AMOS and the output from AMOS is provided in Table 5.15. The comparison provides the most appropriate model that fits the data and could be chosen as the final model to perform the path analysis.

Table5.15, Goodness fit measure

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	73	1504.786	333	.000	4.519
Saturated model	406	.000	0		
Independence model	28	9903.891	378	.000	26.201

5.15 (a)

RMR, GFI

Model	RMR	GFI
Default model	.088	.805
Saturated model	.000	1.000
Independence model	.324	.169

5.15 (b)

Baseline Comparisons

Model	NFI Delta1	IFI Delta2	TLI rho2	CFI
Default model	.848	.878	.860	.877
Saturated model	1.000	1.000	1.000	1.000
Independence model	.000	.000	.000	.000

5.15 (c)

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.087	.083	.092	.000
Independence model	.233	.229	.237	.000

5.15 (d)

An analysis of Table 5.16 shows that the default model is better when compared to the independence model with regard to λ2/df, RMR, GFI, NFI, IFI, TLI, CFI and RMSEA readings as the default model readings are closer to the reference values set for these parameters as defined in Section 5.7.7. However the default model itself was not quite meeting the more stringent reference values cited in the literature. That is, λ2 should be ≤ 3; GFI, NFI, IFI, TLI and CFI should be ≥ 0.9 whereas the default model readings are found to be λ2/df=4.519; GFI=0.805; NFI=0.848; IFI=0.878; TLI=0.860 and CFI=0.877.

Furthermore CMIN value is found significant at a p value <0.05 indicating that the null hypothesis is rejected and hence the model is not fit. The researcher probed the possibility of

improving the model by analyzing the model further. One method suggested by researchers that is widely used in empirical research to improve λ2/df value is to use modification indices generated by AMOS. Although researchers caution against the use of modification indices while improving the model, modification indices provide information on those items of the model which when freed could improve λ2/df (Schermelleh-Engel et al. 2003). According to Schermelleh-Engel et al. (2003) use of modification indices should be supported by theory and should not be done for the sake of improving the fitness index only. Schermelleh-Engel et al. (2003) argue that each one of the modification indices possesses a λ2 with a df=1 and indicate the extent of decrease possible in λ2 value when the parameter in question is deleted from the model and the model is re-estimated. In fact the largest modification index points towards that parameter which when freed, improves the fit (Schermelleh-Engel et al. 2003). For a good model researchers have estimated that the modification indices approximate the value 1 (Schermelleh-Engel et al. 2003).

Considering the above-mentioned arguments on modification indices, the researcher examined the modification index output generated by AMOS for the model in Figure 5.10 (Appendix XIII). An examination of the modification index showed that item 19 (FP19) has the highest index of 68.347 and hence the item FP19 could be freed. The item FP19 which reads as "Compared to firms similar in size and scope to your firm, how does your firm compare on growth rate of sales or revenues over a three year period during which strategic decisions were made?" although appears to be an important indicator of firm performance, the deletion could to a greater extent be compensated by all other remaining items put together. For instance the item FP18 is related to long-run level of profitability which by default has to have elements related to growth rate of sales or revenues (Calandro & Lane, 2007). Hence freeing item FP19 can be said to be supported by theory as well as practice as it does not affect the overall character of the construct Firm Performance. After freeing the item the re-specified model was tested and the following model fitness report from AMOS was obtained (Table 5.16).

Table5.16, Goodness fit readings of revised model (after deleting FP19 based on modification index)

CMIN

Model	NPAR	CMIN	DF	P	CMIN/DF
Default model	71	1300.909	307	.000	4.237
Saturated model	378	.000	0		
Independence model	27	9323.782	351	.000	26.563

5.16 (a)

RMR, GFI

Model	RMR	GFI
Default model	.085	.823
Saturated model	.000	1.000
Independence model	.327	.176

5.16 (b)

Baseline Comparisons

Model	NFI Delta1	IFI Delta2	TLI rho2	CFI
Default model	.860	.890	.873	.889
Saturated model	1.000	1.000	1.000	1.000
Independence model	.000	.000	.000	.000

5.16 (c)

RMSEA

Model	RMSEA	LO 90	HI 90	PCLOSE
Default model	.084	.079	.088	.000
Independence model	.235	.231	.239	.000

5.16 (d)

An examination of Table 5.16 indicates there is an improvement in all the fitness measures namely $\lambda 2/df$, RMR, GFI, NFI, IFI, TLI, CFI and RMSEA. However CMIN value was still significant at a p-value of 0.000 leading to the rejection of the null model indicating that the model is not fit. Similarly GFI, NFI, IFI, TLI and CFI values still remained very slightly below the reference level of 0.9. When further modification to the model was contemplated by the researcher, it was not found feasible due to the following reasons:

- Freeing more items according to the modification indices generated by AMOS did not yield further improvement in GFI, NFI, IFI, TLI and CFI.
- Freeing more items was not justifiable due to lack of theoretical support.

However a closer examination of the various indices in Table 5.16 revealed the following:
RMR at 0.085 was approaching lower values than 0.088 generated by AMOS for the initial model. Researchers (Schermelleh-Engel et al. 2003) opine that RMR is scale dependent and it is complicated to estimate acceptable levels of RMR for a fit model. Hence in place of RMR, Standardised Root Mean Square Residual (SRMR) values are tested by researchers and values of SRMR less than 0.10 are considered acceptable (Schermelleh-Engel et al. 2003). For the revised default model the value of SRMR computed by AMOS was found to be 0.103 which is equivalent to 0.10 when the figure is reduced to two decimal places. Hence SRMR value of 0.10 obtained from AMOS suggests that the default model fits data. NFI at 0.86 was closer to the reference value of 0.9 considered as acceptable by some researchers, for instance Long

and Perkins (2003) who argue that values greater than 0.9 are desirable while other values above 0.8 are acceptable. The same argument applies to GFI, IFI, TLI and CFI. In addition values for IFI (0.89) and CFI (0.889) are found very close to the reference value of 0.9 while for TLI (0.873) it is tending towards 0.9. Considering the above arguments it can be concluded that the default model can be considered to be of acceptable fit to data. Furthermore, the RMSEA at 0.084 is within the acceptable level of 0.1 although some researchers consider this as marginal fit (Long & Perkins, 2003).

With regard to CMIN and λ2/df tests although the model is not found fit due to rejection of the null hypothesis as p-value is significant at 0.000 and λ2/df being greater than 3, taking the support of the values for other indices including SRMR, GFI, NFI, IFI, TLI, CFI and RMSEA, which are considered to be in the acceptable range (refer above), it is reasonable to conclude that the re-specified model has adequate fit to the data. This argument is further supported with the identified model becoming better due to reduction in the number of parameters (reduced from 73 to 71) and the degrees of freedom (reduced from 333 to 307) indicating more degrees of freedom against fewer parameters in comparison to the figures obtained for the initial model (Table 5.16). Thus the re-specified model also has been identified. The revised model is provided in Figures 5.11 and 5.12.

Figure5.11, Re-specified integrated SDMP model (Unstandardised)

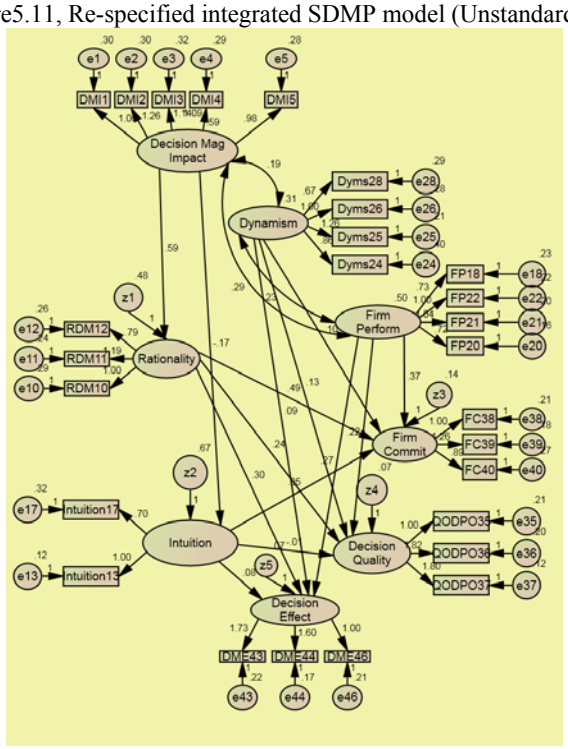
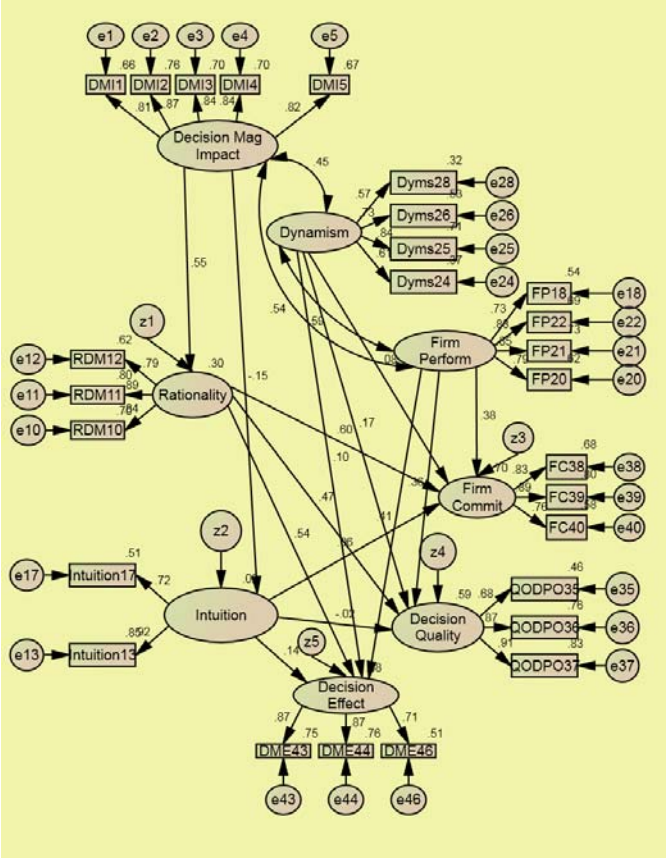


Figure5.12, Re-specified integrated SDMP model (Standardised)



After analyzing the parsimonious nature of the model as well as identifying the model along with assessing its fitness, the re-specified model was tested for the minimum sample discrepancy function.

5.13 CMIN/df test

The test of minimum sample discrepancy function involves testing whether λ2/df is approaching 1 if the model is correct for the sample size chosen by the researcher although researchers do not indicate on the extent of deviation from 1 that can be considered as acceptable (Arbuckle, 2005). Some other researchers argue that λ2/df up to 3 are acceptable (Byrne, 2006). However since λ2 is dependent on and sensitive to sample size some researchers do not advice placing too much emphasis on the significance of λ2 statistic (Long & Perkins, 2003). Further critiques of λ2 statistic argue that it is an unrealistic standard (e.g., Fabrigar et al. 1999; Millis et al. 1999). Under these circumstances some researchers for instance Joreskog and Sorbom (1989) suggest that in place of λ2 statistic it is possible to use other goodness fit statistic like GFI to indicate minimum sample discrepancy function. Thus based on the goodness fit indices reported in Table 5.15, it is reasonable to conclude that the minimum sample discrepancy function has been addressed and the sample size chosen for this satisfies the minimum requirements of statistical analysis.

5.14 RMSEA test

The next measure of model fitness that was examined was the population discrepancy measure assessment. Kaplan (2000) argues that assessing whether the model fits approximately well in the population is a more appropriate approach rather than testing the null hypotheses (e.g. λ2/df test). Furthermore, Schermelleh-Engel et al. (2003) claim that testing the null hypotheses to verify model fit invariably turns out to be false in real life situations and the likely rejection of the null hypothesis is almost certain if the sample size is sufficiently large. Thus, Browne and Cudeck (1993) suggest an alternative to the test of exact fitness of the model based on null hypotheses which is the null hypotheses of close fit. Steiger (1990) argues that the Root Mean Square Error of Approximation (RMSEA) is a measure that provides an approximate fit in the population and determines the discrepancy that could be generated due to the approximation. Researchers widely use RMSEA to check the model fit and consider this as a robust measure of fitness in comparison to the others (e.g., Jackson et al. 2009; Taylor, 2008). While RMSEA is used widely researchers caution that RMSEA measures are susceptible to confidence intervals. Furthermore researchers feel that confidence intervals are dependent on sample size and model complexity and hence needs to be considered with caution (Byrne, 2001).

Values of RMSEA considered by researchers in testing the model fit include ≤0.05 as good fit, in the range 0.05-0.08 as adequate fit, in the range 0.08-0.10 as mediocre fit and > 0.10 as not acceptable (Browne & Cudeck 1993). Considering the pros and cons of using RMSEA and the widespread use of RMSEA in empirical research, the researcher tested the RMSEA value for the re-specified model using AMOS and found it to be 0.084 (Table 5.16 (d)) which when reduced to two decimal places becomes 0.08. From the arguments given above, it can be seen that 0.08 falls in the adequately fit range. Hence it was concluded that the re-specified model satisfies the model fit requirement with regard to the population discrepancy measure assessment.

At this point it is necessary to highlight an important aspect related to the results obtained using several of the chosen test statistic or index. Some (e.g. Kline, 1998) claim that regardless of the test statistic chosen, it is possible for researchers to arrive at models that are statistically acceptable as the tests may indicate good fit even though it has a poor fit in many different parts of the model as well as lacks theoretical value or poor predictive power. Therefore it is common practice to report as many number of test statistic as possible with higher number of tests indicating better model fit (Kline, 1998). Thus in this research it can be seen that the researcher has tested the model with respect to SRMR, GFI, NFI, IFI, TLI, CFI and RMSEA and found the model to adequately fit. Apart from testing the fitness of the

model many researchers opine that it is necessary to test whether the model relationships are in the direction expected (e.g. Bollen & Long, 1993). Thus the next section deals with the path analysis of the re-specified model.

5.15 Path analysis

The path analysis was carried out using the the path coefficients generated by AMOS and checking the statistical significance (at a p-value < 0.05). Table 5.17 provides the estimate of the regression weights (path coefficients) of the various paths in the re-specified model.

Table5.17, Regression weights of the re-specified integrated SDMP model

			Estimate	S.E.	C.R.	P	Label
Rationality	<---	Decision Mag_Impact	.593	.054	10.953	***	par_20
Intuition	<---	Decision Mag_Impact	-.166	.056	-2.973	.003***	par_33
Firm_Commit	<---	Firm_Perform	.369	.048	7.680	***	par_23
Decision_Effect	<---	Firm_Perform	.271	.035	7.777	***	par_26
Decision_Quality	<---	Firm_Perform	.220	.033	6.626	***	par_35
Firm_Commit	<---	Rationality	.493	.037	13.445	***	par_27
Decision_Quality	<---	Rationality	.243	.025	9.779	***	par_28
Decision_Effect	<---	Rationality	.301	.027	11.309	***	par_29
Decision_Effect	<---	Intuition	.079	.024	3.292	***	par_30
Decision_Quality	<---	Intuition	-.010	.020	-.525	.600	par_31
Firm_Commit	<---	Intuition	.051	.030	1.691	.091	par_32
Decision_Effect	<---	Dynamism	.085	.041	2.075	.038*	par_34
Firm_Commit	<---	Dynamism	.095	.059	1.624	.104	par_24
Decision_Quality	<---	Dynamism	.131	.040	3.247	.001***	par_36

*** A p value is statistically significant at the 0.01 level (two-tailed)
* A p value is statistically significant at the 0.05 level (two-tailed)

The significance of a path is determined by the p-value. A path is considered to be statistically significant if the p-values is less than or equal to the cut-off figure of 0.05. Thus it can be seen from Table 5.17 that out of the fourteen paths three paths are not found to be significant while the remaining paths are found to be statistically significant. The paths that are not found significant are Intuition → QODPO (p- value 0.6), Intuition → FC (p-value 0.091) and Dyms → FC (p-value 0.104). Furthermore, it can be seen from Table 5.17 that the different paths provide the basis to explain the relationship between the independent variable DMI and the dependent variable Decision Process Output (DME, QODPO and FC). Table 5.17 shows that there can be varying explanations to the relationships.

After determining which paths are significant and which are not, the next step is to assess and account for the variance of endogenous variables using the SMC between the predictors and dependent variables. Arbuckle (2005) argues that SMC of a construct is the proportion of the variance of the construct that is accounted for by its determinants. Table 5.18 provides the SMC values related to the predictor and predicted variables.

Table5.18, Squared Multiple Correlations

Dependent variable	Estimate (SMC)
Intuition	.024
Rationality	.302
Decision_Effect	.677
Decision_Quality	.594
Firm_Commit	.697

- The interpretation of the estimates in Table 5.18 is as follows.
- The determinant DMI accounts for 2.4% of the variance of Intuition.
- The determinant DMI accounts for 30.2% of the variance of RDM.
- The three determinants namely DMI, FP and Dyms account for 67.7% of the variance of DME.
- The three determinants namely DMI, FP and Dyms account for 59.4% of the variance of QODPO.
- The three determinants namely DMI, FP and Dyms account for 69.7% of the variance of FC.

It can be seen that the interpretations of the variance estimates are indicating that the independent variable decision magnitude of impact is having very little impact on the dependent variable intuition whereas all the independent variables have significant impact on the remaining dependent variables namely rationality in decision making, decision making effectiveness, quality of decision making process output and firm commitment.

Further to examining the extent to which the predictors account for the variance in the dependent variables, it is now possible to use the standardized regression weights reported by AMOS to compare the relative effect of each independent construct on the dependent variable (Hair et al. 2006). Using these regression weights it is possible to infer whether the hypotheses can be accepted or rejected. Table 5.19 provides the AMOS output which indicates the standardized regression weights. The reference values for the regression weights that were used in this research are given in Section 5.9 which is in line with the suggestions of Kline (1998). That is Kline (1998) classifies regression beta weights in the standardized output with absolute values of 0.1, 0.3 and 0.5 as having small, moderate and large effects respectively of the independent variable on the dependent variable.

Table5.19, Standardized Regression Weights (Re-specified integrated SDMP model (Standardised))

			Estimate
Rationality	<---	Decision Mag_Impact	.550
Intuition	<---	Decision Mag_Impact	-.154
Firm_Commit	<---	Firm_Perform	.383
Decision_Quality	<---	Firm_Perform	.362
Decision_Effect	<---	Firm_Perform	.414
Firm_Commit	<---	Rationality	.599
Decision_Quality	<---	Rationality	.468
Decision_Effect	<---	Rationality	.539
Decision_Effect	<---	Intuition	.142
Decision_Quality	<---	Intuition	-.020
Firm_Commit	<---	Intuition	.062
Decision_Effect	<---	Dynamism	.103
Firm_Commit	<---	Dynamism	.078
Decision_Quality	<---	Dynamism	.171

Thus with respect to the data in Table 5.19 it is possible to interpret the relationship between each one of the two constructs in each row as follows.

Decision magnitude of impact has a positive relationship with rationality and the effect of decision magnitude of impact on rationality in decision-making is large (standardized regression weight for the relationship between DMI and RDM is 0.550 which is greater than the reference value of 0.5 for large effects). That is to say if the magnitude of impact of the decision is great, then the rationality in strategic decision-making will be comprehensive. Alternatively if the magnitude of impact is mild then the rationality in strategic decision-making will be non-comprehensive.

An example of DMI affecting rationality could be demonstrated by considering a hypothetical situation. For instance in a fast changing field like telecommunication where the technology has been changing from 2G to 3G to 4G to 5G, a firm dealing in mobile phones needs to make sound strategic decisions based on rationality. In fact SMEs in the telecommunication sector need to change their business strategies to keep pace with the changes taking place in the external environment. In this situation, an impact on the profits of the firm, due to the magnitude of impact of the decisions made earlier can be considered to have a bearing on the future decisions to be made, for instance to enhance profits using analytic techniques, as part of the rational strategic decision making process. It is logical that an analytic technique could provide decision-making support to the managers in the firm with regard to the fast changing technology based on information gathered from the external environment, impact of past decision on the firm's profit and analysed using techniques that support decision-making. If rationality is used, then it is possible to predict the output of the decision making process leading to a better understanding of the possible profits the firm could earn. In the absence of such a rational decision making based on the impact of prior decisions made, it is possible that the decision process output is unpredictable and profits made by the firm could be less than the optimum.

Similarly decision magnitude of impact has a negative relationship with intuition and the effect of decision magnitude of impact on intuition is small in absolute terms (standardized regression weight for the relationship between DMI and Intuition is 0.154 which is greater than the reference value of 0.1 for small effects). That is to say if the magnitude of impact of the decision is great then the extent of use of intuition in strategic decision-making will be little and the effect of variance in DMI on the variance in intuition will be small. It must be noted here that the negative relationship between intuition and decision magnitude of impact can be considered to be logical. In a fast changing business sector like IT, intuition is unlikely

to be a major factor that could contribute in strategic decision making as the rate at which the change takes place is high.

For instance IT applications such as Adobe are frequently updated and new versions are brought out in quick succession. IT firms in the SME sector will have a very little time between two versions of the application to gain experience and knowledge on the upgrades or new versions because by the time they attempt to master or gain experience in one version the next version is already out. This leaves very little scope for the entrepreneurs to apply intuition as there is hardly any knowledge or experience gained with regard to the new versions of the IT applications, in such a short duration. Further, in the aforementioned circumstances, the impact of previous decisions on intuition will hardly mean anything especially in a fast changing environment as each decision might have been taken under varying circumstances and in haste leading to very little knowledge gained. Thus it is logical to infer that when DMI is great then the opposite should be the case with regard to intuition that is it should be used little in strategic decision-making process. The outcome of the statistical analysis can therefore be considered logical.

With regard to Firm Performance, data in Table 5.19 indicates that firm performance is positively related to all the three decision making process output variables (dependent) decision making effectiveness, quality of the decision process output and firm commitment. Further firm performance as an independent variable is seen to have moderate effect on all the three decision making process output variables (standardised regression weight for the relationship between FP and DME is 0.414; between FP and QODPO is 0.362; and between FP and FC is 0.383; all these regression weights are above 0.3 which is higher than the reference value of 0.3 indicative of moderate effect of the independent variable on the dependent variables). This can be interpreted in a way that firm performance as an internal contextual factor plays a moderate role in the strategic decision making process. That is to say if a firm's performance is much better in comparison to firms similar in size and scope to the firm, then the decision making process in that firm will be highly effective, the quality of decision making process output will be quite precise and the firm will be very committed to the decision making process output.

That firm performance is positively related to decision-making effectiveness, quality of the decision process output and firm commitment is logical, practical and theoretically supported. For instance, in the field of consumer electronics, new product versions are quite common. SMEs dealing with consumer electronic products have to perform effectively without which it is not possible to survive in the market. Reducing prices, high cost of inventory, changing

customer demands and changing models can have devastating effect on the SMEs if their performance is not up to the mark. Such situations call for strategic decision-making process that is expected to be effective failing which it is possible that the firm's performance is not adequate. It is also imperative and expected that such a decision making process produces output that is of high quality without which the results could be sloppy. Finally the commitment of the firm to the decision process output is expected to be in place influenced by past performance as past performance logically inspires firms to perform better leading to a committed firm. This argument is line with research outcomes produced by Amgun et al. (2008). Hence it is possible to infer that past performance of the firm is an important influencing factor of the strategic decision making process with moderate effect on decision-making effectiveness, quality of the decision process output and firm commitment.

Like firm performance the other independent variable Dynamism in the industry as an external environment factor, is also seen to be positively related to all the three decision making process output variables; decision making effectiveness, quality of the decision process output and firm commitment. The results also indicate that dynamism in the industry as an independent variable is seen to have low effect on two of the three decision making process output variables (DME and QODPO) while on the third (FC) it is lower than the small effect (standardised regression weight for the relationship between Dyms and DME is 0.103; between Dyms and QODPO is 0.171; and between Dyms and FC is 0.078. Out of these, regression weights for the relationships Dyms and DME as well as Dyms and QODPO are above 0.1, which are higher than the reference value of 0.1 and indicative of small effect of the independent variable on the dependent variables. But the regression weight for the relationship between Dyms and FC is lower than the reference value of 0.1 which is indicative of lower than the small effect expected in this research). That is to say, if the dynamism in the industry as an external factor results in a change that is very different to the previous years, then the decision making process in that firm under those circumstances will be effective, the quality of decision making process output will be quite precise and the firm will be committed to the decision making process output.

However it must be noted here that the findings of Elbanna and Child (2007) with respect to the relationship between dynamic environment and decision-making effectiveness is contradictory to this finding. Elbanna and Child (2007) found through their research that linkage between rationality and strategic decision effectiveness will be positive but low in high uncertain environments and high in low uncertain environments. The current results in this research show that the higher the dynamism, the higher the decision making effectiveness although the effect of dynamism on decision-making effectiveness is found to be small.

A possible explanation for this situation could be that in a highly dynamic industry such as information technology, competing firms in the SME sector need to have highly effective decision-making processes in correspondence with the highly dynamic environment to combat challenges posed by the highly dynamic environment. Any decision making process that is less effective and disproportionate to the rate of variation in the environment, could result in the firm landing into difficult situations such as loss of market, low profits and high non-moving stocks. The same arguments apply to the relationship between dynamism in the industry and quality of decision process output, as well as firm's commitment.

Rationality in decision making as an independent variable with respect to the decision making process output variables (dependent), is seen to be positively related to the three decision making process output variables decision making effectiveness, quality of the decision process output and firm commitment. Out of the three decision making process output variables, rationality in decision making is having a large effect on decision making effectiveness (regression weight 0.539) and firm commitment (0.599) while it has a moderate effect on the quality of the decision making process output (regression weight of 0.468). In fact the effect of rationality in decision making on quality of the decision making process output in terms of the regression weight is also very close to 0.5 leading to a possible inference that rationality in decision making process more or less has a large effect on decision making effectiveness, quality of the decision process output and firm commitment. That is to say if rationality in decision making is comprehensive, then the decision making process in that firm will be effective, the quality of decision making process output will be precise and the firm will be committed to the decision making process output.

However it must be pointed out here that rationality in decision-making is acting as a mediator between decision magnitude of impact (DMI) and the decision process output, under the influence of the environmental factors on the decision process output variables. Additionally DMI has been found to have a large effect on rationality. A large effect of DMI on rationality and a large effect of rationality on decision process output variables calls for a detailed analysis of the combined effect. Hence it was necessary to understand the overall relationship between decision magnitude of impact and decision process output mediated by rationality in decision making, taking into consideration the environmental variables' influence. However such a detailed discussion is beyond the individual path analysis and hence has been provided under the Discussion chapter where assessment of the direct, indirect and total effect of the independent variables on the dependent variables has been addressed taking into account the effect of the mediating variables.

Again, in practical situations, the positive relationship between rationality in decision making and decision output variables, namely decision making effectiveness, quality of the decision process output and firm commitment is logical, practical and theoretically supported. For instance, if a telecommunication firm dealing in provisioning mobile telephone services wants to launch new services such as 5G, then the firm needs to take a rational decision that involves collecting relevant information, analyzing the collected information, use decision support modelling if necessary with regard to various requirements such as additional manpower, additional resources and enhancement of facilities and focus on crucial information generated through such an analysis. Decisions taken based on information collected on the ground and analysed using appropriate analytic techniques, is expected to provide a solid reasoning to the firm's managers in taking actions. Such decision-making is expected to make the decision making process more effective as the firm will be able to optimize on resources and choose the most appropriate alternative. It is logical that an effective decision making process is expected to generate high quality decision process output as well as enable the firm to commit to the decision taken through the process. Especially when the environment is highly dynamic, rational decisions will enable the firm to improve performance. That rationality can improve decision process effectiveness can be corroborated with the research outcomes of Elbanna and Child (2007) who found out that rationality and decision process effectiveness are positively related. Similar arguments could be extended with respect to quality of decision-making process and firm commitment.

Lastly, intuition as an independent variable with respect to the decision making process output variables (dependent), is seen to be positively related to two of the decision making process output variables, decision making effectiveness and firm commitment, where as it is negatively related to quality of decision making process output. Intuition is having a small but positive effect on decision making effectiveness (regression weight 0.142) and less than small but positive effect on firm commitment (regression weight 0.062). At the same time it can be seen that intuition is having negative but almost insignificant effect on quality of decision-making process output (regression weight -0.02). That is to say if intuition is used a great deal in the strategic decision making process in a firm, then the decision making effectiveness in the firms will be effective and the firm will be committed to the decision process output. Similarly if intuition is used a great deal in the strategic decision making process in a firm, then the quality of decision-making process output will be quite imprecise and insignificant.

However as in the case of rationality, it can be seen that intuition is acting as a mediator between decision magnitude of impact and the decision process output, under the influence of

the environmental factors on the decision process output variables. Further, it has been seen that DMI is having small effect on intuition and changes in the opposite direction. Therefore it is imperative that the overall relationship between the predictor decision magnitude of impact on the dependent variables is understood taking into account the influence of the environmental factors on the decision process output variables. Interpretation of the relationship between the mediating variables and the dependent variables through individual path analysis, in isolation would not yield the true picture of the phenomenon under study. Therefore this discussion is provided in the Discussion chapter as that section analyses comprehensively the outcome of the statistical analysis which includes the direct, indirect and total effect of the independent variable on the dependent variables and takes into account the role of mediating variables.

An interpretation of the outcome of the path analysis pertaining to intuition and the decision process output variables could be given as follows. Intuition as a decision dimension could be seen in practice in many SMEs. An SME dealing in retail business of LCD TVs pertaining to different brands may not necessarily use data collecting and analyzing techniques with regard to the changing market needs as it may be uneconomical for the firm to collect and analyse such data due to rapidly changing technology. It is perhaps obvious that in such firms intuition of managers plays a role in determining what brand of LCD TVs should be stocked and what price range should be set. Such situations are practically seen in everyday life. However the result of such a situation could be an outcome that is successful due to a mere chance and not a predicted one. Thus the effect of intuition on the decision process output variables could be considered to be very small as the outcomes are not predictable.

The small effect of intuition on decision making effectiveness and less than small effect of intuition on firm commitment of the decision making process as well as no effect of intuition on quality of the decision making process output is logical. That intuition could have a small effect on decision making process effectiveness is slightly different from the research outcomes brought out by Elbanna and Child (2007) who found no relationship between intuition and decision making process effectiveness. However the slight difference between the results achieved in this research and those of Elbanna and Child (2007) can be attributed to the characteristics of SMEs dealing in electronics, telecommunication and IT sectors, whom are the focus of this research and who appear to use intuition as a tool in the decision making process in a very dynamic environment. In the case of Elbanna and Child (2007) the focus was on manufacturing firms which are expected to be more organized than SMEs and hence intuition may not play any role in decision-making effectiveness. Hence the results of this research are consistent with prior research. Similar arguments could be extended to the

two other decision process output variables which are quality of decision-making process output and firm commitment.

Further to analyzing the paths between each pair of latent variables, it is necessary to understand the association between the independent variables decision magnitude of impact, dynamism in the industry and firm performance. It is important to know whether the three exogenous constructs are correlated or not. Knowledge about their interrelationship is vital to explaining the model as strategic decision-making processes are directly affected by environmental factors. In order to test their association to each other the AMOS output related to the covariance matrix was used. Table 5.20 provides the covariance output from AMOS.

Table5.20, Covariances (Re-specified integrated SDMP model (Standardised))

			Estimate	S.E.	C.R.	P	Label
Decision Mag_Impact	<-->	Dynamism	.194	.027	7.240	***	par_21
Decision Mag_Impact	<-->	Firm_Perform	.290	.033	8.703	***	par_22
Dynamism	<-->	Firm_Perform	.231	.027	8.516	***	par_25

Scrutiny of Table 5.20 indicates that the association between the three exogenous constructs decision magnitude of impact, dynamism in the industry and firm performance are significant with p-values relevant to covariances amongst each pair of the constructs being lower than 0.01. Thus the association between the exogenous constructs is clearly seen to be significant. Such a result is consistent with prior findings (for instance Papadakis et al. 1998) and finds support from the SDMP literature provided in Chapter 2. The association is also logically supported if one considers practical issues related to real time happenings in the industry. Magnitude of impact of the decisions taken in an IT firm cannot be considered in isolation without taking into account the performance of the firm and the external environment. For instance a firm involved in developing software using Microsoft Windows operating system cannot ignore the competition in the market as well as its own capability while taking decisions to offer solutions/services to the customers. The impact of such decisions on the firm will invariably be related to the changing environment as IT market environment is highly dynamic in nature as well as changing capabilities of the firm because the turnover of human resource in the field of IT is very high. Thus an association between the magnitude of impact of the decisions, dynamism in the industry and firm performance can said to be logical, practical and supported by theory.

Scrutinising the results in Tables 5.17, 5.19 and 5.20 together it is possible to come to the following conclusions:

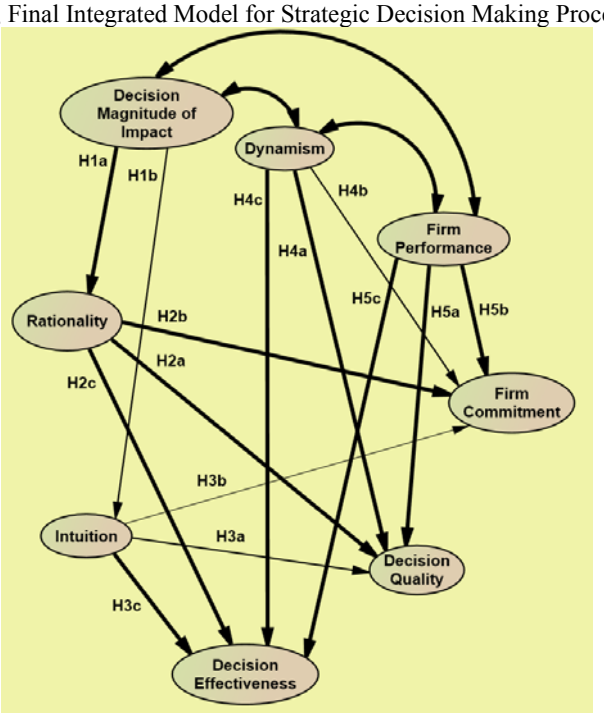
- The association between DMI and Dyms is seen to be of medium correlation.
- The association between DMI and FP is seen to be of large correlation.

- The association between FP and Dyms is seen to be of large correlation.
- The path DMI→RDM is significant. Decision magnitude of impact (a decision characteristic) as an independent variable acts as the predictor of rationality. Thus hypothesis H1a is accepted.
- The path DMI→Intuition is not significant. Decision magnitude of impact (a decision characteristic) as an independent variable does not predict intuition. Thus hypothesis H1b is rejected.
- The path Dyms→ QODPO is significant. Dynamism (the external environment factor) as an independent variable acts as the predictor of decision process output quality. Thus hypothesis H2a is accepted.
- The path Dyms→ DME is significant. Dynamism (the external environment factor) as an independent variable acts as the predictor of decision process output effectiveness. Thus hypothesis H2b is accepted.
- The path Dyms→ FC is not significant. Dynamism (the external environment factor) as an independent variable does not act as a predictor of firm commitment (decision process output). Thus hypothesis H2c is rejected.
- The path FP→ QODPO is significant. Firm performance (an internal contextual factor) as an independent variable acts as the predictor of decision process output quality. Thus hypothesis H3a is accepted.
- The path FP→ DME is significant. Firm performance (an internal contextual factor) as an independent variable acts as the predictor of decision process output effectiveness. Thus hypothesis H3b is accepted.
- The path FP→ FC is significant. Firm performance (an internal contextual factor) as an independent variable acts as the predictor of firm commitment (a decision process output). Thus hypothesis H3c is accepted.
- The path RDM→ QODPO is significant. Rationality (a decision dimension) as an independent variable acts as the predictor of decision process output quality. Thus hypothesis H4a is accepted.
- The path RDM→ DME is significant. Rationality (a decision dimension) as an independent variable acts as the predictor of decision process output effectiveness. Thus hypothesis H4b is accepted.
- The path RDM→ FC is significant. Rationality (a decision dimension) as an independent variable acts as the predictor of firm commitment (a decision process output). Thus hypothesis H4c is accepted.

- The path Intuition→ QODPO is not significant. Intuition (a decision dimension) as an independent variable does not act as the predictor of decision process output quality. Thus hypothesis H5a is rejected.
- The path Intuition→ DME is significant. Intuition (a decision dimension) as an independent variable acts as the predictor of decision process output effectiveness. Thus hypothesis H5b is accepted.
- The path Intuition→ FC is not significant. Intuition (a decision dimension) as an independent variable does not act as the predictor of firm commitment (decision process output). Thus hypothesis H5c is rejected.

Thus the final resultant model which summarises the significant and insignificant paths is provided in Figure 5.13, where the solid lines indicate that the paths are significant and thin lines indicate that the paths are not significant.

Figure5.13, Final Integrated Model for Strategic Decision Making Process Output



After realizing the final model, it was necessary to assess whether the model is unidimensional. The next section discusses this aspect.

5.16 Unidimensionality

According to Janssens et al (2008) unidimensionality refers to the situation were a model has a set of variables which have only one underlying dimension in common. Further Janssens et al (2008) argue that unidimensionality is measured using AMOS by three different measures which are the p-value of significance (p-value should be lower than 0.05), the critical ratio

(C.R. should be higher that ± 1.96) and the estimate of standardized regression weights (should be greater than 0.5) of the observed variables. From Table 5.17 it can be seen that except for the relationships between intuition and quality of decision making process output, intuition and firm commitment, and dynamism in the industry and firm commitment the rest of the relationships satisfy the condition that C.R. value should be greater than the reference value of ±1.96 and p-value of significance is less than the reference values of 0.05. The relationships which do not satisfy the minimum requirements will not be considered as significant to the model which is evident from the final model provided in Figure 5.13. Similarly from Table 5.21, it can be seen that none of the loadings of the observed variables is lower than 0.5. Thus it can be concluded that the model is unidimensional.

Table5.21, Standardized Regression Weights (Re-specified integrated SDMP model (Standardised))

			Estimate
DMI1	<---	Decision Mag_Impact	.813
DMI2	<---	Decision Mag_Impact	.871
DMI3	<---	Decision Mag_Impact	.839
DMI4	<---	Decision Mag_Impact	.839
DMI5	<---	Decision Mag_Impact	.818
RDM10	<---	Rationality	.837
RDM11	<---	Rationality	.894
RDM12	<---	Rationality	.790
Intuition13	<---	Intuition	.922
Intuition17	<---	Intuition	.716
FP18	<---	Firm_Perform	.732
FP20	<---	Firm_Perform	.787
FP21	<---	Firm_Perform	.853
FP22	<---	Firm_Perform	.832
Dyms24	<---	Dynamism	.608
Dyms25	<---	Dynamism	.841
Dyms26	<---	Dynamism	.727
Dyms28	<---	Dynamism	.568
FC38	<---	Firm_Commit	.827
FC39	<---	Firm_Commit	.894
FC40	<---	Firm_Commit	.761
QODPO35	<---	Decision_Quality	.682
QODPO36	<---	Decision_Quality	.870
QODPO37	<---	Decision_Quality	.911
DME46	<---	Decision_Effect	.714
DME44	<---	Decision_Effect	.873
DME43	<---	Decision_Effect	.866

The last test that needed to be conducted on the data was the method bias that could have crept in while collecting data.

5.17 Method bias

As explained in Section 4.12.8 the Average Variance Extracted (AVE) was the measure that was used to check the existence of method bias with values of AVE for each item fixed at a minimum of 0.5 (Janssens et al. 2008). The AVE calculated is given in Table 5.22.

Table5.22, Average variance extracted (Re-specified integrated SDMP model (Standardised)

	Estimate	SMC	Variance extracted
DMI1	.813	0.661	(0.661+0.759+0.704+0.704+0.669)÷5= 0.699
DMI2	.871	0.759	
DMI3	.839	0.704	
DMI4	.839	0.704	
DMI5	.818	0.669	
RDM10	.837	0.701	(0.701+0.799+0.624)÷3 = 0.708
RDM11	.894	0.799	
RDM12	.790	0.624	
Intuition13	.922	0.850	(0.85+0.513)÷2 = 0.682
Intuition17	.716	0.513	
FP18	.732	0.536	(0.536+0.619+0.728+0.692)÷4 = 0.644
FP20	.787	0.619	
FP21	.853	0.728	
FP22	.832	0.692	
Dyms24	.608	0.370	(0.370+0.707+0.529+0.323)÷4 = 0.482
Dyms25	.841	0.707	
Dyms26	.727	0.529	
Dyms28	.568	0.323	
FC38	.827	0.684	(0.684+0.800+0.579)÷3 = 0.688
FC39	.894	0.800	
FC40	.761	0.579	
QODPO35	.682	0.465	(0.465+0.757+0.830)÷3 = 0.684
QODPO36	.870	0.757	
QODPO37	.911	0.830	
DME46	.714	0.510	(0.510+0.682+0.750)÷3 = 0.647
DME44	.873	0.682	
DME43	.866	0.750	

The AVE of the constructs was extracted in two steps. The first step involved the calculation of the average SMC of the items under each construct as given in Table 5.23. The second step involves the SMC of the correlation between latent variables as given in Table 5.24. The resultant AVE for all constructs is provided in Table 5.25.

Table5.23, Correlations (Re-specified integrated SDMP model (Standardised)

	DMI	FP	Dyms	RDM	Intuition	DME	QODPO	FC
DMI	1.000							
FP	.535	1.000						
Dyms	.455	.585	1.000					
RDM	.550	.294	.250	1.000				
Intuition	-.154	-.082	-.070	-.084	1.000			
DME	.543	.621	.470	.674	.055	1.000		
QODPO	.531	.601	.501	.618	-.101	.619	1.000	
FC	.560	.599	.447	.726	-.026	.682	.633	1.000

Table5.24, Squared Multiple-Correlation of correlations in Table 5.23 (Re-specified integrated SDMP model (Standardised)

	DMI	FP	Dyms	RDM	Intuition	DME	QODPO	FC
DMI								
FP	0.286							
Dyms	0.207	0.342						
RDM	0.303	0.086	0.063					
Intuition	0.024	0.007	0.005	0.007				
DME	0.295	0.386	0.221	0.454	0.003			
QODPO	0282	0.361	0.251	0.382	0.010	0.383		
FC	0.314	0.359	0.200	0.527	0.001	0.465	0.401	

Table5.25, Average Variance Extracted (AVE) of the constructs (derived from Tables 5.23 and 5.24) (Re-specified integrated SDMP model (Standardised)

	DMI	FP	Dyms	RDM	Intuition	DME	QODPO	FC
DMI	**0.699**							
FP	0.286	**0.644**						
Dyms	0.207	0.342	**0.482**					
RDM	0.303	0.086	0.063	**0.708**				
Intuition	0.024	0.007	0.005	0.007	**0.682**			
DME	0.295	0.386	0.221	0.454	0.003	**0.647**		
QODPO	0282	0.361	0.251	0.382	0.010	0.383	**0.684**	
FC	0.314	0.359	0.200	0.527	0.001	0.465	0.401	**0.688**

According to Janssens et al. (2008), the AVE of a construct should not be less than 0.5 and none of the SMC between a construct and the remaining constructs should be higher than the SMC of that construct. For instance in column 1 in Table 5.25 the SMC of DMI is given by the bold number which is 0.699 and is higher than the reference value of 0.5. In the same column none of the other SMC values is higher than 0.699 and the highest value found was 0.314 which is the SMC between DMI and FC. Thus if Table 5.25 is examined, it can be seen that with regard to all the constructs, the SMC value of the constructs themselves is higher than 0.5 except for the construct Dyms, but which is also very close to 0.5. Similarly in each one of the columns the values of all SMC values are less than the values of the one indicated in bold numbers. Thus it can be said that there is no presence of method bias found in the data.

5.18 Chapter Summary

In this chapter the data collected for the research relationship model has been analysed using the preliminary analysis and the main analysis. The preliminary analysis enabled the researcher to address descriptive statistics, establish the reliability of the model and validate the internal consistency of the measures. The covariance model enabled the researcher to establish the construct reliability, validity of the content of research instrument and convergence of the constructs as well as the discriminant validity of the constructs and determine the optimum set of variables needed for the model. The initial model was derived from the variance model and using SEM the initial model was tested. Further the structural aspects of the model were tested based on path analysis and the research model was identified leading to model re-specification, testing and establishing hypotheses. Finally, the model was tested and confirmed for unidimensionality and lack of presence of method bias. Thus the statistical tests confirmed that the research relationship model was evaluated, fit to the data and ten out of the fourteen hypotheses could be accepted. This led the researcher to the next task of discussing the results of the statistical analysis in the next chapter and using the outcome of the analysis to address the research problems and explain the hypotheses.

Chapter 6

Discussion

6 Introduction

This chapter provides a comprehensive discussion on the findings derived from the statistical analysis of the data in the previous chapter. To begin with the chapter analyses the outcomes and addresses the research problem. Next, the using outcome from the path analysis the hypotheses are discussed.

The chapter is organised as follows. Section 6 introduces the chapter while Section 6.1 provides discussions on the direct and indirect relationship amongst the latent variables. Section 6.2 discusses how the research problems have been addressed based on the statistical tests and findings provided in the previous chapter while Section 6.3 summarises the chapter.

6.1 Discussions on the direct and indirect relationship amongst the latent variables

In order understand the underlying meaning of the various relationships amongst the eight latent variables, it is necessary to interpret the linkages amongst the variables using the path coefficients derived through the statistical analysis in the previous chapter. Thus each one of the paths will be taken up for analysis and discussed in this section to bring out the statistical significance of the path coefficients. To do this, reference is made back to Section 5.15, and for clarity some statistics are reproduced here.

The association between DMI and Dyms is seen to be of medium correlation

Decision magnitude of impact signifies the impact of the strategic decision on the whole firm. Such an impact has been found to be influenced by external environment (Papadakis et al. 1998). Thus there is correlation between DMI and Dyms and has been confirmed by statistical analysis in Section 5.15 (Table 5.20). The covariance path between DMI and Dyms has been found to have a correlation of 0.45 (Figure 5.12) which is classified in this research as medium correlation (Section 4.9.5). This can be interpreted in a way that the magnitude of impact of a decision on the SDMP needs to be considered together with the influence of dynamism in the industry on the SDMP. Thus when discussing the effectiveness of SDMP, it is necessary also to understand the effect of DMI on decision-making effectiveness taking into account Dyms. Furthermore there is no parallel statistic available in the extant literature to compare this figure.

It can be seen from Table 6.1 that DMI has an indirect effect on decision-making effectiveness (DME). DMI is working through rationality in decision making (RDM) to have an effect on decision-making effectiveness.

Table6.1, Standardized Indirect Effects

	Firm_Perform	Dynamism	Decision Mag_Impact	Intuition	Rationality	Decision_Effect	Decision_Quality	Firm_Commit
Intuition	.000	.000	.000	.000	.000	.000	.000	.000
Rationality	.000	.000	.000	.000	.000	.000	.000	.000
Decision_Effect	.000	.000	.274	.000	.000	.000	.000	.000
Decision_Quality	.000	.000	.260	.000	.000	.000	.000	.000
Firm_Commit	.000	.000	.320	.000	.000	.000	.000	.000

DMI is having a positive effect on rationality in decision-making and rationality is having a positive effect on decision-making effectiveness (Section 5.15). The interpretation of this relationship is that in an SDMP the decision making effectiveness has an effect caused by DMI if only rationality in decision-making mediates between the two. In statistical terms DMI→RDM and RDM→DME. The regression coefficient obtained through AMOS can be used to calculate the effect of DMI on DME. From Figure 5.12 and Table 6.2, the regression coefficient for the direct relationship between DMI and RDM is found to be 0.55. Similarly the regression coefficient for the direct relationship RDM→DME is found to be 0.539. Thus:
Indirect effect of DMI on DME through RDM is (0.55)x(0.539)=0.296 → (1).

Table6.2, Standardized Direct Effects

	Firm_Perform	Dynamism	Decision Mag_Impact	Intuition	Rationality	Decision_Effect	Decision_Quality	Firm_Commit
Intuition	.000	.000	-.154	.000	.000	.000	.000	.000
Rationality	.000	.000	.550	.000	.000	.000	.000	.000
Decision_Effect	.414	.103	.000	.142	.539	.000	.000	.000
Decision_Quality	.362	.171	.000	-.020	.468	.000	.000	.000
Firm_Commit	.383	.078	.000	.062	.599	.000	.000	.000

That is to say that if DMI varies by one standard deviation DME changes by 0.296 standard deviations. However the total effect of DMI on DME is not just the effect through RDM but has another path through intuition. Thus it is necessary to compute the effect of DMI on DME through Intuition. From Table 6.2 the regression coefficient for the path DMI→Intuition is found to be (-0.154). Similarly the regression coefficient for the path Intuition→DME is found to be 0.142. Thus:

Indirect effect of DMI on DME through Intuition is (-0.154)x(0.142)=(-0.022)→ (2)
That is to say that a one standard deviation change in DMI causes a 0.022 standard deviation change in DME.

Thus the total effect of DMI on DME through both RDM and Intuition is (1) + (2).

That is (0.296) + (-0.022) = 0.296 – 0.022 = 0.274. This result is the total effect of DMI on DME which is confirmed in Table 6.3. The interpretation is that the total effect of DMI on DME goes down if Intuition is included as a mediating variable in the SDMP. Thus it is concluded that the path between DMI and DME mediated through rationality could be retained while rejecting the path between DMI and DME mediated by Intuition.

Table6.3, Standardized Total Effects

	Firm_Perform	Dynamism	Decision Mag_Impact	Intuition	Rationality	Decision_Effect	Decision_Quality	Firm_Commit
Intuition	.000	.000	-.154	.000	.000	.000	.000	.000
Rationality	.000	.000	.550	.000	.000	.000	.000	.000
Decision_Effect	.414	.103	.274	.142	.539	.000	.000	.000
Decision_Quality	.362	.171	.260	-.020	.468	.000	.000	.000
Firm_Commit	.383	.078	.320	.062	.599	.000	.000	.000

Further it can be seen that Dyms has a direct effect on DME. The regression coefficient for the path Dyms→DME is 0.103. That is to say one standard deviation change in Dyms will result in just 0.1 standard deviation change in DME. A comparison between the two relationships namely DMI to DME and Dyms to DME shows that Dyms has a much lower effect on DME in comparison to DMI. That is while Dyms is causing only 0.1 standard deviation change in DME, DMI is causing a 0.274 standard deviation change in DME. The interpretation could be that there is a greater impact of DMI on DME due to rationality in decision making in the SDMP than the dynamism in the industry. Even if the change in the industry is very different to the past, still the effect of such a change on the DME of the SDMP is very low. Therefore dynamism in the industry does not have that much effect on the DME. This result is contradicting the results of Elbanna and Child (2007). One reason for this is that in the electronic, telecommunication and IT industries in the SMEs, managers may be using rationality in decision making as a matter of practice due to the very dynamic nature of the environment which is a character of the environment. In such a situation there may be no alternative but to emphasise on rationality in any decision making process by default to counter the effect of dynamism in the industry on the SDMP effectiveness in the SME sector.

Akin to the effect of DMI on DME, it is necessary to understand the effect of DMI on quality of the decision process output and firm commitment taking into account the effect of Dyms. As in the case of DME, DMI is seen to have an indirect effect on QODPO and FC (Table 6.1). DMI is having a positive effect on rationality in decision-making and rationality in decision making is having a positive effect on both QODPO and FC (Section 6.1). The interpretation of these relationships is that DMI has an effect on QODPO and FC if only rationality is involved in the SDMP. In statistical terms DMI→RDM, RDM→QODPO and RDM→FC. From Figure 5.12 and Table 6.2, the regression coefficient for the direct relationship between DMI and RDM is found to be 0.55. Similarly the regression coefficient

for the direct relationship RDM→QODPO is found to be 0.468 and RDM→FC is found to be 0.599. Thus:

Indirect effect of DMI on QODPO through RDM is (0.55)x(0.468)=0.257 → (3)
Indirect effect of DMI on FC through RDM is (0.55)x(0.599)=0.330 → (4)
That is to say that if DMI varies by one standard deviation QODPO changes by 0.257 standard deviation and FC changes by 0.33 standard deviation.

Furthermore QODPO and FC are linked to DMI through another mediating variable Intuition. DMI has a negative relationship with Intuition and Intuition is having a positive relationship with FC but negative relationship with QODPO. Thus the effect of DMI on QODPO and FC through DMI in statistical terms is DMI→RDM, Intuition→QODPO and Intuition→FC. From Figure 5.12 and Table 6.2, the regression coefficient for the direct relationship between DMI and Intuition is found to be (-0.154). Similarly the regression coefficient for the direct relationship Intuition→QODPO is found to be (-0.02) and Intuition→FC is found to be 0.062. Thus:

Indirect effect of DMI on QODPO through Intuition is (-0.154)x(-0.02)=0.003 → (5)
Indirect effect of DMI on FC through Intuition is (-0.154)x(0.062)=(-0.01) → (6)

That is to say, that if DMI varies by one standard deviation QODPO does not change at all. This indicates that DMI has very little or no effect at all on QODPO and FC mediated by Intuition. This result is similar to those argued by such researchers as Senge (1990a) but contradictory to the results obtained by Elbanna and Child (2007). One explanation for this phenomenon could be due to the fact that in highly dynamic environment if decisions are taken through intuition such decisions may or may not produce the desired results for the firm as the basis for such decisions are not backed up by hard facts. Thus the results of this research clearly demonstrate that in the presence of a dynamic environment it is the rationality in decision making that will enable DMI to have a positive and significant effect on QODPO and FC and not Intuition.

From the foregoing discussions and equations (1), (2), (3), (4), (5) and (6) it is possible to conclude that decision magnitude of impact has a positive effect that is indirect and significant on decision making effectiveness, quality of decision process output and firm commitment if only mediated by rationality in decision making even if the environment in the industry is highly dynamic.

The association between DMI and FP is seen to be of large correlation

As mentioned in Section 2.6.1 decision magnitude of impact signifies the impact of the strategic decision on the whole firm. Such an impact has been found to be influenced by internal environment or context (Papadakis et al. 1998). Thus there is correlation between DMI and FP which has been confirmed by statistical analysis in Section 5.15 (Table 5.20). The covariance path between DMI and FP has been found to have a correlation of 0.54 (Figure 5.12) which is classified in this research as large correlation (Section 4.9.5). This can be interpreted as DMI and FP have a strong association which is logical. If the magnitude of impact of decisions is found to be low, then the results of this research indicate that the firm performance could be low and vice-versa. Similarly if the magnitude of impact of the decisions is high, then the firm performance is expected to be high and vice-versa. That is to say in industries that have been the focus of this research, the decision magnitude of impact is expected to play a vital role in the SDMP and together with firm performance provides a strong basis to make the SDMP more effective. SMEs operating in a dynamic environment can tackle the high turbulence or dynamism successfully with the support of an SDMP which requires decisions with a magnitude of impact that is great and a better firm performance. An important point that needs to be highlighted is that although some researchers point towards a linkage between DMI and DME moderated by FP (e.g. Elbanna & Child, 2007), statistical results are not available to compare in the extant literature.

Furthermore the main focus of this research is the linkage between DMI and DME. However considering the importance of FP in the SDMP and its strong association with DMI, it is thus necessary to understand the relationship between DMI and DME taking into account the effect of FP on SDMP.

From the discussions given above it can be seen that:
Indirect effect of DMI on DME through RDM is (0.55)x(0.539)=0.296 → (1)

Further it can be seen that FP has a direct effect on DME. The regression coefficient for the path FP→DME is 0.414. That is to say one standard deviation change in FP will result in 0.414 standard deviation change in DME. Previous studies conducted by other researchers (e.g. Elbanna and Child, 2007) indicate similar results. In addition, a comparison between the two relationships namely DMI to DME and FP to DME shows that FP has a much higher effect on DME in comparison to DMI. That is while FP is causing 0.414 standard deviation change in DME, DMI is causing a 0.274 standard deviation change in DME. The interpretation could be that there is a greater effect of FP on DME in the SDMP than DMI. That is to say a much better performance of a firm as an internal contextual factor makes the

DME highly effective and in association with a DMI that is great the overall DME of the SDMP is further enhanced. Previous studies linking DMI to DME through rationality in decision-making and FP to DME have not been found in the extant literature to compare.

Similar arguments can be posited with respect to QODPO and FP because statistically FP→QODPO and FP→FC have been found to be moderate with the regression coefficient for the two direct relationships found to be 0.362 and 0.383 respectively. That is to say one standard deviation change in FP brings about 0.362 and 0.383 standard deviations change in QODPO and FC respectively. Extant literature does not provide similar outcomes of research that could be compared. Further, like in the case of DME, the effect of DMI on QODPO and FP are statistically found to be lesser than the effect of FP (equations (3) and (4)). However the combined effect of FP and DMI on QODPO and FC is logically much more with FP found to be a major factor that affects decision process output factors positively when compared to DMI and Dyms. However it can be seen that rationality in decision-making is the mediating variable that reduces the overall effect of DMI on DME, QODPO and FC meaning that despite having a lower effect on the decision process output variables, DMI provides a rational approach to SDMP. Thus, in association with Dyms and FP, DMI makes the SDMP a rational process with decisions derived from the SDMP having a much better chance of success in comparison to processes that are based on Intuition, especially in a highly dynamic environment that is found in SMEs pertaining to the electronic, telecommunication and IT industries.

The association between FP and Dyms is seen to be of large correlation

The association between firm performance and dynamism in the industry has been seen to be one of large correlation meaning that there is significant interaction between the two variables. From Figure 5.12 it can be seen that the correlation between the two variables is 0.59 indicating a large effect on each other. This can be interpreted in a way that firm performance in the SMEs is correlated with the changes that take place in the external environment. A small change in Dyms and FP together can have a significant on the SDMP output variables. Hence the SDMP in the SMEs need to take into account the impact of the internal and external environment contexts to ensure that the SDMP is effective, the decision process output is qualitative and the firm could be committed to the process.

Covariance amongst the decision process output variables

The three variables DME, QODPO and FP have been found to have a very high correlation amongst them, which is clearly indicated in Table 6.4. This confirms that decision process output comprises a set of variables with equal importance. Although the main focus in this research has been the decision-making effectiveness, it is clear from the results that DME has

associated factors QODPO and FC that need to be considered if the SDMP has to be implemented in the SMEs. This is in line with the suggestions of Papadakis et al. (1998) who supported the need to investigate the utility of decision process output variables DME, QODPO and FC as part of the SDMP.

Table 6.4 Correlations between the dependent variables

Firm_Commit	<-->	Decision_Effect	.871
Firm_Commit	<-->	Dec_Quality	.829
Decision_Effect	<-->	Dec_Quality	.787

Further keeping in view the arguments of Papadakis et al. (1998) this research found that the effect of DMI as a decision characteristic on DME, QODPO and FP as decision process output mediated by decision dimensions such as rationality has been positive and significant. This finding provides a new opening for SMEs and researchers involved in SDMP. SMEs can implement this SDMP to gain knowledge on the effectiveness and quality of their decision-making and commit to the decision taken through the process prior to implementation.

After discussing the findings set against the hypotheses, as a next step it was necessary to discuss the research questions formulated for this research to enable the researcher assess the questions have been addressed through the findings.

6.2 Discussion on the research problems

The research problem identified for this research was that there is a lack of research on SDMP in SMEs, yet literature supports the view that it is critical. Furthermore, there is an even graver lack of research on SDMP in the SME service sector context, and notably in the electronic, telecommunication and IT industries in this SME sector. Most research has focused on large firms and the manufacturing sector, neglecting the SME sector. This is clearly evident in the case of the two central studies in this area to date, namely Papadakis et al. (1998) and Elbanna and Child (2007).

Accordingly, the research questions set were:-

(a) What factors affect the Strategic Decision Making Process (SDMP) process dimensions in the Small and Medium Enterprises (SME) service sector context?

(b) How the SDMP process dimensions affect the decision process output in terms of effectiveness? and

(c) What other factors affect SDMP process effectiveness?

Each one of these research questions is discussed in turn.

(a) What factors affect the Strategic Decision Making Process (SDMP) process dimensions in the Small and Medium Enterprises (SME) service sector context?

The results of the analysis show that hypothesis *H1 (a) decision magnitude of impact is positively related to rationality in strategic decision making process* was SUPPORTED.

The results of the analysis show that hypothesis *H5 (b) decision magnitude of impact is positively related to intuition* was NOT SUPPORTED.

From the literature review in Chapter 2 it was ascertained that there a number of decision process dimensions that affect the SDMP. The most important of the decision process dimensions that have been widely discussed and studied in the literature are rationality in decision-making (Section 2.5.1) intuition (Section 2.5.2), politicization (Section 2.5.3), formalization (Section 2.5.4) and decentralization (Section 2.5.5). Detailed and critical discussions on the role of these decision dimensions in SDMP were provided in Chapter 2. However amongst these decision dimensions, rationality of decision making has been found to be central to SDMP by many researchers like Cray (1988), Dean and Sharfman (1993), Fredrickson (1985) and Papadakis et al. (1998).

Considering the importance given to rationality in decision making by other researchers and its centrality to decision-making, this research also has identified rationality in decision making as an important dimension that impacts SDMP. As indicated in the discussions in Chapter 2, rationality has been widely used by researchers as an important decision dimension in the SDMP in various contexts including large-scale enterprises. However, application of rationality in the context of SMEs has been found to be a grossly neglected area although Chapter 2 indicates that researchers in their discussions have emphasized on the need to explore the effect of rationality in SDMP in various contexts. The importance of a particular interest in applying rationality as an important decision dimension to SDMP in the context of SMEs arises from the large contribution that these SMEs make to the economy as well as the lack of any model that has been developed by researchers to support the SMEs in SDMP. Especially lack of studies with regard to SDMP in the SMEs in general and those dealing in a dynamic and turbulent field like electronics, IT and telecommunication in particular, have left a huge vacuum in the SDMP literature, which is a serious lapse. Thus, considering the importance of providing solutions to the SDM in the SMEs, this research has identified and adopted the most widely used decision dimension that is rationality in decision-making. Two things emerge. Rationality is an important decision dimension that is central to SDMP. Its role in the SDMP in SMEs required study.

Literature review in Chapter 2 in SDMP indicates that various models have used rationality as a mediating construct (e.g. Papadakis et al. 1998). Thus there are antecedents and dependent variables linked to rationality in decision making as a mediating construct. The antecedents act as factors that affect rationality in decision-making. The dependent variables act as factors that are determined by rationality in decision making although this aspect is not directly relevant to this research problem.

As explained above and in Chapter 2 researchers have identified a number of concepts as influencing rationality as a decision dimension which include organizational factors, decision specific factors and environmental factors (Rajagopalan et al. 1993). While identifying these factors as affecting decision dimensions, research outcomes produced by researchers like Elbanna and Child (2007) indicated that taking one concept at a time and applying that concept to the SDMP research could produce a more parsimonious and meaningful result. In line with these arguments the researcher chose the strategic decision characteristics as a concept for investigating its influence on SDMP dimension. Within the SDMP literature as indicated in Chapter 2, many factors have been identified by researchers as strategic decision characteristics. These included threat and crises, uncertainty and magnitude of impact of decisions about which a critical review was provided in Chapter 2. Amongst these factors, some researchers, for instance Elbanna and Child (2007) and Rajagopalan et al. (1993), have attempted to develop an understanding of the influence of uncertainty as a decision characteristic factor on decision dimension. Similarly threat and crises as well as magnitude of impact have been identified as decision characteristic factors affecting decision dimensions by Papadakis et al. (1998).

However these research efforts have attempted to find out the combined effect of those decision characteristic factors and not their individual impact, resulting in a lack of understanding of the individual impact of the decision characteristic factors on decision dimensions. In such a situation, it may be difficult for the firms to understand how to control the factors and balance their impact on the decision dimensions. Thus, this research chose one important decision characteristic factor namely decision magnitude of impact (DMI) so that its individual effect could be understood in depth on the decision dimensions to enable SMEs to apply the outcome of this research to their firms in a simple and effective manner. Ideas developed by Papadakis et al. (1998) where used as basis in making this decision. SMEs require simpler and more understandable solutions. Thus, this research identified DMI as the factor that affects decision dimensions and this factor has hardly attracted any attention from the research community and much less is known about its influence and impact on decision dimensions.

Along similar lines, it can be argued why DMI has been identified as the factor affecting intuition as a decision dimension alongside rationality in decision-making. As described in Chapter 2, it is difficult to imagine a situation in SMEs wherein intuition does not come to play a role in SDMP although hardly any research has been conducted that has addressed the role of intuition in the SDMP. However amongst the few researchers who have investigated the influence of intuition in the SDMP, the research conducted by Elbanna and Child (2007) provided the basis for choosing intuition as decision dimension factor and analyse the influence of DMI on it. In contrast to rationality in decision-making, intuition has rarely been used by researchers in the SDMP research (Elbanna & Child, 2007). This provided a strong reason for the researcher to investigate the influence of DMI as a decision characteristic factor on intuition. Thus DMI has been chosen as a factor impacting a central decision dimension factor namely rationality in decision-making and a seldom-used dimension factor namely intuition that is widely practiced in SMEs, enabling the researcher to elicit knowledge on two contrasting decision dimension factors. *Thus, this research found and identified DMI as the factor that affects decision dimensions*. It can therefore be concluded that this research problem has been addressed.

(b) How do the SDMP dimensions affect the decision process output in terms of effectiveness?

The results of the analysis show that *hypothesis H4 (b) rationality in strategic decision making process in the industry is positively related to strategic decision making effectiveness* was SUPPORTED.

The results of the analysis show that hypothesis H5 *(b) intuition is positively related to strategic decision making effectiveness* was SUPPORTED.

Initially the two decision dimension constructs, rationality in decision making and intuition, have been posited to act as mediating variables between the independent variable DMI and dependent variables categorised as strategic decision process output variables. For instance, a prominent decision process output variable identified in this research and supported by the literature in Chapter 2 is the strategic decision making effectiveness. The role of the two dimensions in the SDMP was found to be one of mediation between the DMI and strategic decision making effectiveness. Two arguments support this inference. The first is the empirical research findings (detailed discussion provided later in Section 6.2). It has been explained in this section that the dependent variable decision process output is affected by the independent variable DMI indirectly through the two variables rationality and intuition. Any

variable that acts as an intermediary between two variables is considered as a mediating variable. *Thus this research found that rationality and intuition affect the decision-making effectiveness as mediators between DMI and strategic decision-making effectiveness.*

The second one is that prior researchers for instance Elbanna and Child (2007) found that decision dimensions rationality and intuition are positively related to strategic decision-making effectiveness. Findings from the statistical analysis provided under Section 5.15 show that the linkages between the two decision dimensions and strategic decision-making effectiveness are positively related. That is to say, that if the decision-making is rational then the SDMP is effective. It must be highlighted here that hardly any study has been conducted relating decision dimensions rationality in decision-making and intuition to strategic decision-making process output that is strategic decision-making effectiveness. Thus, apart from the one major study conducted by Elbanna and Child (2007) that links rationality in decision making and intuition to strategic decision making effectiveness, there is hardly any supporting evidence found in SDMP literature. Further, the linkage investigated by Elbanna and Child (2007) does not consider the mediating effect of the strategic decision dimensions rationality in decision-making and intuition, but instead simply treats the two dimensions as independent variables affecting strategic decision-making effectiveness. Thus the findings of this research clearly bring out the mediating effect of the decision dimensions rationality in decision-making and intuition on strategic decision-making effectiveness.

However an important caveat needs to be added here. This is needed here as the linkage between DMI as the independent variable and intuition as the dependent variable to DMI, was not found to be statistically significant (Section 5.15). In addition, the linkage was found to be negative meaning that DMI is negatively related to intuition. This finding leads the researcher to infer that intuition cannot be considered as a mediating variable but could be considered as a moderating variable of decision-making effectiveness. That is to say, that intuition is positively related to decision-making effectiveness as a moderating variable. That intuition is positively related to decision-making effectiveness is supported by the findings of Elbanna and Child (2007) although intuition was considered as an independent variable and not as a moderating variable.

An important outcome of this research is the utilization of rationality in decision-making and intuition in performing the same function as each other which is mediating between DMI and decision process output variable decision-making effectiveness. In SMEs, particularly in the electronic, telecommunication and IT sectors, many times managers could resort to intuition due to the complex and dynamic nature of the environment. In fact researchers agree that

intuition could be a very important tool in these situations (Khatri and Ng, 2000). However there are others who argue that use of intuition is counter to rationality that is to say that they are opposing poles of a single concept namely cognition (Allinson and Hayes 1996). Under these circumstances where researchers are divided on using rationality in decision-making and intuition together in the SDMP, this research provides a clear possibility of the contribution of intuition individually, without being a mediator, in SDMP. In SDMP literature some researchers have argued that a combination of intuition and rationality could be used in SDMP especially in a dynamic environment (Khatri and Ng, 2000). For instance, managers in the IT field may use intuition to make decisions to begin with but use rationality in decision making to assess the decision made using intuition, as IT is a very fast changing field and decision making is very difficult as the environment is very complex. Thus, while this research has shown that intuition cannot be a mediator between DMI and the decision making effectiveness, it has also shown that it can be used as an individual or independent construct to determine decision making effectiveness. As pointed out by some researchers, in association with rationality in decision making, intuition could produce a very effective decision making process if used as an independent variable.

Thus in the final analysis, rationality in decision-making acts as a mediator between DMI and decision making effectiveness, while intuition does not. The findings of this research clearly show that rationality in decision making (decision dimension) determine decision process effectiveness (decision output) supported by decision magnitude of impact (decision characteristic). That decision magnitude of impact (decision characteristic) does not support intuition (decision dimension) is an important finding of this research that would encourage the managers in SMEs to be more rational in decision making and less intuitive. Thus it can be concluded that decision magnitude of impact enhances decision process effectiveness for decisions that are rational and reduces the decision process effectiveness for decisions made using intuition.

However, intuition could be used as an important independent or moderator variable to decision making effectiveness in the SDMP. In addition, the possibility of using intuition as an independent variable to predict decision-making effectiveness alongside rationality in decision-making is another aspect that could be probed further. These inferences are in line with research findings of other researchers. Thus it can be concluded that the second research question set for this research has been addressed.

(c) What other factors affect SDMP process effectiveness?

From the model in Figure 5.8 it can be seen that there are two important independent variables namely dynamism in the industry (external environment) and firm performance (internal context) that are related to decision-making effectiveness. Further alongside decision-making effectiveness, the Figure 5.8 shows two other decision-making process output which are quality of decision process output and firm commitment. Each one of these relationships to decision making effectiveness is discussed next.

6.2.1 Relationship between dynamism in the industry and decision making effectiveness

The results of the analysis show that hypothesis *H2 (b) Dynamism in the industry is positively related to strategic decision making effectiveness* was SUPPORTED.

Dynamism in the industry is an external environment factor that affects SDMP and Chapter 2 provided a detailed discussion on this variable. The relationship between dynamism in the industry as a construct and decision making effectiveness has been found to have contradictory significance to the SDMP although decision making effectiveness has been interpreted as organizational performance by some researchers (Dean & Sharfman, 1996; Elbanna & Child, 2007). While researchers like Bourgeois and Eisenhardt (1988), and Fredrickson (1984) found environmental uncertainty or stability to be related to organization performance, Elbanna and Child (2007) found that environmental uncertainty is not related to decision-making effectiveness. The results in this research (Section 5.15) though are contradicting the findings of Elbanna and Child (2007) but are in line with those of other researchers. *This research found that dynamism in the industry was a predictor of decision making effectiveness*. Thus it is logical to infer that environment uncertainty or stability, meaning dynamism in the industry, in the SMEs pertaining to electronics, telecommunication and IT sectors could have a positive effect on the decision-making effectiveness.

Although there is no prior research data to confirm the results of the current research, it is practical to assume that a fast changing or turbulent environment like the ones in which telecommunication industries operate, dynamism in the industry could have a definite impact on the SMEs. For instance recently two major firms, Samsung and Apple, were found to be battling a tough competition with each other with regard to launching new products. Both companies had to take fast decisions due to changing technology as new products had to be brought into the market as quickly as possible. Delay on the part one company could have affected the market segment of the other. In this situation, small retailers dealing with both

Apple and Samsung products could land into trouble if they do not take decisions that are effective. An effective decision could be, for example, how much stock of one particular model pertaining to a particular technology should be held and for what period, before moving to the models coming with a more advanced technology. These dilemmas can be seen in everyday life. This needs the support of rationality in decision making. That is to understand whether the life cycle of a particular model can impact the stock holding. Data must be collected to understand the time that will elapse between the arrival of the expected new model and the exhaustion of the existing stock. Further such a rational decision needs to be supported by the magnitude of impact of the decision. For instance, if profitability (DMI) is the objective, then the rationality behind the decision will be influenced by profitability and the rationality in decision making should ensure that an effective decision is taken in stocking the product keeping in view the profitability aspect. Such practical issues can be supported by the model developed in this research. This example demonstrates that the results of this research could support managers in taking effective decisions taking into account DMI and rationality in decision making in a practical situation.

In addition to the foregoing discussion, it is important to know how the effect of dynamism in the industry on decision-making effectiveness affects the relationship between DMI and decision making effectiveness. After all the main focus of this research is to determine the effect of DMI on decision making effectiveness in SMEs pertaining to the electronics, telecommunication and IT industries in a dynamic environment. Thus, the interpretation of the results on the relationship between dynamism in the industry and decision making effectiveness is necessary keeping in view the relationship between DMI and decision making effectiveness. The positive relationship between dynamism in the industry and decision making effectiveness indicates that if the change in the environment in the industry is very different compared to the past then the SDMP should be logically highly effective to counter any ill effects arising due to the change. In such a situation the positive effect of DMI on the decision making effectiveness will have an additive effect on the SDMP along with the effect of dynamism in the industry on decision-making effectiveness. That means, in a situation where the dynamic environment has resulted in a change that is very different to the past and the impact of the magnitude of the decision is great on the decision-making effectiveness, then the combined effect of the two requires an SDMP that is highly effective.

6.2.2 Relationship between firm performance and decision making effectiveness

The results of the analysis show that hypothesis *H3 (b) firm performance is positively related to strategic decision making effectiveness* was SUPPORTED.

Firm performance is an internal contextual factor which has been critically discussed in Chapter 2. Firm performance has been found to have positive relationship to decision making effectiveness in the extant literature (Elbanna and Child, 2007). The results of this research are in line with the findings of Elbanna and Child (2007). Thus it is reasonable to infer that in the context of the SMEs pertaining to the electronic, telecommunication and IT sector, firm performance as an independent variable is positively related to decision-making effectiveness and *acts as a predictor of decision making effectiveness*.

Furthermore, like the effect of dynamism in the industry on decision making effectiveness, it is necessary to interpret the effect of firm performance on decision making effectiveness taking into account the linkage between DMI and decision making effectiveness. For instance, if the firm performance is low then for a given magnitude of impact, the combined effect of both firm performance and DMI on decision making effectiveness could be lower due to the additive nature of the two effects. That means even if the performance of a firm is considered to be worse than the expected level or previously achieved levels, the decision making effectiveness could be ensured to be high if the DMI is great and the rationality in decision making is comprehensive leading to an effective SDMP. As a corollary, it can be stated that if the DMI is mild and therefore the rationality in decision-making is considered as non-comprehensive then the resulting decision making effectiveness is expected to be ineffective.

Apart from the two environmental factors, decision-making effectiveness as a decision process output variable has been shown in Figure 5.8 to sit alongside ~~with~~ two other important variables namely quality of decision process output and firm commitment. Results in Section 5.15 show that decision effectiveness is positively associated with quality of decision process output and firm commitment. Literature on decision-making points out that decision effectiveness is a function of quality of the decision as well as commitment (Vroom and Jago, 1974). The results obtained in this research can therefore be said to be in line with the concepts postulated by earlier researchers. Furthermore, it can be interpreted that as a decision process output variable, decision making effectiveness has an association with quality of decision process output and firm commitment. That means to say that decision making effectiveness need to be considered as a decision process output in conjunction with quality of decision process output and firm commitment without which it may be reasonable to infer that decision effectiveness measure will not be complete. Thus the two important factors that can be associated with decision-making effectiveness as part of the decision process output are found to be quality of decision process output and firm commitment.

Furthermore, the effect of independent variables DMI, Dyms and FP on the two associate factors of DME needs to be understood in order to gain full understanding of the association between DME on the one hand and quality of decision process output and firm commitment on the other. The discussions in the following sections elicit this understanding.

6.2.3 Relationship between dynamism in the industry and quality of decision process output and firm commitment

The results of the analysis show that hypothesis *H2 (a) dynamism in the industry is positively related to quality of decision process output* was SUPPORTED.

The results of the analysis show that hypothesis *H2 (c) dynamism in the industry is positively related to firm commitment* was NOT SUPPORTED.

Literature on the direct relationship between dynamism in the industry and quality of decision process output and firm commitment is very scarce. Most of the available literature talks about the moderating effect of dynamism in the industry on the relationship between decision dimensions and decision process output (Rajagopalan et al. 1993). For instance, the moderating effect of environment dynamism on the relationship between:

- Rationality in decision-making and quality of decision process output, and
- Rationality in decision-making and firm commitment (Rajagopalan et al. 1993).

While the extant literature clearly argues on the importance of the effect of turbulent or dynamic environment on decision quality (e.g. Hough & White, 2003) or firm commitment (e.g. Lumpkin & Dess, 2001), hardly any research could be found in the SDMP literature that discussed the impact or effect of dynamism in the industry as a predictor, especially in regard to SMEs like those dealing in electronics, telecommunication and IT on decision process quality or firm commitment. The findings of this research provides an important outcome in terms of relating dynamism in the industry to quality of decision process output on the one hand and firm commitment on the other.

While the results in Section 5.15 show that dynamism in the industry is positively related to quality of decision process output, it is seen that the relationship between dynamism in the industry and firm commitment is not significant (Table 5.17). It is logical that in a turbulent environment it is difficult to commit to decisions, as such decisions may have serious repercussions on the firm if the commitment leads to, for example, obsolete stocks. For example committing financial resources for stocking huge quantities of components, say

computer mother boards, in a firm that is retailing computer hardware in an environment where technology is fast changing, could be disastrous as technology related to mother boards constantly changes. However positive relationship between dynamism in the industry and quality of decision process output needs explanation. In a dynamic industry like telecommunication where competition is so severe, firms need to produce decisions that are effective meaning that that the quality of decision process output is precise. It is seen that telecommunication are packaging a variety of services like Blackberry service and offer them as bundles. Such decisions need to be very precise, failing which the returns on the investments could be affected. In this context quality of the decision process output plays a leading role. If the quality of the decision process output is very precise, then the return on investment for example could be better. Thus the finding of this research is logical and practical. It is possible to conclude from the findings of this research that dynamism in the industry acts as a predictor of quality of decision process output but not of firm commitment.

Another important argument that needs to be understood is the impact of the dynamism in the industry on decision-making effectiveness in association with its impact on quality of decision process output and firm commitment. Since firm commitment is not significantly related to dynamism in the industry, it is possible to infer that firm commitment acts independently on decision-making effectiveness as a covarying factor. That is to say, that firm commitment could vary when decision-making effectiveness varies and vice versa regardless of the effect of dynamism in the industry on decision-making effectiveness.

However with respect to quality of decision process output and its association to decision making effectiveness, it can be seen that both of these decision process output variables are affected positively by dynamism in the industry. Thus it can be construed that in a dynamic environment, the SDMP will be effective only if the quality of decision process output is precise. This important finding could help SMEs in the electronic, telecommunication and IT industries in implementing an SDMP that is rational, and whose output is effective and qualitative leading to the firm's commitment. In addition, the effect of dynamism on the SDMP output will add to the effect of the magnitude of the impact of the decisions on the SDMP output. Such a process could be a major tool for SMEs to take a more rational decision that could be implemented with predictable outcomes.

6.2.4 Relationship between firm performance and quality of decision process output and firm commitment

The results of the analysis show that hypothesis *H3 (a) firm performance is positively related to quality of decision process output* was SUPPORTED.

The results of the analysis show that hypothesis H3 (c) firm performance is positively related to firm commitment was SUPPORTED.

SDMP literature shows that firm performance is indirectly related to quality of decision process output and firm commitment (Rajagopalan et al. 1993). In fact, Rajagopalan et al. (1993) argue that firm performance moderates the relationship between decision dimensions and decision process output. Thus SDMP literature supports the relationship between firm performance on the one hand and decision quality of decision process output and firm commitment on the other.

The model depicted in Figure 5.8 in this research has taken a departure from the foregoing arguments. Instead of linking firm performance to quality of decision process output and firm commitment indirectly, the research has examined the effect of firm performance on quality of decision process output and firm commitment as a predictor, directly. In the SDMP literature the direct effect of firm performance on quality of decision process output and firm commitment has not been dealt with by researchers, especially in the context of SMEs. However the results provided in Section 5.15 clearly indicate that firm performance has a moderate but positive effect on quality of decision process output and firm commitment. This result could be interpreted that, when the firm is capable of delivering the results which can fulfil the objectives of the firm, then logically the quality of the decision process output likely to be precise. Additionally the executed decisions which are derived from the SDMP output would enjoy the firm's commitment. Thus, the result can be considered logical and practical. *This research found that firm performance acts as a predictor of quality of decision process output.*

Furthermore, like in the case of dynamism in the industry, the impact of firm performance on decision making effectiveness in association with its impact on quality of decision process output and firm commitment needs elaboration. Quality of decision process output and firm commitment were found to be positively associated with decision-making effectiveness. Hence, an effect of firm performance on the dependent variables quality of decision process output and firm commitment could be expected to have some effect on decision-making effectiveness. For instance, profitability could be a measure of firm performance. If a firm is profitable, then it could be expected that the managers in that firm are taking precise decisions indicating an effective SDMP as well as clear commitment of resources to the decisions taken through the SDMP. This can be seen in logical action in many electronic firms in the contemporary world. Additionally, with respect to the linkage between DMI on the one hand and decision effectiveness, quality of decision process output and firm commitment on the

other, the effect of firm performance on the decision process output variables could be said to be a moderator. That is to say that if the firm performance is good then together with the magnitude of impact of the decisions made the SDMP output is expected to be stronger. The inference is that firm performance has a major effect on the overall SDMP as the process output. Such an inference could be a major booster to the SMEs as they will be in a better position to implement decisions derived through an SDMP that is rational and whose output is effective and qualitative leading to the firm's commitment under a dynamic environment. This ultimately adds to the effect caused by the magnitude of impact of the decisions on the SDMP output variables.

However, the same argument cannot be extended to the impact of DMI on quality of decision process output mediated by intuition because intuition varies in the opposite direction to DMI and the relationship between intuition and quality of decision process has been found to be insignificant and negative (Table 5.17). In this case the effect of the linkage between DMI and quality of decision process output has a reducing effect on the overall impact on decision-making effectiveness of the SDMP. This result is contrary to the results obtained by Elbanna and Child (2007) who found that intuition does not have any negative effect on strategic decision effectiveness moderated by decision characteristic factors. The reason for this could be that rationality in decision-making has been found to be superior to intuition as a decision-making factor by many other researchers (e.g. Elbanna, 2006). Since this model has involved both factors as working together in the SDMP and shown to be affected by a common determinant DMI, it is logical to assume that intuition has a reducing effect whereas rationality in decision-making is having an additive effect. This inference is in line with the arguments of researchers such as Khatri and Ng (2000) who argue that choices made based on rational processes yield results superior to those made based on intuitive processes.

An important inference that needs to be brought out here is that the relationship between firm performance and quality of decision process output has an additive effect on the decision-making effectiveness and adds to the effects caused by other variables namely DMI through rationality, dynamism in the industry and firm commitment. This inference is based on the discussions provided in Section 5.15. To explain in simple terms, if an SDMP is considered to be effective, then the quality of decision process output must be quite precise and such precision is determined by firm performance. For example if a firm's return on assets is better during the past, then from the model it is possible to predict that the quality of the decision process output from the SDMP will be precise. This could further be extended in a way that such an effect of firm performance on quality of decision process output supports and

enhances decision-making effectiveness of the SDMP in a dynamic industry and encourages firm commitment.

The next section provides a discussion on the relationship between the mediating variables rationality in decision-making and intuition and quality of decision-making process output and firm commitment. Such a discussion is expected to enable the researcher to provide a better picture of the SDMP model taking into account the effect of the independent and mediating variables on the additional SDMP output factors that have been found to support the decision making effectiveness.

6.2.5 Relationship between rationality in decision making and quality of decision making process output

The results of the analysis show that hypothesis *H4 (a) rationality in decision making is positively related to quality of decision process output* was SUPPORTED.

The relationship between rationality in decision making and the quality of decision making process has been found to be important by leading researchers involved in SDMP research like for instance Rajagopalan et al. (1993). Although empirical research that have produced generalisable or meaningful results are negligible in the literature that have successfully linked rationality in decision making and the quality of decision making process, this research has been able to provide a verifiable and quantifiable result linking the two. The results provided in Section 5.15 clearly indicate that rationality of decision-making is positively related to quality of decision-making output. This result is in line with the arguments in the SDMP literature which have indicated strong relationship between rationality in decision-making and the quality of decision-making process. This research found that rationality in decision making influences quality of decision-making process.

While there is no research conducted in SMEs in general with regard to SDMP (Gibcus et al. 2004), including the electronics, telecommunication and IT sectors, introducing a linkage between rationality in decision making and the quality of decision making process to support the decision making process in the SMEs can be considered to be a major step forward. Especially in a fast changing field like electronics or telecommunication or IT, rationality in decision-making could act as an important factor that determines the quality of the decision process output. This in turn could imply that the independent variable DMI has an effect on quality of decision process output leading to the inference that the magnitude of impact of prior decisions mediated by rationality in decision-making is expected to determine the quality of the decision process output. Using this relationship could enable SMEs to make

informed decisions; that is, to determine whether a decision is likely to be implemented successfully or not. *This research found that rationality in decision making acts as a mediator between DMI and quality of decision process output*.

Furthermore as was mentioned in Section 5.15, intuition was found to affect quality of decision process output. In addition, the relationship between firm performance and quality of decision process output has been found to be significant and positive and hence may be construed to add to the effect of rationality on quality of decision process output (Section 6.2.4).

6.2.6 Relationship between rationality in decision making and firm commitment

The results of the analysis show that hypothesis *H4 (c) rationality in decision making is positively related to firm commitment* was SUPPORTED.

The theoretical basis on the relationship between rationality in decision-making and firm commitment was explained in Chapter 2. While researchers agree that rationality in decision making influences firm commitment towards the implementation of the decision, this research has come out with an objective result of linking rationality in decision-making and firm commitment. The results provided in Section 5.15 indicate that rationality in decision-making is positively related to firm commitment. These results are in line with prior research (Fredrickson, 1984). An important highlight of this result is that this research has advanced the current knowledge as suggested by other leading researchers. This research has shown the existence of a large effect of rationality in decision making on firm commitment in the context of SMEs operating in a dynamic environment (Section 5.15), a major finding that is one of its kind in SDMP literature and hence it can be said that this research has advanced current knowledge. In addition, firm commitment as a decision process output variable could be considered a necessity if SDMP has to be effective as rationality in decision making suggests that if firms have effective decision processes then unless the firms commit to the decision process output there will be no implementation of the decisions made using the process. In fact, in practice, some researchers such as Dincer et al. (2006) found that firms do not commit to implementing strategic decisions even if such decisions are taken using rationality in decision-making. The results of this research are contrary to the arguments of Dincer et al. (2006) meaning that firms appear to commit to the SDMP which is indicated by the impact of the decision taken previously on the firm commitment. *This research found that rationality in decision making influences firm commitment*.

Furthermore, if one interprets the positive relationship between rationality in decision-making and firm commitment, keeping in view the other relationships and constructs then the result of such an interpretation could be in line with the following explanation, based on Table 5.17 and Figure 5.12. Thus DMI has a positive but indirect effect on firm commitment mediated by rationality. *This research found that rationality in decision making mediates between DMI and firm commitment*. Hence firms are committed to the SDMP if DMI is large. Similarly, firm performance has a positive but direct effect on firm commitment. That is, when firm performance is better than the preciously achieved outcomes, then firms are expected to be committed to the SDMP. However intuition and dynamism in the industry have no impact on firm commitment and hence can be ignored. In the final inference the relationship between rationality in decision-making and firm commitment adds and provides support to the main focus of the model which is decision-making effectiveness. Such an inference could be made regardless of a dynamic or turbulent environment and the use of intuition or lack of it in the SDMP. Firm commitment's effect on the overall effectiveness of SDMP is further enhanced if the firm performance is better.

6.2.7 Relationship between intuition and quality of decision making process output

The results of the analysis show that hypothesis *H5 (a) intuition is positively related to quality of decision process output* was SUPPORTED.

Previous researchers for instance Quinn (1980) and Eisenhardt (1989) have argued that intuition could be linked to decision quality in high-velocity environments in SDMP. Another important factor that weighs in favour of using intuition in SDMP is that in high velocity environment, decisions need to be made quickly and on many occasions without data or prior precedent (Eisenhardt, 1989). However empirical research outcomes in the extant literature that have linked intuition and quality of decision process output have been negligible. Under these circumstances the outcome of this research linking intuition to quality of decision process output is a major finding that contributes to the body of knowledge.

Discussions in Section 5.15 show that intuition is negatively related to quality of decision process output and such a relationship is not significant. *This research found that intuition influences quality of decision process output negatively and is not significant*. This could be interpreted in a way that intuition has no effect on the quality of the SDMP in the context of SMEs dealing in electronic, telecommunication, IT products, or services and operating in dynamic environments. Furthermore when decision processes are effective, especially those based on rationality, then quality of decision process output should be a logical outcome and

it is reasonable to believe that intuition has limited role or no role to play with regard to the quality of the decision process output.

Furthermore, with regard to the linkage between DMI and quality of decision process output, it can be seen that the results indicate that the linkage is not significant. First of all the linkage between DMI and intuition is negative meaning that if the magnitude of impact of decisions is high then it has a lower effect on intuition, and intuition in turn does not have any effect on quality of decision process output. Similarly if the magnitude of impact of decisions is low then its effect on intuition is high, but still intuition does not have any effect on quality of decision process output. These arguments indicate that DMI has no effect on quality of decision process output through the mediating effect of intuition. *This research found that intuition does not mediate between DMI and quality of decision process output*.

Regardless of the effect of intuition, the relationship between dynamism in the industry and firm performance on quality of decision process is positive (Sections 6.2.3 and 6.2.4). That is to say, quality of decision process output is only affected by rationality and hence DMI, dynamism in the industry and firm performance. Thus it is reasonable to infer that the relationship between rationality and quality of decision process output gets additional support from dynamism in the industry and firm performance. In turn the overall SDMP output is supported by quality of decision process output leading to an SDMP that is effective overall. Under these circumstances the SDMP could be logically supported by firm commitment whose contribution to the overall effectiveness of the SDMP has been already shown to be positive in Sections 6.2.3, 6.2.4, and 6.2.6. While research on the relationship between rationality and quality of decision process output is scarce this research provides one of the first attempts to objectively relate the two constructs.

6.2.8 Relationship between intuition and firm commitment

The results of the analysis show that hypothesis *H5 (c) intuition is positively related to firm commitment* was NOT SUPPORTED.

According to prior research firm commitment is not related to intuition (Senge, 1990a). The results of the current research discussed in Section 5.15 clearly indicate similar outcomes. The outcome from this research shows that the relationship between intuition and firm commitment is not significant. Furthermore firm commitment is seen to be an essential part of the definition of strategic decision (Dean & Sharfman, 1996) which dictates that it is worthwhile to see whether logically intuition affects firm commitment or not. Considering the logic that in any SDMP, decision making by implication needs to involve commitment of the

firm to implement the strategic decision like for instance commitment of resources to a decision taken, the outcome of this research is seen to be contrary to this logic. In fact Dincer et al. (2006) confirm through their research that firms are more committed to strategy formulation and less committed to implementation of the strategy. This interpretation is supported by the findings of this research. *This research found that intuition does not predict firm commitment*. It is apt to mention here that while some researchers feel that intuition could be positively related to firm performance (a proxy for firm commitment), those researchers also feel that intuition could be more useful if only combined with rationality as they feel that intuition and rationality are valid, separate as well as complementary (Goldberg, 1983; Vaughan, 1979). That is to say that managers in firms could take intuitive decisions initially to be followed by an analysis of the decision using rational approach as part of the overall SDMP prior to implementation (Vasilescu, 2011). However such a situation could be considered to be covered under rationality in decision making in which case a separate analysis of decisions taken intuitively using rationality and applying the current model could be meaningless.

Furthermore, as in the case of quality of decision-making process output, DMI as the independent variable is indirectly related to firm commitment through the mediation of intuition. However since DMI is related to intuition negatively, that is when the impact of magnitude of decision is high, then the effect of DMI on intuition is low and vice versa, and that intuition is not significantly related to firm commitment, it is reasonable to infer that DMI does not have any significant relationship with firm commitment. *This research found that intuition does not act as a mediator between DMI and firm commitment*. This inference is supported by research outcomes that indicate lack of commitment on the firms to implementing strategic decisions made in a firm, regardless of the SDMP of decision making either through rationality or intuition or a combination of both (Dincer et al.2006). However while this research has confirmed the commitment of SMEs to SDMP through the use of rationality in decision making process, it is possible to infer that a combination of intuition and rationality could lead to a possible relationship between DMI and firm commitment. This is contradicting the arguments found in previous research publications (Dincer et al. 2006). This aspect needs further study.

The foregoing detailed and comprehensive discussions have brought out four important factors that affect decision-making effectiveness in the SDMP. These factors are dynamism in the industry, firm performance, quality of decision process output and firm commitment. Out of those, dynamism in the industry and firm performance are related to external and internal environment in which the industry is operating and are independent variables. Quality of

decision process output and firm commitment act as additional constructs which are associated with decision process output and also decision making effectiveness. These two are dependent variables and are also seen to be affected by DMI alongside decision-making effectiveness through the mediating effect of rationality in decision-making. Thus it can be concluded that this research problem has been answered.

6.3 Chapter Summary

This chapter has provided discussions on the findings of the research based on the theoretical underpinnings and statistical analysis. Additionally, the discussions have also provided the direct and indirect impact of DMI, the independent variable, on the dependent variable, DME and its supporting variables. The importance of the mediating variables have been brought out which indicate that rationality in decision-making is an important correlate in the SDMP while Intuition is not. Dynamism in the industry and firm performance have been found to be essential. While prior research has linked the internal and external contexts to decision dimension rationality and have argued that the link is strong, this research has taken a departure and has investigated the effect of internal and external contexts on the decision process output variables. Thus this research provides new insight into the effect of the internal and external contextual variables on decision process output variables keeping in view the already established and known results of their impact on rationality. Furthermore, quality of decision process output and firm commitment have been found to be strong decision process output variables that support the decision making effectiveness assumed as the main dependent variable in this research. An important finding here is that DME many times may be misconstrued to be synonymous with decision process output, while in reality it may not be the case as there are other variables that affect decision process output like QODPO and FC, which has been demonstrated in this research. Thus the discussions provided in this chapter enabled the researcher to provide solutions to the research problems set for this research in Chapter 3.

Chapter 7

Conclusion

7 Introduction

The previous chapter provided a comprehensive discussion on the findings of this research. This chapter provides the conclusions based on the discussions by assessing whether the aim and objectives set for this research have been answered or not. In addition this chapter presents the contribution of this research to knowledge, to methodology and to practice as also the limitations of this research, and recommendation for future research.

7.1 Aim of the research

The aim of this research is:

'*To develop a relationship amongst the factors affecting SDMP dimensions as well as SDMP dimensions and decision process effectiveness in the context of SMEs in the electronic, telecommunication and information technology industries' sector to aid such industries in improving their decision making process effectiveness*'.

Chapters 5 and 6 demonstrate the establishment of the integrated SDMP model based on statistical testing in the context of the SMEs operating in the electronic, telecommunication and information technology industries' sector. The nature of relationship between decision magnitude of impact as a decision characteristic factor and rationality in decision making on the one hand and intuition on the other as decision dimensions have been established as indicated in Section 5.15. Thus, the decision characteristic factor that has been shown to impact the SDMP dimensions is the decision magnitude of impact (DME). In addition DMI has been found to affect only one of the two decision dimension variables namely rationality in decision-making and has not been found to affect intuition. Although there are other decision characteristic factors that have been found to affect SDMP dimensions such as rationality, this research has focussed on DMI only due to the fact that decision characteristics individually have been found to play a major role as part of the SDMP. Involving more than one factor would have made the research model complex and difficult to control as part of the research. Furthermore DMI has not been studied in-depth in the SDMP literature by researchers and hence studying its impact on the SDMP variables such as decision dimensions and decision process output added new knowledge to the SDMP literature. Thus it is justified to take one factor at a time to investigate its impact on the SDMP thereby providing parsimony and clear understanding of its role as part of the SDMP.

Furthermore, out of the two-decision dimension factors identified in this research, rationality in decision-making is the one that has been found to have a large effect on the decision process effectiveness, the dependent variable (Section 6.2). This finding is in line with earlier research conducted by Elbanna and Child (2007). Rationality in decision-making (RDM) has been found to be mediating variable between the decision characteristic variable DMI and decision process effectiveness DME (Section 6.2). DMI has been found have an indirect effect on DME but this effect is positive and significant. Thus DMI as a decision characteristic finds importance in the SDMP effectiveness although it is imperative to include rationality in decision making as a mediating variable. This finding is a contribution to the existing body of knowledge relevant to SDMP. It must be noted here that while two decision dimensions were considered in this research namely rationality in decision making and intuition, only rationality in decision making has been found to have significance in the SDMP. Intuition has not been found to be significant. This is in line with some of the findings of other researchers involved in the SDMP research (Senge, 1990b).

In addition to the above, both DMI and DME were found to be related to other decision process output variables, quality in decision process output (QOFPO) and firm commitment (FC). These two variables are found to be important associates of DME without which measuring the decision process output effectiveness would be less meaningful. Thus in addition to finding a positive relationship between RDM and DME, this research has further contributions to the SDMP literature by finding associate variables to DME and their linkage to DMI and RDM. Both DMI and RDM have been found to have positive effect on QODPO and FC although RDM is having a direct effect while DMI is found to have an indirect effect.

It is important to mention here that the aforementioned linkages have been tested with the internal and external contexts affecting the decision process output. The linkage between the decision characteristics (DMI), decision dimension (RDM) and decision process output variables (DME, QODPO and FC) were scrutinised under the influence of dynamism in the industry (Dyms, an essential external factor that needs to be considered in the context of strategic decision making) as well as the firm performance (FP, an essential internal factor that needs to be considered in the context of strategic decision making). It was found that both these factors affect the relationships DMI→RDM→DME, DMI→RDM→QODPO and DMI→RDM→FC positively. Additionally, these factors have also been found to have a direct impact on the decision process output variables DME, QODPO and FC. It is clear that any SDMP process needs to take these factors into consideration. While extant literature shows that there is a direct relationship between decision dimensions (e.g. RDM) and environmental factors, this research has taken a deviation to link those environmental factors

to decision process output, a new way of looking at the impact of the environment factors on SDMP. The reason for this is that while literature has strongly hinted at the influence of environmental factors on decision dimensions, the outcome of this research is expected to add to this already existing knowledge thus providing new insight into the impact of environmental factors on the overall SDMP.

Chapters 4 and 5 provide adequate information on the fact that the focus of this research are the SMEs which operate in the electronic, telecommunication and IT sectors and hence it can be concluded that the research findings are attributable to those industries. Thus it is reasonable to infer that the current SDMP model can be applied to those SMEs who can reap rich benefits by a decision making process in a way that they find their decision making rational, effective and qualitative thereby be committed to their decisions and implement the decisions. This also provides a new measure of the impact of the magnitude of their decisions prior to their implementation as well influence during implementation.

From the foregoing discussion it can be concluded that the aim set for this research has been achieved. As a next step the following discussions highlight how the objectives set for this research have been achieved.

7.2 Objectives of the research

7.2.1 Identify and study SDMP dimensions

Chapter 2 has provided comprehensive discussions on the strategic decision dimensions. In Chapter 2, Rationality (Cray et al. 1988; Dean & Sharfman, 1993; Fredrickson, 1985), political/dynamics dimension (Lyles 1987; Hickson et al. 1986), centralization (Cray et al. 1988; Lyles, 1987), formalization/ standardization (e.g. Stein, 1981) and intuition (Elbanna, 2006) were identified as decision dimensions that are considered as important by many researchers. These dimensions were studied. Considering the wide scope involved in studying each one of these dimensions, it was important to choose two decision dimensions namely rationality in decision making and intuition and the rationale for such a choice has been provided in Chapter 3. These two decision dimensions were included in the SDMP model in this research. Thus the first objective can be said to have been achieved.

7.2.2 Identify factors that impact SDMP dimensions and study their linkage to SDMP

Literature review in Chapter 2 provides a detailed discussion on the various factors which include decision characteristic factors, decision output factors, internal contextual factors and external environmental factors. Those discussions indicate that how various researchers have linked them to SDMP. While many factors have been discussed considering the focus of this

research, the time required for study and the gap available in the literature only the following factors were chosen for this research:

Decision characteristic: Decision magnitude of impact which has not been studied in the literature with regard to its linkage and effect on SDMP. This research fills up an important gap found in the literature. In fact the importance of DMI as a decision characteristic has been found to be very significant for the SDMP in this research.

Intuition: While literature review in Chapter 2 highlights the importance of intuition as an important decision dimension, the findings in this research do not show that intuition is significant for the SDMP. This finding is in line with those views of Senge (1990b) but is contradicting the findings of Elbanna and Child (2007). Considering the fact that managers in SME could use intuition as an initial decision dimension, the overall results of the data analysis collected from SME decision makers shows that intuition is not significant to SDMP. However, individually intuition has been found to have a small effect on DME (Section 6.2). That is to say intuition overall does not affect the SDMP that could be implemented in an SME operating in the electronic, telecommunication and IT sectors.

7.2.3 Study the relationship amongst the SDMP dimensions, factors affecting SDMP dimensions and SDMP output

A complete study of the SDMP dimensions, factors affecting SDMP dimensions and SDMP output was provided in the literature review (Chapter 2). The critical review provided in Chapter 2 enabled the researcher to identify important SDMP dimensions, factor that affects SDMP dimensions and SDMP output which are provided above. However the linkage between the decision characteristic DMI as a factor and decision dimensions rationality in decision-making and intuition along with the theoretical underpinning has been brought out in Chapter 3. Furthermore, Chapter 3 provides the theoretical support for the relationship between the decision dimension factors and SDMP output factors alongside the two environmental factors namely dynamism in the industry and firm performance that are related to the SDMP output factors. The chapter also provides the rationale behind the choice of the SDMP dimension factors, factors that affect SDMP dimensions and SDMP output variables. The attempt to link DMI as a factor affecting SDMP, to the DME, QODPO and FC, through a linkage to rationality in decision making as a mediating variable and environmental factors affecting the SDMP output variables directly in the context of electronic, telecommunication and IT industries in the SME sector is a novelty in the SDMP literature. Thus it can be confirmed that the third objective has been achieved.

7.2.4 Develop a relationship model linking SDMP dimensions, factors affecting SDMP dimensions and SDMP output

The theoretical framework provided in Chapter 3 discusses the rationale in developing the model linking SDMP dimensions, factors affecting SDMP dimensions and SDMP output variables. The research relationship model has been developed based on two central studies carried out by Papadakis et al. (1998) and Elbanna and Child (2007). The model provided the basis to solve the research problems. Thus it can be concluded that objective four has been achieved.

7.2.5 Develop hypotheses to test the model

Chapter 3 also provides the hypotheses developed for this research model based on the discussions related to the linkage between the SDMP dimensions, factors affecting SDMP dimensions and SDMP output variables. The hypotheses were presented in Section 3.7. The testing of the hypotheses has been carried out based on the statistical analysis provided in Chapter 5. Out of the 14 hypotheses, four hypotheses (H1b, H2c, H5a and H5c) were rejected. The rest of the hypotheses have been established, although hypothesis H5b was accepted statistically, but was found to be insignificant to this research. The various statistical analyses provided in Chapter 5 and the discussions in Chapter 6 enabled the researcher that the hypotheses have been tested and established using sound statistical methods and theoretical support. From this it can be concluded that objective five has been achieved.

The foregoing discussions enable the researcher to conclude the aim and objectives set for this research have been achieved leading to the next sections that discuss the contribution of this research to knowledge, methodology and practice.

7.3 Contribution to knowledge

Researchers in SDMP have been dominantly investigating a bulk of decision characteristics, dimensions and output variables although widely accepted research outcomes are few and far between. Furthermore, researchers in general have seldom studied the SDMP in SMEs and there is hardly any study that has brought out SDMP research output in this area (Gibcus et al. 2004). As such there was a great and urgent need to study the SDMP in SMEs due to lack of useful solutions produced by researchers for the difficulties faced by SMEs because of the ever-changing environmental factors. Additionally considering the contributions made by SMEs to the economy of any nation researchers by default should have focussed on SMEs to guide them in making strategic decisions to effectively counter serious challenges posed by the environment. The lack of any useful research has forced SMEs to use their own methods in tackling the challenges. This has led many SMEs to take erratic decisions resulting in their

closure, with the duration between establishing and closing an SME seen to be continuously shrinking. The enormous contributions made by SMEs, the vulnerability they have in facing challenging circumstances and lack of research in this sector impose the need to investigate into the SDMP used by the SMEs. Such an investigation was needed to come up with new findings in the area of strategic decision making because strategic decision-making was one area that has been found to have a serious impact on the SMEs performance (Section 1.2). Thus, this research has developed an empirical SDMP model called the integrated SDMP model that is expected to provide support to the SMEs, in particular those in the electronic, telecommunication and IT sectors and fill the gap that currently exists in the SDMP literature.

From a theoretical perspective, the model provides an understanding of the relationship between the determinant DMI and the decision output variables. It further develops the view on how decision magnitude of impact can be related to decision effectiveness under varying internal and external environmental conditions using a decision dimension as mediator. That is to say that when the magnitude of impact of strategic decisions is great, then the decision making and decision output variables are expected to be more effective, provided the decision making process is mediated by rationality in decision making (Section 6.2). Further, such an impact has to take into account the effect of dynamism in the industry and firm performance. Another important contribution to the body of knowledge is the addition of quality of decision process output and firm commitment as factors to the decision process output alongside decision-making effectiveness. In addition, the decision process output variables themselves have been shown to be affected by both dynamism in the industry an external environmental factor and firm performance an internal contextual factor (Section 6.2). Thus the model's power has been increased by the involvement of three fundamental variables in the SDMP investigated under two powerful environmental factors.

Apart from the above, the research has found that intuition is not a significant variable in the SDMP which is contrary to the research findings of some of the leading researchers (e.g. Khatri and Ng, 2000 and Elbanna and Child, 2007) but in line with the arguments of Senge (1990b) (Section 5.15).

Amongst the three key determinants, it can be seen that dynamism in the industry affects the decision output factors the least in comparison to DMI and FP. This leads the inference that SMEs must improve their firm performance and the impact of the magnitude of the decisions if the decision output is to be effective. However the impact of DMI as a determinant needs to have a high level of rationality in the decision-making on the decision output factors. From Section 6.2 it can be seen that Dyms has a lower effect in comparison to FP and DMI. That is

to say the result of the current study indicates that even if the dynamism in the industry is very different to what existed previously, the impact of such a variation will have only marginal effect on the SDMP. Higher the dynamism more effective should be the SDMP and vice versa.

The integrated SDMP model if implemented could act as an important support to the SMEs in the electronic, telecommunication and IT sectors in their decision making process. The model enables the SMEs to review the past decisions using the model and provides an objective assessment of their decision making effective leading to better decision-making future by addressing the deficiencies.

Additionally the model could also be used for making current decisions using the parameters provided in the research instrument related to the independent, mediating and dependent variables. The validity of the instrument established in Chapter 5 (Section A) provides a new tool to the SMEs to vary the parameters used to measure the variables in the instrument and improve the overall performance of the SDMP. This provides an opportunity for the SMEs to determine whether the decision could be implemented or not.

One of the most important outcomes of this research that contributes to the already existing body of knowledge in SDMP is the gerenalisability of the research findings tested across four countries in the Gulf Region and three different, albeit related, industrial sectors within the SMEs. This research was conducted by collecting data from four different countries each having varying geographical environmental, economical, political and sociological contexts. Similarly the research was conducted taking into account three industrial sectors which are electronic, telecommunication and IT, having varying characteristics. The statistical results obtained and reported in Chapter 5 indicate that the findings are reliable, valid and applicable to multiple contexts. This confirms that this research has produced generalisable findings to a limited extent and that the results could be applied to various contexts. This is a major contribution to knowledge as current research outcomes found in the SDMP literature are either restricted to single country or single industrial sectors and lack generalisability.

Overall from the foregoing discussions it can be concluded that the integrated SDMP model and the instrument developed for this research are novelties and contribute significantly to the existing body of knowledge related to the SDMP literature.

7.4 Contribution to methodology

The research methodology adopted for this research provides a methodology that could be used as a basis and reference for future research. In the absence of credible and comparable evidence in the SDMP research, regarding the employment of a particular methodology as a reference for this research, this research provides a basis for future research in terms of operationalisation of variables, sampling procedure, design of the research instrument, research design, reliability, validity, generalisability and statistical data analysis.

Firstly the variables were operationalised based on a thorough pilot study. It is difficult to transfer the concepts of SDMP across nations without taking into account many of the characteristics of those nations. In this context the results of the pilot study conducted in Bahrain provided a strong basis to conduct the research across the Gulf Region. This also established the reliability and internal consistency of the constructs. In addition the methodology adopted in this research enabled the researcher to test the mediating characteristics of decision dimension variables without the direct influence of environmental variables contrary to the common practice adopted in SDMP research.

Secondly, the research method has adopted a cross-sectional time horizon for data collection which has produced reliable and valid results. Intuitively it may appear that SDMP may require collection of data over a period of time due to the necessity to understand the utility of the integrated SDMP model over varying external environmental conditions. However the statistical results obtained in this research as provided in Chapter 5 clearly indicate that use of cross-sectional time horizon is a reliable and valid method.

Thirdly, while Papadakis et al. (1998) have used only Pearson correlation coefficient to test the correlation between two observed and latent variables, this research uses CFA and linear regression to test the relationship between the variables that considerably improves the reliability and validity of the findings. In addition, while the method used by Elbanna and Child (2007) improvises the research method used by Papadakis et al. (1998) by using regression techniques to determine the predictability of the dependent variables, it does not uses CFA and SEM to evaluate and estimate the model as well as determine the direction of the path between the latent variables. The current research achieves this and estimates the direction, goodness fit and effect of the independent variable on the dependent variable using path analysis.

Lastly use of structural equation modelling method provided a robust way of model generating and testing in combination with AMOS. The advantages provided by SEM have

been narrated in Section 4.13. This research has demonstrated the successful use of SEM and AMOS to test the model providing a solid base for use in future research.

7.5 Contribution to practice

The key findings (Section 5.15) of this research are expected to primarily benefit the managers and decision makers of the SMEs operating in the electronic, telecommunication and IT sectors. More fundamentally this research is one of its kind that has been conducted in the context of SMEs as a whole and hence the findings could be extended to other industries also. The arguments of (Gibcus et al. 2004) indicate that hardly any academic study has been conducted with regard to SDMP in the SME context and this study is expected act as a beacon for future research. The findings and the framework developed in this research have the potential for application in four of the countries chosen in the GCC region in the SMEs operating in the electronics, information technology and telecommunication sectors. How they can be applied is provided taking into account three aspects namely context, the established hypotheses and the model developed for this research.

As far as the context is concerned, in Section 1.1.2 it was highlighted that SMEs in the electronic, information technology and telecommunication sector in four of the countries in the GCC region have been identified as industries that need to be provided a thrust by policy makers. Any support that could be provided by policy makers in governments of individual nations requires organised management of SMEs so that support provided could be translated into results. However, from Section 1 it can be seen that hardly any SME has a structured way of developing strategic plans and strategic decision making. The findings of this research clearly point out that implementation of a strategic decision making process could enable organisations to make sound decisions using factors such as decision magnitude of impact, rationality in decision making, dynamism in environment and firm performance. Thus SMEs could apply decision magnitude of impact as an important decision characteristic as part of the strategic decision making process and determine its influence on decision process effectiveness, decision process quality and commitment of the managers of the firms using past data. Such a process will provide outcomes that could objectively indicate whether a decision could be useful to the firm or not prior to implementation of a new decision, especially in a dynamic environment where the firm performance is known. In the context of the SMEs in GCC the findings need to be implemented if the managers in the SMEs in four of the GCC countries would like to succeed using the support provided policy makers. Managers will also know whether the decision making process implemented is effective and qualitative so that they can commit to any decision taken through the process.

The findings of this research are expected to contribute to the adoption of a more scientific way of strategic decision making in SMEs and provide an opportunity for the managers in the SMEs to assess the decision making process and the decisions that come out of the process to gain knowledge on whether the decision could be implementable or not. If implementable, SMEs could be benefitted in enhancing their performance by implementing the decisions and if not, the decisions could be reviewed prior to implementation. For instance, though SME managers operate in a high pressure environment in which they are under time pressures etc., the findings of the research indicate that better SDs are likely to be made if they follow a rational process. This therefore means, that SME managers need to find creative ways that will enable them to introduce more structured rational thinking into their decision making despite the time pressures. This might in turn infer that they need to consider how they might be able to direct some investment towards more real time capture of important marketing intelligence in a proactive way. This implication for managers is further backed up by the finding that intuition does not have a much of a positive effect, and in fact has a negative effect the larger the likely magnitude of impact of the decision that is being considered. AS such, while it may be intuitively sensible anyway, this research has now confirmed that managers, particularly where decisions are likely to have a widespread impact, must avoid as much as possible going ahead with decisions based on gut feel. As such, SME managers need to try to find the time to devote more time to analysis and gathering market intelligence, however difficult that may be alongside their day-to-day operational role.

As far as the established hypotheses are concerned, it is clear that decision magnitude of impact is influencing rationality in decision making while rationality in decision making along with environmental dynamism and firm performance influences decision process effectiveness, decision process quality and firm commitment. This implies that decision magnitude of impact is influencing decision process effectiveness, decision process quality and firm commitment through rationality in decision making. Thus every decision that is to made by managers in a firm that has impact on the organisation needs to be supported by rationality in decision making. Managers in SMEs can apply the concept of rationality in decision making so that they can understand whether their decision making process is effective and whether decisions could be implemented or not. Especially in a dynamic field like electronics, information technology and telecommunication, it is essential to take appropriate decisions based on sound rationale failing which SMEs in four of the GCC countries could face difficulties due to improper decisions made.

As far as the model developed for this is concerned, managers in SMEs in the electronics, information technology and telecommunication sector could implement it for collecting data

about the external environment so that it is possible to assess the extent to which the market is turbulent or uncertain. Similarly managers in SMEs can measure the firm performance using the concepts explained in this research. Past firm performance can indicate the capability of the firm to implement a certain decision to be taken by the managers. Putting together the information about the external environment and the firm capability to perform in implementing a decision, it is possible for the managers in SMEs in four of the GCC countries to determine whether the magnitude of a certain decision that when taken could be implemented or not by using the decision making process. The model provides a way by which managers could link the level of the decision magnitude of impact to the rationality in decision making directly and gain knowledge on whether decision magnitude of impact that could be measured using the instrument developed by the researcher is indicating rationality in decision making and if so whether the decision could be implemented. In a dynamic environment like the one where SMEs in the electronics, information technology and telecommunication sector are operating, where decision making is very tricky, this model could support the managers to know whether any decision they would like to make is rational and to what extent environmental dynamism and firm performance would affect the decision process effectiveness and quality as well as firm commitment to the decision. The research model has been tested using a research instrument developed for the research.

This research instrument could be used by SMEs to review the effectiveness of their past decisions. In addition the findings of the research have provided two important conceptualisations that improve the decision-making effectiveness of the SDMP. One of them is the direct relationship between the internal and external environmental factors and the decision process output variables DME, QODPO and FC. This enables the SMEs to understand the impact of the sole determinant DMI on DME mediated by rationality under varying environmental factors. For instance if profitability of the SME is taken as a measure of the construct decision magnitude of impact, then rationality in terms of collecting appropriate information to achieve profitability needs to be involved to make the decision process effective. This provides an opportunity for the SMEs to make rational decisions at a stage that is very early in the SDMP and that have high magnitude of impact. Knowledge about decision characteristics and dimensions at an early stage in the SDMP enhances the decision process effectiveness. The SMEs have been handicapped for long without a support from the academic community on how to make strategic decisions that are methodical and supported by reasoning. The integrated SDMP model provides this support to the SMEs and removes this handicap of SMEs.

7.6 Limitations of the study

Although this research promises to be one of the first ones to address the SDMP in SMEs in general and electronic, telecommunication and IT SMEs in particular, still the research has some limitations. The main limitation of this study could be identified as the one that points towards the use of cross-sectional time horizon in place of longitudinal one. SDMP could need the study of decisions taken at more than one point of time to confirm that the process variables are indeed performing the expected functions. For instance dynamism in the industry could be tested at two different points of time as the environment changes considerably. However since this model has been tested based on past decisions, the use of cross-sectional time horizon is justified as the research takes into account the variation of the constructs over three years that have passed with reference to the date of conduct of this research.

Another important limitation of this research could be attributed to the lack of comparison that could have been made across industries and positions occupied by the respondents. This would have enriched the research in terms of the variation in the SDMP across industries and positions occupied by respondents and provided greater insight into how DMI affects different industries or decision makers. However this would have meant that the researcher spends additional time and resources which would have seriously handicapped the researcher in completing the PhD within the allotted time.

Yet another limitation that could be considered as affecting this research, is the use of one single decision characteristic factor DMI in determining the decision-making effectiveness. More factors as identified in Chapter 2 could have been used to understand the SDMP in greater depth with more than one factor in action. However such a decision would have widened the scope of this research beyond control because the effect of each factor individually and collectively require far more longer time and higher quantum of resources.
Lastly, the research could have been benefitted from inputs derived from qualitative research method if it had been used. The use of qualitative research method to supplement the prominent quantitative research method used in research efforts is gaining currency. Especially the lack of support found for the use of intuition as part of the SDMP in this research could be a major limitation as the utility of intuition as part of the SDMP could be understood better based on respondents' experiences, feelings and thoughts. However, such a step might not have contributed to a great extent to this research as current literature has provided clear findings on the role of intuition in the SDMP as variable that could be used directly in a conceptual model measured using quantitative method. This research has fallen

upon the existing research findings in concluding that intuition may not be a significant contributor the SDMP especially when rationality is used as parallel mediating construct.

An important limitation of this research could be the use of positivist epistemology alone which assumes the existence of single truth that is the assumption that there exists a relationship between decision magnitude of impact and decision process effectiveness and there are factors that influence such a relationship. Such an assumption inherently leads the researcher to ignore possible influence of any underlying factors pertaining to decision magnitude of impact on the decision making process. For instance decision magnitude of impact as a concept may be affected by an entrepreneur's knowledge and experience about the electronics or information technology or telecommunication industry which may not be reflected by an assumption that decision magnitude of impact is phenomenon that can be easily understood by limiting it as a single quantity using definitions found in the extant literature. Such a stance could be a limitation that has prevented the researcher from investigating the concept of decision magnitude of impact from different angles. There is a need to apply interpretivist epistemology as a philosophy to this research which could uncover some underlying concepts not investigated in this research.

Strategic decision making process usually involves top decision makers in a firm. Particularly in SMEs it could largely depend on the chief executive of a company. In this research data has been collected from people occupying five different levels in the management hierarchy to verify hypotheses. This could have resulted in a situation wherein the opinions of middle managers and the chief executive have been given the same weightage whereas in reality there could be significant difference in their way of taking decisions. Therefore the method adopted in this research to classify the decision makers under five categories wherein the top executive's opinion and the middle manager's opinion have been given equal weightage might have resulted in an inaccurate assessment of the relationship between decision magnitude of impact and decision process effectiveness and other factors addressed in this research. This limitation might be overcome by investigating the decision making process by collecting data from a specific population like the chief executives only which then could provide a more focused understanding about the decision making process in SMEs and hence a better understanding about the relationship between the independent and dependent variable.

As far as generalizability of the research findings are concerned, this research might have suffered from a limitation of the assumption that three sectors electronics, information technology and telecommunication are similar in nature and hence the data collected through

a simple random sampling process could be assumed to be homogenous. In reality there can be factors that could be unique to each one of these sectors and the assumption that the findings of this research could be consistently applied to all the three industries could be flawed. Although the three industrial sectors have some common characteristics, there could be distinctly differing characteristics that are unique to a particular industry type. For instance the level of change one could see in the IT sector may not necessarily compare with the level of change taking place either in the electronics sector or telecommunication sector. Similarly decisions that are taken by SMEs with regard to electronic products may not necessarily fit for telecommunication services. In such a situation it is possible to question the generalizability of the research findings of this research. A more focused investigation by industry type could produce results that are more consistent to be accepted as generalizable.

7.7 Suggestions for future research

Considering the vastness of the topic and the limitations that are attributed to this study, many opportunities for future research could be suggested. Broadly, future research could consider the effect of other decision characteristic factors such as decision stimulus, decision urgency, decision uncertainty, Threat/Crisis, Opportunity and familiarity (frequency of occurrence) as part of the SDMP.

Furthermore, the research findings could be extended to other industries as well as to compare the findings against countries, positions occupied by the respondents and level education of respondents who are decision makers. This could provide a wider knowledge on the operationalisation of the integrated SDMP under different contexts thereby enhancing the generalisability of the model.

The outcomes of this research could be extended to larger firms also. For instance, the model that has been tested in this research could be applied to larger firms as the fundamental character of the model is unlikely to be affected by the nature of the firm. Thus future research should consider how decision process effectiveness could be understood in large firms by extending the findings of this research. Knowledge from such a research could significantly contribute to strategic decision making process in large firms.

As far as decision dimensions are concerned, this research has addressed only two of the many decision dimensions found in the extant literature. Future research could consider the influence of other decision dimensions such as centralization, political/dynamics and formalization/standardization to gain deeper knowledge on how SDMP works with those dimensions. The outcomes of this research could be extended to include these dimensions as

mediating factors and ascertain the functioning of the SDMP model developed in this research.

Again with regard to external environment as a context, this research has addressed only one factor namely the dynamism in the industry. Future research could enhance the current findings in this research by extending the concepts discussed in this research to include such external environment factors as stability, hostility, heterogeneity, munificence, velocity, complexity and scarcity. Investigation into the impact of those factors on SDMP can shed new light into how the SDMP works.

Similarly, further research can also be conducted by including other internal contextual factors like internal systems, firm size and corporate control which could have implications to the SDMP. While this research has addressed the SDMP by including firm performance as an internal contextual factor, expanding the findings of this research including other internal contextual factors could add to the current body of knowledge.

In addition, future researchers could consider conducting research on a longitudinal time horizon in order to get insights into the functioning of the model when the environmental conditions have changed.

References

Abderrahman, J., Delphine, V. H. & Pierre, L., 2012. The Intention for Voluntary Departure of Staff: A Quantitative Study for a Scale Measuring. *International Journal of Business and Management Tomorrow,* 2(6), pp. 1-10..

Abramson, R., Rahman, S. & Buckley, P., 2005. Tricks and Traps in Structural Equation Modelling: a GEM Australia Example Using AMOS Graphics. *Paper presented at the Australasian Business and Behavioural Sciences Association Conference,* Cairns, Australia August 5-7, 2005.

Adams, G. & Schvaneveldt, J., 1991. *Understanding Research Methods.* 2nd edn. ed. New York: Longman.

Agor, W. H., 1989a. Intuition and strategic planning: how organisation can make productive decisions. *The Futurist,* Volume 23, p. 20–23.

Ajzen, I., 1985. From intentions to actions: a theory of planned behaviour. *Action Control, From Cognition to Behaviour,* pp. 11-39.

Akgun, A. E., Keskin, H. & Byrne, J., 2008. The moderating role of environmental dynamism between firm emotional capability and performance. *Journal of Organizational Change Management,* 21(2), pp. 230-252.

Akkermans, H. A. & van Aken, J. E., 1999. *Strategic decision-making in an ever-changing world: creating conditions for informed action,* The Netherlands: Report EUT/BDK/92.

Albright, J. J. & Park, H. M., 2009. *Confirmatory Factor Analysis Using Amos, LISREL, Mplus, and SAS/STAT CALIS,* Mombay: Indian University Information Technology ServicesIndian University Information Technology Services.

Alge, B. J., Wiethoff, C. & Klein, H. J., 2003. When does the medium matter? Knowledge-building experiences and opportunities in decision-making teams. *Organizational Behavior and Human Decision Processes,* Volume 91, pp. 26-37.

Allinson, C. W. & Hayes, J., 1996. The cognitive style index: A measure of intuition-analysis for organizational research. *Journal of Management Studies,* Volume 33, p. 19–135.

Amason, A. C., 1996. Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams. *Academy of Management Journal,* 39(1), p. 123–148.

Andersen, T. J., 2005. The performance effect of computer-mediated communication and decentralized strategic decision making. *Journal of Business Research,* Volume 58, p. 1059–1067.

Anderson, E. W., Fornell, C. & Lehmann, D. R., 1994. Customer Satisfaction, market share, and profitability: findings from Sweeden. *Journal of Marketing,* Volume 58, pp. 53-66.

Andrade, A. D., 2009. Interpretive Research Aiming at Theory Building: Adopting and Adapting the Case Study Design. *The Qualitative Report,* Volume 14.

Ansoff, H. I., 1979. *Strategic Management.* New York: John Wiley & Sons.

Arbuckle, J. L., 2005. *AMOS 6.0 user's guide.* Chicago, IL: AMOS Development Corporation.

Arbuckle, J. L., 2010. *IBM SPSS Amos™ 19 User's Guide.* s.l.:Amos Development Corporation.

Arbuckle, J. L. & Wothke, W., 1999. *Amos 4.0 User's Guide.* Chicago: SPSS Inc.

Astley, G. W. et al., 1982. Complexity and Cleavage: Dual Explanations of Strategic Decision-making. *Journal of Management Studies,* 19(4), pp. 357-375.

Atuahene-Gima, K. & Li, H., 2004. Strategic Decision Comprehensiveness and New Product Development outcomes in new Technology ventures. *Academy of Management Journal,* Volume 47, p. 583–597.

Babbie, E., 1990. *Survey research methods.* 2nd edn ed. Belmont, CA: Wadsworth.

Bantel, K. A., 1998. Technology-based, 'adolescent' firm configurations: strategy identification, context, and performance. *Journal of Business Venturing,* Volume 13, pp. 205-230.

Bargh, J. A. & Thein, D., 1985. Individual construct accessibility, person memory and the recall judgment link: The case of information overload. *Journal of Personality and Social Psychology,* Volume 49, pp. 1129-1146.

Barnard, C., 1938. *The Functions of the Executive.* Cambridge: Harvard University Press.

Baron, R. M. & Kenny, D. A., 1986. The Moderator-Mediator variable distinction in Social Psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology,* 51(6), pp. 1173-1182.

Baum, J. R. & Wally, S., 2003. Strategic decision speed and firm performance. *Strategic Management Journal,* 24(11), pp. 1107-1129.

Beach, L. R. & Mitchell, T. R., 1978. A Contingency Model for the Selection of decision Strategies. *Academy of Management Review,* Volume 3, pp. 439-449.

Beaver, G., 2003. Beliefs and principles: the compass in guiding strategy. *Strategic change,* Volume 12, pp. 1-5.

Bedeian, A. G., 2007. Even if the Tower Is "Ivory," It Isn't "White:" Understanding the Consequences of Faculty Cynicism. *Academy of Management Learning and Education,* 16(1), p. 9–32.

Bedeian, A. G., Day, D. V. & Kelloway, E. K., 1997. Correcting for measurement error attenuation in structural equation models: Some important reminders. *Educational and Psychological Measurement,* Volume 57, pp. 785-799.

Beidas-Strom, S. et al., 2011. *Gulf Cooperation Council Countries: Enhancing Economic Outcomes in an Uncertain Global Economy,* Washington, D.C.: International Monetary Fund.

Bell, A. & Steel, W., 2005. Social justice in cold climate could social accounting make a difference?. *Accounting Forum,* 29(4), pp. 455-473.

Bell, D., Raiffa, H. & Tversky, A., 1988. *Decision Making.* Yew York: Cambridge University Press.

Bell, G. G., Bromily, P. & Bryson, J., 1997. Spinning a complex web: Links between strategic decision making context, content, process and outcome. In: V. Papadakis & P. Barwise, eds. *Strategic Decisions.* London: Kluwer, pp. 164-178.

Bennett, R. H., 1998. The importance of tacit knowledge in strategic deliberations and decisions. *Management Decision,* 36(9), pp. 589-597.

Bertsch, A. M., 2012. Validating GLOBE's Societal Values Scales: A Test in the U.S.A.. *International Journal of Business and Social Science,* 3(8).

Bharati, P. & Chaudhury, A., 2006. Product customization on the web: an empirical study of factors impacting choiceboard user satisfaction. *Information Resources Management Journal,* 19(2), pp. 69-81.

Bhattacharjee, A. & Holly, S., 2009. *Understanding Interactions in Social Networks and Committees. SIRE (Scottish Institute for Research in Economics) Discussion Paper. SIRE-DP-2009-53,* St Andrews: University of St Andrews.

Billings, R. S., Milburn, T. W. & Schaalman, M. L., 1980. A Model of Crisis Perception: A Theoretical and Empirical Analysis. *Administrative Science Quarterly,* 25(2), pp. 300-316.

Bitsch, V., 2005. Qualitative Research: A Grounded Theory Example and Evaluation Criteria. *Journal of Agribusiness,* 23(1).

Bland, M., 1998. *Communicating Out of a Crisis.* London: Macmillan Business.

Blume, B. D. & Covin, J. G., 2011. Attributions to intuition in the venture founding process: Do entrepreneurs actually use intuition or just say that they do?. *Journal of Business Venturing,* Volume 26, p. 137–151.

Bollen, K. A., 1989. *Structural Equations with Latent Variables.* New York: John Wiley and Sons.

Bollen, K. A. & Long, J. S., 1993. *Testing structural equation models.* Newbury Park, CA: Sage Publications..

Boone Jr, H. N. & Boone, D. A., 2012. Analyzing Likert Data. *Journal of Extension,* 50(2).

Bourgeois, L. J., 1981. On the Measurement of Organization Slack. *Academy of Management Review,* 6(1), pp. 29-39.

Bourgeois, L. J. & Brodwin, D. R., 1984. Strategic implementation: Five approaches to an elusive phenomenon. *Strategic Management Journal,* 5(3), pp. 241-264.

Bourgeois, L. J. & Eisenhardt, K. M., 1988. Strategic Decision Processes in High Velocity Environments: Four Cases in the Microcomputer Industry. *Management Science,* 34(7), pp. 816-835.

Brockman, E. N. & Anthony, W. P., 2002. Tacit knowledge and strategic decision making. *Group and Organization Management,* Volume 27, pp. 436-455.

Brouthers, K., Andriessen, F. & Nicolaes, I., 1998. Driving blind: Strategic decisionmaking in small companies. *Long Range Planning,* 31(1), pp. 130-138.

Browne, M. W. & Cudeck, R., 1993. Alternative ways of assessing model fit. *sociological Method Resaerch,* 2(2), pp. 230-258.

Brown, J. B., 2011. Likert items and scales of measurement?. *SHIKEN: JALT Testing & Evaluation SIG Newsletter,* 15(1), pp. 10-14.

Brown, T. A., 2006. *Confirmatory factor analysis for applied research.* New York: Guilford.

Bryman, A., 2004. *Social Research Methods.* 2nd edn ed. London: Oxford University Press.

Bryman, A., 2006. Integrating quantitative and qualitative research: how is it done? Qualitative Research. *SAGE Publications,* 6(1), p. 97–113.

Bryman, A. & Bell, E., 2007. *Business research methods.* New York: Oxford University Press.

Bryson, J. M. & Bromiley, P., 1993. Critical factors affecting the planning and implementation of major projects. *Strategic Management Journal,* 14(5), pp. 319-337.

Burgelman, R. A., 1983. A model of the interaction of the strategic behavior, corporate context, and the concept of strategy. *The Academy of Management Review,* 8(1), pp. 61-70.

Burke, L. A. & Miller, M. K., 1999. Taking the mystery out of intuitive decision making. *Academy of Management Executive,* Volume 13, pp. 91-99.

Burrell, G. & Morgan, G., 1979. *Sociological paradigms and organizational Analysis.* London: Heinemann.

Butler, R., 2002. Decision making. In: A. Sorge, ed. *Organisation.* London: Thomson Learning, p. 224–251.

Butler, R., Astley, G. W., Hickson, D. J. & Mallory, G., 1979. Strategic Decision –Making: Concepts of Content and Process. *International Studies of Management and Organisation,* 6(4), pp. 5-36.

Butler, R., Davies, L., Pike, R. & Sharp, J., 1991. Strategic Investment Decision-making: Complexities, Politics and Processes. *Journal of Management Studies,* 28(4), pp. 395-415.

Butler, R., Davies, L., Pike, R. & Sharp, J., 1993. *Strategic Investment Decisions: Theory, Practice and Process.* London: Routledge.

Byers, T. & Slack, T., 2001. Strategic Decision-Making in Small Businesses within the Leisure Industry. *Journal of Leisure Research,* 33(2), pp. 121-136.

Byrne, B. M., 2001. *Structural Equation Modelling with AMOS: Basic Concepts, Applications and Programming.* New Jersey: Lawrence Erlbaum Associates, Inc.

Byrne, B. M., 2006. *Structural Equation Modelling with EQS: Basic concepts, applications and Programming.* 2 edn ed. New Jersey: Lawrence Erlbaum Associates, Inc.

Byrom, J., Medway, D. & Warnaby, G., 2001. Towards a typology of rural retailing strategies: evidence from the Uists. *Paper presented at the Academy of Marketing Conference,* Cardiff, Wales July 2-4, 2001.

Calandro, J. & Lane, S., 2007. Special section: Winning in your industry: new tools and strategies A new competitive analysis tool: the relative profitability and growth matrix. *Strategy and leadership,* 35(2), pp. 30-38.

Canter, E. E., 1971. The behavioural theory of the firm and top-level corporate decisions. *Administrative Science Quarterly,* Volume 16, pp. 413-428.

Carey, J. W., 1989. *Communication as culture: Essay on media and society.* Boston: Unwin Hman.

Carmeli, A., Sheaffer, Z. & Halevi, M. Y., 2009. Does participatory indecision making in top management enhance decision effectiveness and firm performance?. *Personnel Review,* 38(6), pp. 696-714.

Carmines, E. G. & Zeller, R. A., 1979. *Reliability and Validity Assessment.* Beverly Hills, CA: Sage.

Carson, D. & Cromie, S., 1990. Marketing planning in small enterprises: a model and some empirical evidence. *The Journal of Consumer Marketing,* 7(3), pp. 5-17.

Castrogiovanni, G., 1991. Environmental Munificence a Theoretical Assessment. *Academy of Management Review,* 16(3), pp. 542-565.

Cavana, R. Y., Delahaye, B. L. & Sekaran, U., 2001. *Applied business research: Qualitative and quantitative methods,* Queensland, Australia: Milton.

Chaffee, E. E., 1985. Three Models of Strategy. *Academy of Management Review,* 10(1), pp. 89-91.

Chandler, G. N. & Jansen, E., 1992. The founders self-assessed competence and venture Performance. *Journal of Business Venturing,* Volume 7, pp. 223-236.

Chen, C. P. & Chien, C. F., 2009. What Constitutes 'A Quality Decision'?. *Journal of Quality,* 16(2), pp. 87-94.

Child, J., 1972. Organizational structure, environment, and performance: The role of strategic choice. *Sociology,* Volume 6, pp. 1-22.

Child, J. & Tsai, T., 2005. The dynamic between firms' environmental strategies and institutional constraints in emerging economies: Evidence from China and Taiwan. *Journal of Management Studies,* 42(1), p. 95–125.

Churchill, G., 1995. *Marketing Research: Methodological Foundations.* London: Dryden Press.

Clason, D. L. & Dormody, T. J., 1994. Analzing data measured by individual likert-type items. *Journal of Agricultural Education,* 35(4), pp. 31-35.

Clegg, S., Carter, C. & Kornberger, M., 2004. Get up, I feel like being a strategy machine. *European Management Review,* Volume 1, p. 21–28.

Cliff, N., 1983. Some cautions concerning the application of causal modelling methods. *Multitivariate Behavioral Research,* Issue 18, pp. 115-126.

Cloke, P., Philo, C. & Sadler, D., 1991. *Approaching Human Geography.* London: Chapman.

Cohen, J. W., 1988. *Statistical power analysis for the behavioural sciences.* 2nd edn ed. Hillsdale, NJ: Lawrence Erlbaum Associates.

College Grad, 2014. *Looking For A Job?.* [Online] Available at: http://www.collegegrad.com/industries/profb04.shtml [Accessed 16 March 2014].

Collis, J. & Hussey, R., 2009. *Business Research: A Practical Guide for Undergraduate and Postgraduate Students.* 3rd ed. New York: Palgrave Macmillan.

Comrey, A. L. & Lee, H. B., 1992. *A first course in factor analysis.* 2nd edn ed. Erlbaum: Hillsdale, NJ.

Covin, J. G. & Slevin, D. P., 1989. Strategic Management of Small Firms in Hostile and Benign Environments. *Strategic Management Journal,* 10(1), pp. 75-87.

Covin, J. G., Slevin, D. P. & Heeley, M. B., 2001. Strategic decision making in an intuitive vs. technocratic mode Structural and environmental considerations. *Journal of Business Research,* Volume 52, pp. 51-67.

Cox, T., 1993. *Cultural Diversity in Organisations: Theory, Research and practice.* San Francisco: Berrett- Koehler.

Cray, D. et al., 1988. Sporadic, fluid and constricted processes: three types of strategic decisions-making in organizations. *Journal of Management Studies,* 25(1), pp. 13-39.

Creswell, J. W., 2003. *Research Method; Qualitative, Quantitative and Mixed Methods Approaches.* 2nd edn ed. London: Sage Publications.

Crotty, M., 1998. *The foundations of social research: Meaning and perspective in the research processes.* London: Sage.

Cyert, R. M. & March, J. G., 1963. *A Behavior Theory of the Firm.* Enewood Cliffs, NJ: Prentice Hall.

Cyert, R. M., Simon, H. A. & Trow, D. B., 1956. Observation of a Business Decision. *Journal of Business,* 29(4), pp. 237-248.

D&B, 2008. *Study of the Key Problems & Challenges of SMEs in Bahrain,* Manama: Report Commensurate to Phase I of the D&B-Tamkeen Engagement.

D'Aveni, R. A., 1994. *Hypercompetition: Managing the Dynamics of Strategic Maneuvering.* 1st edn ed. New York: Free Press.

Dans, E., 1999. *IT Investment in Small and Medium Enterprises: Paradoxically Productive?,* Los Angeles: The Anderson School of Management at UCLA.

Daud, N. M., Mamud, N. I. & Abd Aziz, S., 2011. Customer's Perception Towards Information Security in Internet Banking System in Malaysia. *Australian Journal of Basic and Applied Sciences,* 5(9), pp. 101-112.

Davis, C. H. & Sun, E., 2006. Business Development in Information technology SMEs in a Regional Economy: An Exploratory Study. *Journal of Technology Transfer,* Volume 3, pp. 145-161.

De Carlo, L. T., 1997. On the Meaning and Use of Kurtosis. *Psychological Methods,* 2(3), pp. 292-307.

Dean, J. W. & Sharfman, M. P., 1993b. The Relationship between Procedural Rationality and Political Behaviour in Strategic Decision making. *Decision Sciences,* 24(6), pp. 1069-1083.

Dean, J. W. & Sharfman, M. P., 1996. Does decision process matter? A study of strategic decision-making effectiveness. *Academy of Management Journal,* 39(2), pp. 368-396.

Dean, J. W. & Shrfman, M. P., 1993a. Procedural Rationality in the Strategic Decision-making Process. *Journal of Management Studies,* 30(4), pp. 587-610.

Delmar, F., Davidsson, P. & Gartner, W., 2003. Arriving at the high-growth firm. *Journal of Business Venturing,* 18(2), pp. 189-216.

Denzin, N. K. & Lincoln, Y. S., 2000. *Handbook of Qualitative Research.* London: Sage Publication Inc.

Dess, D. G., 1987. Consensus on Strategy Formation and Organisational Performance: Competitors in a Fragmented Industry. *Strategic Management Journal,* 8(3), pp. 259-277.

Dess, G. C., Lumpkin, G. T. & Covin, J. G., 1997. Entrepreneurial Strategy Making and Firm Performance: tests of contingency and configurational models. *Strategic Management Journal,* 18(9), pp. 677-695.

Dess, G. G. & Beard, D. W., 1984. Dimensions of Organizational task Environments. *Administrative Science Quarterly,* 29(1), pp. 52-73.

Dickson, P., 1992. Toward a General Theory of Competitive Rationality. *Journal of Marketing,* Volume 56, pp. 69-83.

Dillon, A. & Morris, M. G., 1996. User acceptance of information technology: Theories and models. *Annual Review of Information Science and Technology,* Volume 31, pp. 3-32.

Dimitratos, P., Petrou, A., Papadakis, V. & Thanos, I. C., 2010. *Strategy Processes, Environmental Determinism and Performance in Internationalized SMEs.* Rio de Janeiro, The Seventh Annual Journal of International Business Studies (JIBS) Paper Development Workshop.

Dincer, O., Taloglu, E. & Glaister, K. W., 2006. The strategic planning process: evidence from Turkish firms. *Management Research News,* Volume 29, pp. 206-219.

Dooley, R. S., Fryxell, G. E. & Judge, W. Q., 2000. Belaboring the not-so-obvious: consensus, commitment, and strategy implementation speed and success. *Journal of Management,* Volume 26, pp. 1237-1257.

Doty, D. H. & Glick, W. H., 1998. Common methods bias: Does common methods variance really bias results?. *Organizational Research Methods,* 1(4), pp. 374-406.

Dutton, J. E., 1986. The Processing of Crisis and non-crisis strategic issues. *Journal of Management Studies,* 23(5), pp. 501-517.

Dutton, J. E., 1993. Interpretations on Automatic: A Different View of Strategic issue Diagnosis. *Journal of Management Studies,* 30(3), pp. 339-357.

Dutton, J. E. & Duncan, R. B., 1987. The creation of momentum for change through the process of strategic issue diagnosis. *Strategic Management Journal,* 8(3), pp. 279-295.

Dutton, J. E., Fahey, L. & Narayanan, U. K., 1983. Toward understanding strategic issue diagnosis. *Strategic Management Journal,* Volume 4, pp. 307-323.

Dutton, J. E. & Jackson, S. E., 1987. Categorizing strategic issues: Links to organizational action. *Academy of management review,* 12(1), pp. 76-90.

Dutton, J. E., Stumpf, S. A. & Wagner, D., 1990. Diagnosing Strategic Issues and Manageral Investment of Resources. *Advances in Stategic Management,* Volume 6, pp. 143-167.

Dutton, J. E., Walton, E. J. & Abrahamson, E., 1989. Important dimensions of strategic issues: separating the wheat from the chaff. *Journal of Management Studies,* 26(4), pp. 379-396.

Easterby-Smith, M., Thorpe, R. & Lowe, A., 1991. *Management Research. An Introduction.* 1 st edn ed. London: Sage.

EDB, 2010. *Annual Economic Review,* Manama: Bahrain Economic Development Board.

Edgar, A. & Sedgwick, P., 2003. *Cultural Theory, The key concepts.* 2nd ed. London: Routledge.

Edwards, W., 1984. How to make a good decisions. *Acta Psychologica,* Volume 56, pp. 7-10.

Eisenhardt, K. M., 1989. Building theories from case study research. *Academy of Management Review,* 14(4), pp. 532-550.

Eisenhardt, K. M., 1999. Strategy as Strategic Decision Making. *Sloan Management Review,* 40(3), pp. 65-72.

Eisenhardt, K. M. & Bourgeois, L. J., 1988. Politics of strategic decision making in high velocity environments: Towards a midrange theory. *Academy of Management Journal,* Volume 31, pp. 737-770.

Eisenhardt, K. M., Kahwajy, J. L. & Bourgeois, L., 1997. How management teams can have a good fight. *Harvard Business Review,* 75(4), pp. 77-85.

Eisenhardt, K. & Zbaracki, M., 1992. Strategic Decision Making. *Strategic Management Journal,* Volume 13, pp. 17-37.

Ekamen, I., 2005. Bootstrapping: the investment decision-making process in small firm. *The British Accounting Review,* 2(12), pp. 162-175.

Elbanna, S., 2006. Strategic decision making: Process perspectives. *International Journal of Management Reviews,* 8(1), p. 1–20.

Elbanna, S., 2009. The impact of affective conflict on firm performance. *Management Resaerch News,* 32(9), pp. 789-803.

Elbanna, S., 2011. Multi-Theoretic Perspectives of Strategy Processes. *UAEU-FBE-Working Paper Series,* Issue 2011-09.

Elbanna, S. & Child, J., 2007a. The influence of decision, environmental and firm characteristics on the rationality of strategic decision-making. *Journal of Management Studies,* Volume 44, pp. 561-591.

Elbanna, S. & Child, J., 2007b. Influences on strategic decision effectiveness: Development and test of an integrative model. *Strategic Management Journal,* 28(4), pp. 431-453.

Elbanna, S., Child, J. & Dayan, M., 2013. A Model of Antecedents and Consequences of Intuitionin Strategic Decision-making: Evidence from Eygpt. *Long Range Planning ,* Volume 46, pp. 149-176.

Elbanna, S. & Naguib, R., 2009. How much does performance matter in strategic decision making?. *International Journal of Productivity and Performance Management,* 58(2), pp. 437-459.

Elbanna, S. & Younies, H., 2008. The relationships between the characteristics of the strategy process: evidence from Egypt. *Management Decision,* 46(4), pp. 626-639.

Ellis, T. J. & Levy, Y., 2009. Towards a Guide for Novice Researchers on Research Methodology: Review and Proposed Methods. *The Journal of Issues in Informing Science and Information Technology,* Volume 6, pp. 323-337.

Eom, M., 2008. Underlying Factors of MELAB Listening Constructs. *Working Papers,* Volume 6, p. 77–94.

Eric, W. W., 1972. *Kurtosis.* [Online] Available at: http://mathwold.wolfram.com/Kurtosis.html [Accessed 26 July 2012].

Eric, W. W., 1972. *Kurtosis.* [Online] Available at: http://mathwold.wolfram.com/Kurtosis.html [Accessed 4 October 2012].

Eriksson, P. & Kovalainen, A., 2008. *Qualitative Methods in Business Research.* 1st edn ed. London: SAGE Publications Ltd.

Etemad, H., 2004. Internationalisation of small and medium sized enterprises: A grounded Theoretical Framework and an Overview. *Canadian Journal of Administrative Science,* 21(1), pp. 1-21.

Fabrigar, L. R. e. a., 1999. Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods,* 4(3), p. 272–299.

Fahey, L., 1981. On strategic Management Decision Processes. *Strategic Management Journal,* 2(1), pp. 43-60.

Fathian, M., Akhavan, P. & Hoorali, M., 2008. E-readiness assessment of non-profit ICT SMEs in a developing country: The case of Iran. *Technovation,* 28(9), pp. 578-590.

Fernandez, S. & Moldogaziev, T. M., 2011. A Causal Model of the Empowerment Process: Exploring the Links between Empowerment Practices, Employee Cognitions, and Behavioural Outcomes. *Paper presented at the 11th National Public Management Research Conference,* Maxwell School, Syracuse University, Syracuse, New York, June 2-4, 2011.

Fielden, K., 2003. *Fact or Fiction: Qualitative Research Results in Information Systems,* New Zealand: Informing Science, UNITEC Institute of Technology.

Fredrickson, J. W., 1984. The comprehensiveness of strategic decision processes: Extension, observations, future directions. *Academy of Management Journal,* 27(3), pp. 445-466.

Fredrickson, J. W., 1985. Effects of decision motive and organisational performance level on strategic decision processes. *Academy of Management Journal,* 28(4), pp. 821-843.

Fredrickson, J. W. & Iaquinto, A. L., 1989. Inertia and Creeping Rationality in Strategic Decision Processes. *Academy of Management Journal,* 32(4), pp. 516-542.

Fredrickson, J. W. & Mitchell, T. R., 1984. Strategic decision processes: comprehensiveness and performance in an industry with an unstable environment. *Academy of Management Journal,* Volume 27, p. 399–423.

Frishammar, J., 2003. Information use in strategic decision making. *Management Decision,* Volume 41, pp. 318-326.

Galbraith, J., 1977. *Organizational Design.* Reading, MA: Addison-Wesley.

Garcia, L. & Quek, F., 1997. Qualitative research in information systems: Time to be subjective?. *Paper presented at the IFIP TC8 WG 8.2 international conference on Information systems and qualitative research,* Chapman & Hall, Ltd. London, July 26, 1997.

Gasson, S., 2003. Subjectivity, Context and Perceptions of quality in empirical research. *paper presented at the Americas Conference on Information Systems,* Tampa, FL, USA, August 4-6, 2003.

Gay, L. R., 1987. *Educational Research: Competencies for Analysis and Application.* 3rd edn ed. Columbus, Ohio: Merrill Publishing Company.

Gefen, D. & Straub, D., 2005. A practical guide to factorial validity using PLS-Graph: tutorial and annotated example. *Communications of the Association for Information Systems,* Volume 16, pp. 91-109.

Ghanatabadi, F., 2005. *Internationalization of small and medium-sized enterprises in Iran,* Boston: Lulea University of Technology, Department of Business Administration and Social Sciences.

Ghobadian, A. & Gallear, D., 1997. TQM and organisation size. *International Journal of Operations and Production Management,* 17(2), pp. 121-163.

Gibb, A. A. & Davies, L. G., 1991. Methodological problems in the development and testing of a growth model of business enterprise development. In: *Recent Research in Entrepreneurship.* Avebury: Aldershot, pp. 286-323.

Gibcus, P., Vermeulen, P. A. M. & de Jong, J. P., 2004. *Strategic Decision-Making in Small Firms: Towards a Typology of Entrepreneurial Decision-Makers,* Zoetermeer: Gibcus, P., Vermeulen, P. A. M., and de Jong, J. P. J., EIM Business and Policy Research.

Giddens, A., 1993. *New Rules of Sociological Method.* 2nd edn ed. Cambridge: Polity Press.

Gilbert, D. T., Giesler, R. B. & Morris, K. A., 1995. When comparisons arise. *Journal of Personality and Social Psychology,* 69(2), pp. 227-236.

Gilbert, D. T. & Osborne, R. E., 1989. Thinking backward: Some curable and incurable consequences of cognitive busyness. *Journal of Personality and Social Psychology,* Volume 57, pp. 940-949.

Gilbert, D. T., Pelham, B. W. & Krull, D. S., 1988. On cognitive busyness: When person Perceivers meet persons perceived. *Journal of Personality and Social Psychology,* Volume 54, pp. 733-740.

Ginsberg, A., 1988. Measuring and modelling changes in strategy: theoretical foundations and empirical directions. *Strategic Management Journal,* Volume 19, p. 559–575.

Goldberg, P., 1983. *The intuitive edge.* New York: Putnam's Sons.

Goll, I. & Rasheed, A. M. A., 1997. Rational decision making and firm performance: the moderating role of environment. *Strategic Management Journal,* Volume 18, p. 583–591.

Greiner, L. E., Bhambri, A. & Cummings, T. G., 2003. Searching for a Strategy to Teach Strategy. *Academy of Management Learning and Education,* 2(4), pp. 402-420.

Grieves, J., 2000. Images of change: the new organisational development. *The Journal of Management Development,* 19(5), pp. 345-448.

Grigoryan, K., 2012. *Review of distinctive features of export promotion for small and medium-sized enterprises: experience of EU and of Armenia.* Armenia, Paper presented at The Armenian Economic Association 2012 annual meetings was jointly hosted by Yerevan State University and the American University of Armenia on October 13-14, 2012, followed by Macro/Growth Theory work shop on October .

Grinyer, P., Al-Bazzaz, S. & Ardekani, Y., 1986. Towards a contingency theory of corporate planning. Findings in 48 U.K. companies. *Strategic Management Journal,* 7(1), pp. 3-28.

Guba, E. G., 1990. *The alternative paradigm dialogue.* California: Sage.

Guba, E. G. & Lincoln, Y., 2005. *Handbook of Qualitative Research.* London: Sage Publication Inc.

Guba, E. G. & Lincoln, Y. S., 1994. Competing paradigms in qualitative research. In: N. K. Deenzin & Y. S. Lincoln, eds. *Handbook of qualitative research.* London: Sage, pp. 105-117.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C., 1992. *Multivariate Data Analysis.* 3rd edn ed. Sydney: Maxwell Macmillan International.

Hair, J. F., Anderson, R. E., Tatham, R. L. & Black, W. C., 1998. *Multivariate Data Analysis.* New Jersey: Prentice Hall.

Hair, J. F., Tatham, R. L., Anderson, R. E. & Black, W., 2006. *Multivariate data analysis.* 6th edn ed. New Jersey: Pearson Education, Inc.

Hambrick, D. C. & Snow, C. C., 1977. A contextual model of strategic decision-making in oganisations. *Academy of Management Proceedings,* Volume 1, pp. 109-112.

Harper, S. C., 1990. Intuition: What separates executives from managers. In: W. H. Agor, ed. *Intuition in organizations.* Newbury Park: Sage.

Harrison, E. F., 1993. Interdisciplinary Models of Decision Making. *Management Decision,* 31(8), pp. 27-33.

Hart, S. & Banbury, C., 1994. How strategy-making processes can make a difference. *Strategic Management Journal,* Volume 15, p. 251–269.

Hart, S. I., 1992. An integrative framework for strategy making process. *Academy of Management review,* Volume 17, pp. 327-351.

Harwell, M. R., 2011. *Research Design in Qualitative/Quantitative/Mixed Methods.* Thousand Oaks, California: SAGE Publications.

Hatch, M. J. & Cunliffe, A. L., 2006. *Organization Theory Modern, Symbolic, and Postmodern Perspectives.* 2nd ed. New York: Oxford University Press.

Hatch, M. L. & Cunliffe, A. L., 2006. *Organization Theory Modern, Symbolic, and Postmodern Perspectives.* 2nd ed. New York: Oxford University Press.

Hayduk, L. A., 1987. *Structural equation modeling with LISREL: Essentials and advances.* Baltimore: The Johns Hopkins University Press.

Heath, R., 1998. *Crisis management for managers and executives.* London: Financial Times Management.

Henderson, B. D., 1989. The origin of strategy. *Harvard Business Review,* 67(6), pp. 139-143.

Hendry, J., 2000. Strategic Decision Making, discourse, and strategy as social practice. *Journal of Management Studies,* 37(7), p. 955–978.

Hertog, S., 2008. *Benchmarking SME policies in the GCC: a survey of challenges and opportunities,* Brussels: Eurochambres.

Hertog, S., 2010. *Princes, Brokers, and Bureaucrats: Oil and the State in Saudi Arabia,* Ithaca, NY: Cornell University Press.

Hetherington, R. W., 1991. The effects of formalization on departments of a multi-hospital system. *Journal of Management Studies,* 28(2), pp. 103-140.

Hickson, D. J., Miller, S. J. & Wilson, D. C., 2003. Planned or Prioritized? Two Options in Managing the implementation of Strategic Decisions. *Journal of Management Studies,* Volume 40, pp. 1803-1836.

Hickson, D. J. et al., 1986. *Top Decisions: Strategic Decision-Making in Organizations.* Oxford: Basil Blackwell.

Hill, J. & Wright, L., 2001. A qualitative research agenda for small to medium-sized Enterprises. *Marketing Intelligence and planning,* 19(6), pp. 432-443.

Hills, A. M., 2005. *Foolproof guide to statistics using SPSS.* 2nd edn ed. Sydney: Pearson/SprintPrint.

Hirschman, E. C., 1986. Humanistic Inquiry in Marketing Research: Philosophy, Method, and Criteria. *Journal of Marketing Research,* 23(3), pp. 237-249.

Hitt, M. & Tylor, B., 1991. Strategic Decision models: Integrating different perspectives. *Strategic Management Journal,* 12(3), pp. 327-351.

Hjalager, A. M., 2007. Stages in the economic globalization on tourism. *Annals of Tourism Research,* 34(2), p. 437–457.

Hodge, V. J. & Austin, J., 2004. A survey of outlier detection methodologies. *Artificial Intelligence Review,* 22(2), pp. 85-126.

Hofer, C. W. & Schendel, D., 1978. *Strategy formulation: Analytical concepts.* St.Paul, Minnesota: West Publishing Co.

Hofstede, G., 1980. *Culture's Consequences – International Differences in work related values.* Newbury Park: Sage Publications.

Holden, M. T. & Lynch, P., 2004. Choosing the Appropriate Methodology: Understanding Research Philosophy. *The Marketing Review,* Volume 4, pp. 397-409.

Holmes-Smith, Cunningham, E. & Coote, L., 2006. *Structural Equation Modelling: From the fundamentals to advanced topics,* Melbourne: Holmes-Smith, Cunningham, E. and Coote, L., SREAMS.

Hoskisson & et al, 1999. Theory and research in strategic management: Swings of a pendulum. *Journal of Management,* 25(3), p. 417–456.

Hough, J. R., 2005. An empirical test of cognitive style and strategic decision outcome. *Journal of Management studies,* 42(2), pp. 417-448.

Hough, J. R. & White, M. A., 2003. Environmental dynamism and strategic decision-making rationality: an examination at the decision level. *Strategic Management Journal,* Volume 24, p. 481–489.

Hox, J. J. & Bechger, T. M., 1998. An Introduction to Structural equation Modelng. *Family Science Review,* Volume 11, pp. 354-373.

Hughes, J. & Sharrock, W., 1997. *The Philosophy of Social Research.* 3rd edn ed. London: Pearson.

Hunt, S. D., 1993. Objectiving in Marketing Theory and Research. *Journal of Marketing,* 57(2), pp. 76-99.

Hussey, J. & Hussey, R., 1997. *Business Research, A Practical Guide for Undergraduate and Postgraduate Students.* Basingstoke: Palgrave.

Hutzshenreuter, T. & Kleindienst, I., 2006. Strategy - process research: what have we learnt and what is still to be explored. *Journal of Management,* 32(5), pp. 673-720.

Iacobucci, D. C., 2010. *Marketing Research: Methodological Foundations.* 10th edn ed. London: Cengage Learning.

Jackson, D. L., Gillaspy, J. A. & Purc-Stephenso, R., 2009. Reporting practices in confirmatory factor analysis: An overview and some recommendations. *Psychological Methods,* Volume 14, p. 6–23.

Jackson, S. E., 1992. Consequences of group composition for the interpersonal dynamics of strategic issue processing. In: *Advances in strategic management.* s.l.:s.n., pp. 345-382.

Jackson, S. E. & Dutton, J. E., 1988. Discerning threats and Opportunities. *Adminstrative Science Quarterly,* 33(3), pp. 370-387.

Jafari, M., Fathian, M., Akhavan, P. & Hosnavi, R., 2007. Exploring KM features and learning in Iranian SMEs. *The Journal of information and Knowledge management systems,* 37(2), pp. 207-218.

Janssens, W., Wijnen, K., Pelsmacker, P. D. & Kenhove, P. V., 2008. *Marketing Research with SPSS.* Essex: Pearson Education.

Jemison, D. B., 1981. Organizational vs Environmental Sources of Influence in Strategic Decision Making. *Strategic Management Journal,* 2(2), pp. 77-89.

Jocumsen, G., 2004. How do small business managers make strategic marketing decisions? A model of process. *European Journal of Marketing,* 38(5), pp. 659-674.

Johari, J., Yahya, K. K. & Omar, A., 2011. The Construct Validity of Organizational Structure Scale: Evidence from Malaysia. *World Journal of Management,* 3(2), pp. 131-152.

Johnson, G., 1988. Re-thinking incrementalism. *Strategic Management Journal,* 9(1), pp. 75-91.

Jones, R. E., Jacobs, L. W. & Spijker, W. V., 1992. Strategic decision processes in international firms. *Management International Review,* 32(3), p. 219–237.

Joreskog, K. G., 1977. *Structural equation models in the social sciences: Specification, estimation and testing.* Dayton, Ohio, Paper presented at the Applications of Statistics; Proceedings of the Symposium Held at Wright State University.

Joreskog, K. G., 1993. Testing Structural Equation Models. In: K. A. Bollen & J. S. Long, eds. *Testing Structural Equation Models.* Newbury Park: Sage Publications., pp. 294-316.

Joreskog, K. G. & Sorbom, D., 1984. *Lisrel-VI user's guide.* 3 ed. Mooresville: Scientific Software.

Joreskog, K. G. & Sorbom, D., 1989. *A guide to the program and applications. LISREL 7.* Chicago: Scientific Software International.

Juan, J. & Prieto, F. J., 1997. *Identification of point-mass contaminations in multivariate samples: Statistics and Econometrics Series 07.* [Online] Available at: http://e-archivo.uc3m.es/bitstream/10016/10575/1/ws9713.pdf [Accessed 16 August 2013].

Judge, W. Q. & Miller, A., 1991. Antecedents and outcome of decision speed in different environmental contexts. *Academy of Management Journal,* 34(2), pp. 449-463.

Kaplan, D., 2000. *Structural equation modelling: Foundation and extensions.* Thousand Oaks: Sage Publications.

Karami, A., 2008. An investigation on environmental scanning and growth strategy in high tech small and medium sized enterprises. *Paper presented at the Netherlands, High Technology Small Firms Conference ,* University of Twente. May 22-23, 2008.

Kasseeah, H. & Tandrayen-Ragoobur, V., 2011. Financial Constraints, Gender and Firm Performance: Evidence from Mauritius. *Middle Eastern Finance and Economics,* Issue 13, pp. 60-70.

Kassim, A. Z. & Sulaiman, M., 2011. Market Orentation and Leadership Tyles of Managers in Malaysia. *International Journal of Leadership studies,* 6(2), pp. 230-245.

Kazakevitch, G. & Torlina, L., 2008. Competition in the Mature Markets of Professional versus Final Consumer Information Products. *Paper presented at the 19th Australasian Conference on Information Systems,* University of Canterbury, Christchurch, New Zealand, December 3-5, 2008.

Keats, B. W. & Hitt, M. A., 1988. A Causal Model of Linkages among Environmental Dimensions, Macro Organisational Characteristics and Performance. *Academy of Mangement Journal,* Volume 31, pp. 570-598.

Keeney, R. L., 2000. Making Better Decisions Faster. *ORMS Today,* 27(3), pp. 36-37.

Kennedy, J. J. & Bush, A. J., 1985. *An introduction to the design and analysis of experiments in behavioural research.* Lanham: University Press of America.

Kenny, J. F. & Keeping, E. S., 1962. *Kurtosis: In Mathematics of statistics.* 3rd edn ed. New Jersey: Princeton, NJ, Van Nostrand.

Khandwalla, P. N., 1977. *The Design of Organizations.* New York: Harcourt Brace Jovanovich.

Khatri, N., 1994. *Strategic Decision Processes and Organisational Performance.* Buffalo: State University of New York.

Khatri, N. & Ng, H. A., 2000. The role of intuition in strategic decision making. *Human Relations,* Volume 53, p. 57–86.

Khunthongjan, S., 2009. *A study of the characteristics of small and medium size enterprises embracing the philosophy of sufficient economy.* [Online] Available at: http://www.gmrjournal.com/documents/GMRJ-V5N1-JUN2009-15-24.pdf [Accessed 16 August 2013].

Kidd, J. B. & Teramoto, Y., 1995. The learning organization: The case of the Japanese RHQs in Europe. *Management International Review,* 35(2), pp. 39-56.

Kim, S., 2003. Research Paradigms in Organizational Learning and Performance: Competing Modes of Inquiry. *Information Technology, Learning, and Performance Journal,* 21(1).

Kim, W. C. & Mauborgne, R., 1998. Procedural justice, strategic decision making, and the knowledge economy. *Strategic Management Journal,* Volume 9, pp. 323-338.

Kinghts, D. & Morgan, G., 1991. Corporate strategy, organizations and subjectivity: A critique. *Organization Studies,* Volume 12, pp. 251-273.

Kline, R. B., 1998. *Principles and Practice of Structural Equation Modelling.* New York: The Guilford Press.

Kline, R. B., 2005. *Principles and Practice of Structural Equation Modelling.* 2nd edn ed. New York: Guilford Press.

Kline, R. B., 2011. Convergence of structural equation modelling and multilevel modelling. In: M. Williams & W. P. vogt, eds. *Handbook of methodological innovation.* Thousand Oaks: Sage, pp. 562-589.

Kline, R. B., 2013. Exploratory and Confirmatory Factor Analysis. In: Y. Petscher & C. Schatsschneider, eds. *Applied quantitative analysis in the social sciences.* New York: Routledge, pp. 171-207.

Knights, D. & Morgan, G., 1991. Corporate strategy, organizations and subjectivity: A critique. *Organization Studies,* Volume 12, pp. 251-273.

koh, S. C. L. & Simpson, M., 2005. Change and uncertainty in SME manufacturing environments using ERP. *Journal of Manufacturing Technology Management,* 16(6), pp. 629-653.

Kokkinis, G., 1995. *An Examination of the Appropriateness of the Contemporary Strategic Management Models for the Greek Small Manufacturing Enterprises.* Birmingham: PhD, Aston University.

Kotey, B. & Meredith, G. G., 1997. Relationships among owner/manager personal values, business strategies, and enterprise performance. *Journal of Small Business Management,* 35(2), pp. 37-61.

Kukalls, S., 1991. Determinants of strategic planning systems in large organizations: a contingency approach. *Journal of Management Studies,* Volume 28, p. 143–160.

Kumar, D. S., Prasad, K. V. S. & Rao, S. P., 2013. Sustainable Trends and Policies of MSME in Economic Development in India: An Empirical Study. *International Journal of Management Business Studies,* 3(2), pp. 106-111.

Langley, A., 1989. In search of rationality: the purposes behind the use of formal analysis in organizations. *Administrative Science Quarterly,* Volume 34, p. 598–631.

Langley, A., 1990. Patterns in the Use of Formal Analysis in Strategic Decisions. *Organisation Studies,* 11(1), pp. 17-45.

Lavie, N., Hirst, A., de Fockert, J. W. & Viding, E., 2004. Load theory of selective attention and cognitive control. *Journal of Experimental Psychology: General,* 133(3), pp. 339-354.

Layder, D., 1993. *New strategies in social research: An introduction and Guide.* 1st edn ed. Cambridge: Polity Press.

Lee, A., 1991. Integrating positivist and interpretive approach to organizational research. *Organization Sciences,* 2(4), pp. 342-365.

Lee, C., Lee, K. & Pennings, J. M., 2001. Internal capabilities, external networks, and performance: a study on technology-based ventures. *Strategic Management Journal,* 22(6-7), pp. 615-640.

Leedy, P. & Ormrod, J., 2001. *Practical research: Planning and design.* 7th edn ed. Thousand Oaks: SAGE Publications.

Lenz, R. T. & Engledow, J. L., 1986. Environmental Analysis: The application of current Theory. *Strategic Management Journal,* 7(4), pp. 329-346.

Lenz, R. T. & Lyles, M., 1985. Paralysis by analysis: is your planning system becoming too rational?. *Long Range Planning,* 18(4), pp. 64-72.

Lewin, A. Y. & Stephens, C. U., 1994. CEO Attributes as Determinants of Orgnisation Design: An Integrated Model. *Organistion Studies,* 15(2), pp. 183-212.

Li, H., 2001. How does new venture strategy matter in the environment–performance relationship?. *Journal of High Technology Management Research,* 12(2), p. 183–204.

Ling, Y., Simsek, Z., Lubatkin, M. K. & Veiga, J. F., 2008. Transformational leadership's role in promoting corporate entrepreneurship: Examining the C EO- T M T interface. *Academy of Management Journal,* 51(3), p. 20.

Lioukas, S., Bourantas, D. & Papadakis, V., 1993. Managerial Autonomy of State-owned Enterprises: Determining Factors. *Organisational Science,* 4(4), pp. 645-666.

Lioukas, S. I. & Papadakis, V. M., 2003. Strategic Decision processes and Outcomes: effects of Context. In: D. Nagao, ed. *Best Paper Proceedings of the Business Policy and Strategy Division of the 6th Annual Meeting of the Academy of Management.* Seattle, Washington: August 1-6, pp. BB1- BB6.

Little, R. J. A. & Rubin, D. B., 1987. *Statistical Analysis With Missing Data.* New York: John Wiley and Sons.

Long, D. A. & Perkins, D. D., 2003. Confirmatory Factor Analysis of the Sense of Community index and Development of a Brief SCI. *Journal of Community Psychology,* 31(3), p. 279–296.

Lumpkin, G. T. & Dess, G. G., 2001. Linking two dimensions of entrepreneurial orientation to firm performance: the moderating role of environment and industry life cycle. *Journal of Business Venturing,* 16(5), pp. 429-451.

Lu, Y. & Heard, R., 1995. Socialized economic action: a comparison of strategic investment decisions in China and Britain. *Organization Studies,* 16(3), pp. 395-424.

Lyles, M. A., 1987. Defining Strategic Problems: Subjective Criteria of Executives. *Organisational Studies,* Volume 8, pp. 263-279.

Lyles, M. A. & Mitroff, J. I., 1980. Organisational Problem Formulation: An Empirical Study. *Administrative Science Quarterly,* 25(1), pp. 102-119.

Lyles, M. A. & Thomas, H., 1988. Strategic problem formulation: biases and assumption embedded in alternative decision-making models. *Journal of Management Studies,* Volume 25, pp. 131-146.

MacCallum, R. C., 1990. The need for alternative measures of fit in covariance structure modeling. *Multivariate Behavioural Research,* Volume 25, pp. 157-162.

MacCallum, R. C. & Austin, J. T., 2000. Applications of struc- CFA REPORTING 21 tural equation modeling in psychological research. *Annual Review of Psychology,* Volume 51, p. 201–226.

Mack, N. et al., 2005. *Qualitative Research Methods: A Data Collector's Field Guide.* North Carolina: Family Health International.

Mador, M., 2000. Strategic Decision Making Process Research: Are Entrepreneur and Owner Managed Firms Different?. *Journal of Research in Marketing and Entrepreneurship,* 2(3), p. 215–234.

Majone, G., 1984. A good decision is more than a right decision. *Acta Psychologica,* Volume 56, pp. 15-18.

Mallory, G. R., Butler, R. J., Cray, D. & Hickson, D., 1983. Implanted decision-making: American owned firms in Britain. *Journal of Management Studies,* 20(2), pp. 191-211.

Marsh, P., Barwise, P., Thomas, K. & Wensley, R., 1988. *Managing Strategic Investment Decisions in Large Diversified Companies.* london: London Business School.

Mauro, F. D., Ruffer, R. & Bunda, I., 2008. *The changing role of the exchange rate in a globalisation economy,* s.l.: European Central Bank.

McArthur, A. W. & Nystrom, P. C., 1991. Environmental dynamism, complexity and munificence as moderators of strategy performance relationship. *Journal of Business Research,* 23(4), pp. 349-361.

McGee, J. & Petersen, M., 2000. Toward the development of measures of distinctive competencies among small independent retailers. *Journal of Small Business Management,* 38(2), pp. 19-33.

Meekanon, K., 2007. Reasons for doing qualitative research into strategic decision making process. *Paper presented at the Bangkok, Conference of the International Decision Sciences Institute (DSI), conducted in association with the 12th Asia-Pacific.,* Bangkok, Thailand. July 11-15, 2008.

Megicks, P., 2007. Section 5. Hierarchical Fit Levels of strategy and performance in UK small retail businesses. *Management Decision,* 45(3), pp. 484-502.

Merrilees, B., Rundle-Thiele, S. & Lye, A., 2011. Marketing capabilities: Antecedents and implications for B2B SME performance. *Industrial Marketing Management,* Volume 40, p. 368–375.

Metts, G. A., 2011. Decision Making and Strategy Development in SMEs: An Empirical Investigation into the Role of Adaptation. *International Review of Business Research Papers,* 7(6), pp. 65-83.

Milburn, T. W., Schhuler, R. S. & Watman, K. H., 1983. Organisational Crisis, Part II: Strategies and Responses. *Human Relations,* 36(12), pp. 1161-1179.

Miller, C. C. & Cardinal, L. B., 1994. Strategic Planning and Firm Performance: A Synthesis of Two Decades of Research. *Academy of Management Journal,* Dec., Volume 37, pp. 1649-1665.

Miller, C. C. & Ireland, R. D., 2005. Intuition in strategic decision making: friend or foe in the fast-paced 21st century. *Academy of Management Executive,* Volume 19, pp. 19-30.

Miller, D., 1987. The Structural and Environmental Correlates of Business Strategy. *Strategic Management Journal,* Volume 8, pp. 55-76.

Miller, D., Droge, C. & Toulouse, J. M., 1988. Corporate Control Type, Strategy, Size and Financial Performance. *Journal of Management Studies,* 25(5), pp. 403-417.

Miller, D. & Friesen, P. H., 1983. Strategy-making and environment: The third link. *Strategic Management Journal,* 4(3), pp. 221-235.

Miller, D. & Toulouse, J. M., 1986. Chief executive personality and corporate strategy and structure in small firms. *Management Science,* 32(11), pp. 1389-1409.

Millis, S. R., Malina, A. C., Bowers, D. A. & Ricker, J. H., 1999. Confirmatory factor analysis of the Wechsler memory scale-III. *Journal of Clinical and Experimental Neuropsychology,* 21(1), p. 87–93.

Mingers, J., 2001. Combining IS research methods: Towards a pluralist methodology. *Information Systems Research,* 12(3), pp. 240-259.

Mintzberg, H., 1979. An Emerging Strategy of "Direct" Research. *Administrative Science Quarterly,* 24(4), pp. 582-589.

Mintzberg, H., 1994. *The Rise and Fall of Strategic Planning.* 1st ed. New York: Free Press.

Mintzberg, H. A., 1973. Strategy-Making in three Modes. *California Management Review,* 16(2), pp. 44-53.

Mintzberg, H., Ahlstrand, B. & Lampel, J., 1998. *Strategy Safari – A Guided Tour Through the Wilds of Strategic Management.* 1st ed. Boston: Free Press.

Mintzberg, H. A., Raisingham, D. & Theoret, A., 1976. The structure of unstructured decision processes. *Administrative Science Quarterly,* 21(1), pp. 246-275.

Mintzberg, H. A. & Water, J. A., 1985. Of Strategies, Deliberate and Emergent. *Strategic Management Journal,* Volume 6, pp. 257-272.

Mintzberg, H. A. & Waters, J. A., 1982. Tracking strategy in an entrepreneurial firm. *Academy of Management Journal,* 25(3), pp. 465-499.

Mirbargkar, S. M., 2009. Global Competitiveness: Iranian SME. *SCMS Journal of Indian Management,* 6(4), pp. 106-116.

Mir, R. & Watson, A., 2000. Strategic management and the philosophy of science: The case for a constructivist methodology. *Strategic Management Journal,* Volume 21, pp. 941-953.

Mitchell, J. R., Shepherd, D. A. & Sharfman, M. P., 2011. Erratic strategic decisions: when and why managers are inconsistent in strategic decision making. *Strategic Management Journal,* 32(7), p. 683–704.

Mogey, N., 1999. *So you want to use Likert scale?.* [Online] Available at: Http://www.icbl.hw.ac.uk/ltdi/cookbook/inf_likert_scale/ [Accessed 12 September 2012].

Morgan, G. & Smircich, L., 1980. The Case of Qualitative Research. *Academy of Management Review,* Volume 5, pp. 491-500.

Mori, M. & Munisi, G., 2009. Strategic Decision Making in Microfinance Organisations: Stakeholder perspective. *Papr presented at the First European Research Conference on Microfinance, organized by CERMI,* Brussels, June 2-3-4, 2009.

Mulaik, S. A. et al., 1989. Evaluation of goodness-of-fit indices for structural equation models. *Psychological Bulletin,* 105(3), p. 430−445.

Muthen, B. & Kaplan, D., 1985. Comparison of methodologies for the factor analysis of non-normal Likert variables. *British Journal of Mathematical and Statistical Psychology,* 38(1), pp. 171-189.

Naoum, S. G., 1994. Critical analysis of time and cost of management and traditional contracts. *Journal of Construction Engineering and Management,* 120(4), pp. 687-705.

Narayanan, V. K. & Fahey, L., 1982. The micro-politics of strategy formation. *Academy of Management Review,* 7(1), pp. 25-34.

Narayan, D. & Cassidy, M. F., 2001. A Dimensional Approach to Measuring Social Capital: Development and Validation of a Social Capital Inventory. *Current Sociology,* 49(2), pp. 59-102.

Nickols, F. W., 2005. *Strategic Decision Making - Commitment to Strategic Action.* [Online] Available at: http://home.att.net/~essays/strategic_decision_making.pdf [Accessed 17 February 2011].

Nkomo, S. M., 1992. The emperor has no clothes: Rewriting race in organizations. *Academy of Management Review,* 17(3), pp. 487-513.

Nooraie, M., 2008. Decision magnitude of impact and strategic decision-making process output, The mediating impact of rationality of the decision-making process. *Management Decision,* 46(4), pp. 640-655.

Nooraie, M., 2012. Factors influencing Startegic Decision-Making Processes. *International Journal of Academic Research in Business and Social Sciences,* 2(7), pp. 405-429.

Numangami, T., 1998. The infeasibility of invariant laws in management studies: A reflective dialogue in defense of case studies. *Organization Sciences,* 9(1), pp. 2-15.

Nutt, P. C., 1984. A Strategic Planning Network for Nonprofits Organizations. *Strategic Management Journal,* Volume 5, pp. 57-75.

Nutt, P. C., 1993. The identification of solution ideas during organizational decision making. *Management Science,* 39(9), pp. 1071-1085.

Nutt, P. C., 1998. Evaluating alternatives to make strategic choices. *Omega, the international journal of management science,* 26(3), pp. 333-354.

Nutt, P. C., 1999. Public Private Differences and the assessment of alternatives for decision making. *Journal of Public administration Research and Theory,* 9(2), pp. 305-350.

O'Regan, N., Sims, M. A. & Gallear, D., 2006. The Strategic Planning-Environment-Performance Relationship Re-visited in HTSFs. *Paper presented at the 14th Annual High Technology Small Firms Conference,* University of Twente, Dutch, May 10-13, 2006.

Orlikowski, W. J. & Baroudi, J. J., 1991. *Studying Information Technology In Organizations: Research Approaches and Assumptions,* s.l.: Information Systems Research.

Orlitzky, M., Schmidt, F. L. & Rynes, S. L., 2003. Corporate social and financial performance: a meta-analysis. *Organization Studies,* Volume 24, pp. 403-441.

Pallant, J., 2005. *SPSS survival manual: a step by step guide to data analysis using SPSS.* 2nd edn ed. New South Wales, Australia: Allen and Unwin.

Pallant, J., 2011. *SPSS Survival Manual A step by step guide to data analysis using SPSS.* 4th edn ed. New South Wales, Australia: Allen and Unwin.

Papadakis, V., 1995. The Contribution of Formal Planning Systems to Strategic Investment Decision (SID) Making. *British Journal of Management,* 6(2), pp. 15-28.

Papadakis, V. & Barwise, P., 1997. What can we tell managers about strategic decisions?. In: V. Papadakis & P. Barwise, eds. *Strategic Decisions.* Boston: Kluwer.

Papadakis, V. & Barwise, P., 1998a. What can we tell Managers about making strategic decisions?. In: *Strategic Decisions.* New York: Kluwer Acadamic Publishers, pp. 267-287.

Papadakis, V. & Barwise, P., 1998b. Research on Strategic Decisions: Where do we go from here?. In: *Strategic Decisions.* New York: Kluwer Academic Publishers, pp. 289-302.

Papadakis, V. M., 2002. An empirical foundation of strategic decision-making processes: towards a synthesis and a future research agenda. *Spoudai Journal of Economics and Busines,* 52(1-2), pp. 32-64.

Papadakis, V. M., 2006. Do CEOs shape the process of making strategic decisions? Evidence from Greece. *Management Decision,* 44(3), pp. 367-394.

Papadakis, V. M. & Barwise, P., 1998. *Strategic Decisions.* London: Kluwer.

Papadakis, V. M. & Barwise, P., 2002. How Much do CEOs and Top Managers Matter is Strategic Decision-Making. *British Journal of Management,* Volume 13, pp. 83-95.

Papadakis, V. M. & Lioukas, S., 1996. Do Early Perceptions of Strategic Decisions Influence Strategic Processes? An Empirical Investigation. *Academy of Management Proceedings,* Volume 1, pp. 46-50.

Papadakis, V. M., Lioukas, S. & Chambers, D., 1998. Strategic decisions – Making Processes: The Role of Management and Context. *Strategic Management Journal,* 19(2), p. 115–147.

Papke-Shields, K. E. & Malhotra, M. K., 2001. Assessing the impact of the manufacturing executive's role on business performance through strategic alignment. *Journal of Operations Management,* Volume 19, p. 5–22.

Partington, D., 2000. Building grounded theories of management action. *British Journal of Management,* Volume 11, pp. 91-102.

Paswan, A. K., Dant, R. P. & Lumpkin, J. R., 1998. An empirical investigation of the linkages among relationalism, environmental uncertainty, and bureaucratization. *Journal of Business Research,* 43(3), pp. 125-140.

Payne, J. W., Bettman, J. R. & Johnson, E., 1988. Adaptive strategy Selection in decision making. *Journal of Experimental Psychology: Learning, Memory, and Cognition,* 14(3), pp. 534-552.

Pearce II, J. A., Robbins, D. K. & Robinson Jr, R. B., 1987. The Impact of Grand Strategy and Planning Formality on Financial Performance. *Strategic Management Journal,* 8(2), pp. 125-134.

Pennings, J. M., 1985. Introduction: on the nature and theory of strategic decisions. In: J. M. Pennings, ed. *Organisation Strategy and Change.* San Francisco: Jossey-Bass, p. 1–34.

Peterson, M. & Meckler, M., 2001. Cuban-American entrepreneurs: Chance, complexity and chaos. *Organisation Studies,* 22(1), pp. 31-57.

Pettigrew, A. M., 1973. *The Politics of Organisational Decision-Making.* London: Tavistock.

Pettigrew, A. M., 1990. Longitudinal field research on change: Theory and practice. *Organization Science,* 1(3), pp. 267-292.

Pettigrew, A. M., 1992. The character and significance of strategy process research. *Strategic Management Journal,* Volume 13, p. 5–16.

Pfeffer, J. & Salancik, G. R., 1974. Organisational decision making as a political process: the case of a university budget. *Administrative Science Quarterly,* Volume 19, p. 135–151.

Pinfield, L. T., 1986. A Field evaluation of perspectives on organisational decision making. *Adminstrative Science Quarterly,* 31(3), pp. 365-388.

Podsakoff, P., Mackenzie, S. & Lee, J., 2003. Common method biases in behavioural research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology,* 88(5), p. 879−903.

Pondy, L. R., 1983. *Union of rationality and intuition in management action in the executive mind.* San Francisco, CA: Jossey Bass.

Powell, D. A. & Schafer, W. D., 2001. The robustness of the likelihood ratio chi-square test for structural equation models: A meta-analysis. *Journal of Educational and Behavioral Statistics,* Volume 26, p. 105–132.

Preacher, K. J., Wichman, A. L., MacCallum, R. C. & Briggs, N. E., 2008. *Latent growth curve modelling.* Thousand Oaks, California: Sage.

Pretz, J. E. & Totz, K. S., 2007. Measuring individual differences in affective, heuristic, and holistic intuition.. *Personality and Individual Differences,* 43(5), pp. 1247-1257.

Priem, R. L., 1990. Top Management team group factors, consensus, and Firm Performance. *Strategic Management Journal,* 11(6), pp. 469-478.

Priem, R. L., Rasheed, P. R. A. & Kotulic, A., 1995. Rationality in Strategic Decision Processes, Environmental Dynamism, and Firm Performance. *Journal of Management,* 21(5), pp. 913-929.

Prietula, M. A. & Simon, H. A., 1989. The experts in your midst. *Harvard Business Review,* Volume 67, p. 120–124.

Proctor, S., 1998. Linking philosophy and method on the research process: the case for realism. *The International Journal of Research Methodology in Nursing and Health Care,* 5(4), pp. 73-90.

Purateera, T., Khamanarong, S., Phanarata, A. & Khamanarong, K., 2009. Influence Factors Affecting Management Of Small Enterprises In Northeast Thailand. *International Business and Economics Research Journal,* 8(2).

Quinn, J. B., 1980. *Strategies for Change: Logical Incrementalism.* Homewood: Richard D. Irwin.

Radaelli, C. & Fritsch, O., 2012. *Measuring Regulatory Performance: Evaluating Regulatory management Tools and Progammes,* s.l.: OECD Publishing.

Rajagopalan, N., Rasheed, A. M. A. & Datta, D. K., 1993. Strategic decision processes: critical review and future directions. *Journal of Management,* 19(2), p. 349–385.

Rajagopalan, N., Rasheed, A. M. A., Datta, D. K. & Spreitzer, G. M., 1997. A multi-theoretic model of strategic decision making. In: V. Papadakis & P. Barwise, eds. *Strategic Decisions.* Boston M A: Kluwer Academic Publishers , pp. 229-249.

Remenyi, D., Williams, B., Money, A. & Swartz, E., 1998. *Doing Research in Business and Management. An Introduction to Process and Method.* London: Sage.

Rice, G. H. J. & Hamilton, R. E., 1979. Decision theory and the small businessman. *American Journal of Small Business,* 4(1), pp. 1-9.

Richardson, S. & Ndubisi, N. O., 2003. Strategic-Level System in Entrepreneurs: The Antecedents of Systems Usage. *The Journal of Business in Developing Nations,* Volume 7, pp. 75-109.

Richard, T. W., 2001. Microenterprising and people with diabilities: strategies for success and failure. *Journal of rehabitation,* 67(2), pp. 29-35.

Riquelme, H. & Watson, J., 2002. Do venture capitalists' implicit theories on new business success/failure have empirical validity?. *International Small Business Journal,* Volume 20, pp. 395-418.

Robinson JR, R. B. & Pearce II, J. A., 1983. Impact of formalized strategic planning on financial performance in small organizations. *Strategic Management Journal,* 4(3), pp. 197-207.

Robinson, J. P., Shaver, P. R. & Wrightsman, L. S., 1991a. *Criteria for scale selection and Evaluation, In Measures of personality and social psychological attitudes.* San Diego: Academic Press.

Robinson, J. P., Shaver, P. R. & Wrightsman, L. S., 1991b. *Measures of personality and social psychological attitudes.* San Diego: Academic Press.

Robinson, J. R. B., Pearce II, J. A., Vozikis, G. S. & Mescon, T. S., 1984. The Relationship between Stage of Development and Small Firm Planning and Performance. *Journal of Small Business Management,* 22(2), pp. 45-52.

Robinson, R. B. & Pearce, J. A., 1984. Research thrusts in Small Firm Strategic Planning. *Academy of Management Review,* 9(1), pp. 128-137.

Robson, C., 2002. *Real World Research.* 2nd edn ed. Oxford: Blackwell.

Romanelli, E. & Tushman, M. L., 1986. Inertia, Environments and Strategic Choice: A Quasi-Experimental Design for Comparative-Longitudinal Research. *Management Science,* 32(5), pp. 608-621.

Roscoe, J. T., 1975. *Fundamental research statistics for the behavioural sciences.* 2nd ed. New York: Holt, Rinehart and Winston.

Rowan, R., 1986. *The intuitive manager.* 1st edn ed. Boston, Toronto: Little, Brown and Company.

Sadler-Smith, E. & Shefy, E., 2004. The intuitive executive: understanding and applying 'gut feel' in decision-making. *Academy of Management Executive,* 18(4), p. 76–91.

Sahran, S., Zeinalnezhad, M. & Mukhtar, M., 2010. Quality Management in Small and Medium Enterprises: experiences from a developing country. *International review of Business Research Papers,* 6(6), pp. 164-173.

Sakolnakorn, P. N., Khamanarong, S., Khamanarong, K. & Imtavil, V., 2008. Influence Factor of Rural Industries Outsourcing in Northeast Thailand. *KKU Research Journal, Graduate Studies,* 8(1), pp. 108-116.

Sapsford, R. & Jupp, V., 2006. *Data Collection and Analysis.* 2nd edn ed. London: Sage Publications.

Saunders, M., Lewis, P. & Thornhill, A., 2007. *Research methods for business students.* 4th edn ed. Harlow: Prentice Hall.

Saunders, M., Lewis, P. & Thornhill, A., 2009. *Research methods for business students.* 5th edn ed. Harlow: Prentice Hall.

Schaffer, U., Weber, J. & Willauer, B., 2001. Quantification of Strategic Planning, Planning Effectiveness and Business Unit Performance Empirical Evidence from a German study. Volume Athens, April 18-24, 2001.

Schermelleh-Engel, K., Moosbrugger, H. & Muller, H., 2003. Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods of Psychological Research Online,* 8(2), pp. 23-74.

Schilit, W. K. & Paine, F. P., 1987. An Examination of the Underlying Dynamics of Strategic Decisions Subject to Upward Influence Activity. *Journal of Management Studies,* 24(2), pp. 161-187.

Schneider, S. C. & De Meyer, A., 1991. Interpreting and Responding to Strategic Issues: The Impact of National Culture. *Strategic Management Journal,* 12(4), pp. 307-320.

Schreiber, J. B. et al., 2006. Reporting Structural Equation Modeling and Confirmatory Factor Analysis Results: A Review. *The Journal of Educational Research,* 99(6), pp. 323- 337.

Schumacker, R. E. & Lomax, R. G., 1996. *A beginner's guide to structural equation modelling.* New York: Taylor & Francis.

Schwandt, T. A., 1994. Constructivist, interpretivist approaches to human inquiry. In: N. K. Denzin & Y. S. Lincoln, eds. *Handbook of qualitative research.* Thousand Oaks: Sage, pp. 118-137.

Schweiger, D. M., Sandberg, W. R. & Ragan, J. W., 1986. Group approaches for improving strategic decision making: A comparative analysis of dialectical inquiry, devil's advocacy and consensus. *Academy of Management Journal,* 29(1), pp. 51-71.

Schwenk, C. R., 1988. *The Essence of Strategic Decision Making.* Massachusetts: Lexington Books.

Schwenk, C. R., 1995. Strategic Decision Making. *Journal of Management,* 21(3), pp. 471-493.

Schwenk, C. R. & Schrader, C. B., 1993. Effects of Formal Strategic Planning on Financial Performance in Small Firms: a Meta-analysis. *Entrepreneurship Theory and Practice,* 17(3), pp. 53-64.

Seethamraju, R., 2008. Enterprise System's Characteristics in Small and Medium-sized enterprises contex- A Case Study. *Paper presented at the European and Mediterrean Conference on Information Systems,* Dubai, UAE. May 25-26, 2008.

Sekaran, U., 2000. *Research method for business: A skill-building approach.* 3rd ed. New York: John Wiley & Sons.

Sekaran, U., 2003. *Research methods for business: a skill-building approach.* 4th ed. New York: John Wiley and Sons, Inc.

Seltman, H. J., 2012. *Experimental Design and Analysis.* [Online] Available at: http://www.stat.cmu.edu/hseltman/309/Book/Book.pdf [Accessed 16 August 2013].

Senge, P. M., 1990a. *The Fifth Disciline. The Art and Practice of the Leading Organisation.* New York: Doubleday Currency.

Senge, P. M., 1990b. Catalyzing Systems Thinking within Organizations. In: F. Masaryk, ed. *Advances in Organizational Development.* Norwood, NJ: Ablex, pp. 197-246.

Shah, S. K. & Corley, K. G., 2006. Building better theory by bridging the quantitative-qualitative divide. *Journal of Management Studies,* 43(8), pp. 1821-1835.

Sharfman, M. P. & Dean, J. W., 1991. Conceptualizing and measuring the organizational environment: a multidimensional approach. *Journal of Management,* 17(4), p. 681–700.

Sharfman, M. P. & Dean, J. W., 1998. The effects of context on strategic decision-making processes and outcomes. In: V. Papadakis & P. Barwise, eds. *Strategic Decisions.* New York: Kluwer Academic Publishers, pp. 179-203.

Shrivastava, P. & Grant, J. H., 1985. Empirically derived models of strategic decision-making processes. *Strategic Management journal,* 6(2), pp. 97-113.

Simmering, M. J., 2006. *Management levels. Encyclopedia of Business 2ed.* [Online] Available at: http://www.referenceforbusiness.com/management/Log-Mar/Management-Levels.htm [Accessed 1 June 2014].

Simon, H. A., 1987. Making management decisions: the role of intuition and emotion. *Academy of Management Executive,* Volume 1, pp. 57-64.

Simon, H. A. et al., 1986. *Decision making and problem solving.* Washington, DC: National Academy Press.

Simons, T. L., Pelled, L. & Smith, K. A., 1999. Making use of difference: diversity, debate, and decision comprehensiveness in top management team. *Academy of Management Journal,* 42(6), pp. 662-673.

Slevin, D. & covin, J., 1997. Strategy formation patterns, performance, and the significance of context. *Journal of Management,* 23(2), pp. 189-209.

Smith, B., 2003. *Ontology.* Oxford: Blackwell.

Smith, J. K. & Heshusius, L., 1986. Closing down the conversation: The end of the quantitative–qualitative debate among educational inquires. *Educational Researcher,* 15(1), pp. 4-12.

Smith, K. G., Grimm, C. M., Chen, M. J. & Gannon, M. J., 1998. Predictors of Competitive Strategic Actions: Theory and Preliminary Evidence. *Journal of Business Research,* Volume 18, pp. 245-258.

Smith, K. G. et al., 1994. Top Management Team Demography and Process: The Role of Social Integration and Communication. *Administrative Science Quarterly,* 39(3), pp. 412-438.

Smith, M., 1998. *Social Science in Question.* London: SAGE Publications Ltd.

Sobh, R. & Perry, C., 2006. Research design and data analysis in realism research. *European Journal of Marketing,* 40(11/12), pp. 1194-1209.

Soetanto, R., 2002. *Modelling satisfaction for main participants of the construction project coalition: a study of mutual performance assessment,* s.l.: Unpublished PhD. Thesis, University of Wolverhampton..

Soetanto, R. & Proverbs, D. G., 2001. Intelligent models for predicting levels of client satisfaction. *Journal of Construction Research,* 5(2), pp. 233-253.

Spiliotopoulou, G., 2009. Reliability reconsidered: Cronbach's alpha and paediatric assessment in occupational therapy. *Australian Occupational Therapy Journal,* 56(3), pp. 150-155.

Stahl, M. J. & Grigsby, D. W., 1992. *Strategic Management for Decision Making.* Boston: PWS-Kent.

Staw, B. & Szwajkowski, E., 1975. The Scarcity-Munificence Component of Organisational Environments and the Commission of illegal Acts. *Administrative Science Quarterly,* Volume 20, pp. 345-354.

Steiger, J. H., 1990. Structural model evaluation and modification: an interval estimation approach. *Multivariate Behavioural Research,* 25(2), pp. 173-180.

Steiner, G., 1969. *Top Management Planning.* New York: Macmillan.

Steiner, I. D., 1972. *Group Processes and Productivity.* New York: Academic Press.

Stein, J., 1980. *Contextual Influence on Strategic Decision Methods,* Pennsylvania: University of Pennsylvania.

Stein, J., 1981. Contextual Factors in the Selection of Strategic Decision Methods. *Human Relations,* 34(10), pp. 819-834.

Storey, D. & Cressy, R., 1995. *Small Business Risk: a Firm and Bank Perspective: Working Paper, SME Center,* Coventry: Warwick Business School.

Straub, D., Boudreau, M. C. & Gefen, D., 2004. Validation Guidelines for is Positivist Research. *Communications of the Association for Information Systems,* Volume 13, pp. 380-427.

Sukamolson, S., 2005. *Fundamentals of quantitative research.* [Online] Available at: http://www.culi.chula.ac.th/e-Journal/bod/Suphat%20Sukamolson.pdf [Accessed 21 October 2006].

Sykianakis, N., 2012. Exploring the Nature of Strategic Decision- Making: from Rationality to Organizational Politics. *Inernational Journal of Information Technology and Business Management,* 7(1), pp. 79-92.

Tabachnick, B. G. & Fidell, L. S., 2001. *Using Multivariate Statistics.* 4th edn ed. Boston: Allyn & Bacon.

Tabachnick, B. G. & Fidell, L. S., 2007. *Using multivariate statistics.* 5th edn ed. Boston: Allyn & Bacon.

Tannenbaum, A. S., 1968. *Control in Organizations.* New York: McGraw-Hill.

Tarter, C. J. & Hoy, W. K., 1998. Toward a contingency theory of decision making. *Journal of Educational Administration,* 36(3), pp. 212-228.

Tashakkori, A. & Tedlie, C., 1998. *Mixed Methodology Combining Qualitative and Quantitative approaches.* California: Sage.

Tayeb, M., 1987. Contingency Theory and Culture: A Study of Matched English and the Indian Manufacturing Firms. *Organization Studies,* 8(3), pp. 241-261.

Taylor, S. & Todd, P. A., 1995. Understanding information technology usage: A test of competing models. *Information Systems Research,* 6(2), p. 144.

Teo, T., 2009. Evaluating the intention to use technology among student teachers: A structural equation modeling approach. *International Journal of Technology in Teaching and Learning,* 5(2), pp. 106-118.

Thassanabanjong, K., Miller, P. & Marchant, P., 2009. Training in Thai SMEs. *Journal of Small Business and Enterprise Development,* 16(9), pp. 678-693.

The Brightwater Group, 2013. *Salary Survey,* Northern Irland: The Brightwater Group.

Thomas, J. D., 1996. *Organizations in action: social science administration theory.* New York: McGraw-Hill.

Thompson, B., 2004. *Exploratory and confirmatory factor analysis: Understanding concepts and applications.* Washington, DC: American Psychological Association.

Thornburg, L., 1993. IBM agent's of Influence. *Human Resource Magazine,* 38(2), pp. 102-117.

Ticehurst, G. W. & Veal, A. J., 2000. *Business research methods: a managerial approach.* Australia, NSW: Pearson Education.

TID, 2001. Prospect and challenges for small and medium-sized enterprises in the Asian and Pacific region in the context of emerging global and regional scenario. In: *Small Industry Bulletin for Asia and the Pacific.* New York: UNESCAP, pp. 1-30.

Tribe, L. H., 1973. Technology assessment and the fourth discontinuity: the limits of instrumental rationality. *Southern California Law Review,* 46(3), pp. 617-670.

Tsoukas, H., 1989. The validity of idiographic research explanations. *Academy of Management Review,* 14(4), pp. 551-561.

Ullman, J. B., 2001. Structural equation modelling. In: B. G. Tabachnick & L. S. Fedell, eds. *Using Multivariate Statistics.* Boston: Allyn and Bacon.

Ullman, J. B., 2006. Structural Equation Modeling: Reviewing the Basics and Moving Forward. *Journal of personality assessment,* 87(1), p. 35–50.

UNFCCC/CCNUCC, 2012. *Best Practice Examples Focusing on Sample Size and Reliability Calculations and Sampling for Validation/Verification,* s.l.: CDM–Executive Board.

UNIDO & UNODC, 2012. *Corruption prevention to foster small and medium-sized enterprise development,* Vienna: Publication was prepared jointly by UNIDO and UNODC.

Vaara, E. & Kakkuri-Knuuttila, M. L., 1999. Critical epistemological issues in strategic management studies: Towards reflective pragmatism?. *Paper presented at International Critical Management Studies Conference,* University of Manchester, Manchester, UK July 14-16, 1999.

Valentin, E. K., 2005. Away With SWOT Analysis: Use Defensive/Offensive Evaluation Instead. *The Journal of Applied Business Research,* 21(2), pp. 91-105.

Van de Ven, A. H., 1992. Suggestions for studying Strategy Process: A Research Note. *Strategic Management Journal,* 13(1), pp. 169-188.

Vasilescu, C., 2011. Effective Strategic Decision Making. *Journal of Defence Resouces Management,* 1(2), pp. 101-106.

Vaughan, F. E., 1979. *Awakening intuition.* Oxford: Anchor Press.

Veetil, N. M. K., 2008. *Strategy Formulation and Implementation in Manufacturing Organisations – The Impact on Performance,* London: Middlesex University Business School.

Ven, d. V., 1992. Suggestions for studying Strategy Process: A Research Note. *Strategic Management Journal,* Volume 13, pp. 169-188.

von Winterfeld, D. & Edwards, W., 1986. *Decision Analysis and Behavioral Research.* Cambridge: Cambridge University Press.

Vroom, V. H. & Jago, A. G., 1974. Leadership and Decision Making. *Decision Sciences Institute from Decision Sciences,* Volume 5, pp. 743-755.

Waddock, S. A. & Graves, S. B., 1997. The Corporate Social Performance–Financial Performance Link. *Strategic Management Journal,* 18(4), pp. 303-319.

Wally, S. & Baum, J. R., 1994. Personal and structural determinants of the pace of strategic decision-making. *Academy of Management Journal,* 37(4), pp. 932-956.

Walsham, G., 1995a. The emergence of interpretivism in IS research. *Information Systems Research,* 6(4), pp. 376-394.

Walsham, G., 1995b. Interpretive case studies in IS research: Nature and method. *European Journal of Information Systems,* 4(2), pp. 74-81.

Walters, B. A. & Bhuian, S. N., 2004. complexity Absorption and Performance: A Structural Analysis of Acute-Care Hospital. *Journal of Management,* 30(1), pp. 97-121.

Wan, W. P. & Hoskisson, R. E., 2003. Home country environments, corporate diversification strategies, and firm performance. *Academy of Managemet Journal,* 40(1), pp. 27-45.

Ward, A. & Mann, T., 2000. Don't mind if I do: disinhibited eating under cognitive load. *Journal of Personality and Social Psychology,* 78(4), pp. 753-763.

Weber, E. U., Ames, D. R. & Blais, A. R., 2005. How Do I Choose Thee? Let Me Count the Ways, A Textual Analysis of Similarities and Differences in Modes of Decision Making in China and the United State. *Management and Organisation Review,* 1(1), pp. 87-118.

Weick, K. E., 1979. *The Social Psychology of Organizing.* 2nd edn ed. New York: McGraw-Hill.

Weisstein, E. W., 2004. *Kurtosis.* [Online] Available at: http://mathwold.wolfram.com/kurtosis.html [Accessed 12 September 2012].

Weston, R. & Gore Jr, P. A., 2006. A Brief Guide to Structural Equation Modeling. *The Counseling Psychologist,* 34(5), pp. 719-751.

Wierzbicki, A. P., 1997. On the Role of Intuition in Decision Making and Some Ways of Multicriteria Aid of Intuition. *Journal of Multi-Criteria Decision Analysis,* Volume 6, pp. 65-76.

Williams, C., 2007. Research Methods. *Journal of Business and Economic Research,* 5(3).

Wilson, D., 2003. Strategy as decision making. In: S. Cummings & D. Wilson, eds. *Images of Strategy.* Oxford: Blackwell, pp. 383-410.

Wong, A. & Dean, A., 2005. The Effects of Store and Customer Characteristics on Value and Loyalty: ANZMAC 2005 Conference. *Paper presented at the ANZMAC Conference; broadening the boundaries,* Fremantle Western Australia, December 5-7, 2005.

Wong, P. T. P., Reker, G. T. & Peacock, E., 2006. The resource-congruence model of coping and the development of the Coping Schemas Inventory. In: P. T. P. Wong & L. C. J. Wong, eds. *Handbook of Multicultural perspectives on stress and coping.* new york: Springer.

Wood, A. & Joyce, P., 2003. Owner–Managers and the Practice of Strategic Management. *International Small Business Journal,* 21(2), pp. 181-195.

Wood, M. & Welch, C., 2010. Are 'Qualitative' and 'Quantitative' Useful Terms for Describing Research?. *Methodological Innovations Online,* 5(1), pp. 56-71.

Wooldridge, B. & Floyd, S. W., 1990. Strategy Process, Middle Management Involvement and Organisational Performance. *Strategic Management Journal,* 11(3), pp. 231-241.

Young, R. D., 2003. *Perspectives on Strategic Planning in the Public Sector.* [Online] Available at: http://www.ipspr.sc.edu/publication/Perspectives on Strategic Planning.pdf [Accessed 20 November 2013].

Zikmund, W. G., 2003. *Business Research Methods.* 7th edn ed. Kentucky: Thomson Southwestern.

Zumbo, B. D., 1994. The lurking assumptions in using generalizability theory to monitor an individual's progress. In: D. Laveault, B. D. Zumbo, M. E. Gessaroli & M. Boss, eds. *Modern theories of measurement: Problems and issues.* Ottaw: University of Ottawa, pp. 261-278.

Appendix I

Survey questionnaire

Dear Sir or Madam,

I am a PhD student with Brunel University, UK. My research is in the area of strategic decision making process. The title of my research is "An empirical study on the relationship between strategic decision characteristic and decision process output in Small and Medium-size Enterprises (SMEs) in the electronic, telecommunication and information technology sectors in the Middle East". As part of my research I need to collect data from decision makers in firms dealing in products and services in the SMEs in the electronic, telecommunication and information technology sectors in the Middle East. A self-administered questionnaire has been developed, using a predefined (single response) scale to facilitate ease of completing the questions. I am in the process of conducting a survey using this questionnaire.

I will be most grateful to you if you would participate in the survey to enable me to complete this important research. I therefore request you to spare a few moments of your valuable time to answer this questionnaire and return to me as soon as possible. I guarantee that the information provided by you will be solely used for the purpose of this research only, and will be treated in the strictest confidence. I also assure you that all the information provided by you will be kept confidential and will be not allowed to be used by any third party or entity. Should you require any clarification, please do not hesitate to contact me on the telephone and/ or e-mail details provided below.

Thanking you for your kind cooperation and support for this important study.

Yours sincerely

Wael H. Al Jassim
PhD student
Brunel University, UK
Email: Wael.Al-Jassim@brunel.ac.uk
Mobile: + 973 39 60 82 82
Fax: + 973 17 46 65 90
Kingdom of Bahrain.

Appendix I (contd)

Questionnaire

Section 1: Demographic questions; (Please tick "X" to whichever applies)

Gender	Male	
	Female	

Place of residence	Bahrain	
	GCC	
	Other	

Age	20 - 29	
	30 - 39	
	40 - 49	
	50 or above	

Years of Managerial Experience	5 or below	
	6 - 10	
	11 - 15	
	16 - 20	
	20 or above	

Level of Education	Primary School	
	Secondary School	
	High School	
	Additional Training (Diploma)	
	Undergraduate University degree	
	Postgraduate University degree	

Position held in your company	CEO	
	Managing Director	
	General Manager	
	Senior Manager	
	Middle Manager	

Appendix I (contd)

Section 2: Strategic Decisions

Please rate with an "X" each item on the five point Likert scale shown, to indicate your level of agreement with the statement.
Please note: Strategic decisions are those decisions made by top management in a firm which affect the health and survival of the firm.

A. Decision magnitude of impact: It is defined as the extent to which a strategic decision may affect various areas of an organization.

Ques. No.	Items	No impact 1	Mild impact 2	Moderate impact 3	Great impact 4	Very great impact 5
Please indicate the extent of the impact that Strategic Decisions have had on the following organizational areas in your firm over the past three years ….						
Q1.	Profit					
Q2.	Quality of service/ products					
Q3.	Total production					
Q4.	Cost					
Q5.	Sales					
Q6.	Market share					
Q7.	Call for changes in existing program					
Q8.	Organizational adjustment required to serve the decision					

B. Rationality in decision making: Rationality characterizes that behaviour which is logical in pursuing goals.

Ques. No.	Items	Very non-compre-hensive 1	Non-compre-hensive 2	Neither 3	Compre-hensive 4	Very compre-hensive 5
Please indicate how rational your firm usually is in making important strategic decisions....						
Q9.	to gather relevant information					
Q10.	to analyse relevant information					
Q11.	to use analytic techniques					
Q12.	to focus attention on crucial information					

Appendix I (contd)

C. Intuition: Intuition refers to where/ when choices were made intuitively by the decision-makers, drawing on their prior experience or knowledge of the situation.

Ques. No.	Items	Very little 1	Little 2	Neither 3	Great deal 4	Very great deal 5
While making decisions in your firm …						
Q13.	to what extent senior managers rely on personal judgment?					
Q14.	to what extent senior managers depend on gut feeling? (gut feeling could mean the managers' instinct)					
Q15.	how much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by managers using their previous experience in a similar situation)					
Q16.	how much emphasis is placed on intuition as a useful decision making tool?					
Q17.	to what extent do managers trust in their intuition?					

D. Firm performance: This is an indicator of the outcomes of the firm and is measured in terms of aspects that include growth rate in sales and revenue, profitability, return on assets, efficiency of operations, public image and goodwill, and quality of product/ services.

Ques. No.	Items	Much worse 1	Worse 2	No difference 3	Better 4	Much better 5
Compared to firms similar in size and scope to your firm, how does your firm compare on each of the following measures over a three year period during which strategic decisions were made?						
Q18.	Long-run level of profitability					
Q19.	Growth rate of sales or revenues					
Q20.	Return on assets					
Q21.	Efficiency of operations					
Q22.	Public image and goodwill					
Q23.	Quality of product					

Appendix I (contd)

E. Dynamism in the industry: Dynamism refers to the rate and the unpredictability of change in a firm's external environment.

Ques. No.	Items	Very similar 1	Similar 2	Neither similar nor different 3	Different 4	Very different 5
With respect to the industry served by your firm, please indicate the changes seen over the last three years (i.e. dynamism in your industry) with respect to each of the following ….						
Q24.	the mix of products/brands carried in the industry	[ ]	[ ]	[ ]	[ ]	[ ]
Q25.	the sales strategies in the industry are	[ ]	[ ]	[ ]	[ ]	[ ]
Q26.	the sales promotion/advertising strategies in the industry	[ ]	[ ]	[ ]	[ ]	[ ]
Q27.	the competitor's mix of products/brands	[ ]	[ ]	[ ]	[ ]	[ ]
Q28.	the competitor's sales strategies	[ ]	[ ]	[ ]	[ ]	[ ]
Q29.	the competitor's sales promotion/ advertising strategies	[ ]	[ ]	[ ]	[ ]	[ ]
Q30.	the consumer preferences in product features	[ ]	[ ]	[ ]	[ ]	[ ]
Q31.	the consumer preferences in brands	[ ]	[ ]	[ ]	[ ]	[ ]
Q32.	the consumer preferences in product quality/price	[ ]	[ ]	[ ]	[ ]	[ ]

F. Decision process output can be defined as how well the decision process is carried out in terms of Quality, Commitment and Effectiveness.

(i) Quality of the decision process output: In the decision making phase, quality of the decision-making process output can be indicated in terms of aspects that include the degree of precision of goals achieved while analyzing the situation, generating alternative choices, evaluating alternative choices, integrating decisions and making final decision.

Ques. No.	Items	Quite imprecise 1	Imprecise 2	Neither 3	Precise 4	Quite precise 5
Please indicate the degree of precision of goals usually achieved in your firm in the following decision process stages ….						
Q33.	Situation diagnosis	[ ]	[ ]	[ ]	[ ]	[ ]
Q34.	Alternative generation	[ ]	[ ]	[ ]	[ ]	[ ]
Q35.	Alternative evaluation	[ ]	[ ]	[ ]	[ ]	[ ]
Q36.	Decision integration	[ ]	[ ]	[ ]	[ ]	[ ]
Q37.	Making of the final decision	[ ]	[ ]	[ ]	[ ]	[ ]

Appendix I (contd)

(ii) The firm's (organisation's) commitment to various strategic activities

Ques. No.	Items	Not committed 1	Less committed 2	Neither 3	Committed 4	Very committed 5
Please indicate the organizational commitment level in your firm usually, as a measure of the following decision process outputs ….						
Q38.	Specification of corporate objectives/aims					
Q39.	Specification of business objectives/aims					
Q40.	Generation of strategic decisions					
Q41.	Evaluation of strategies decisions					

(iii) Decision making effectiveness refers to the outcome of the decision making process in terms of aspects that include the right choice of a decision, successful achievement of the objectives of a decision, expected revenue, fixing estimated highest retail price and the speed at which the firm could introduce its new products/services into the market.

Ques. No.	Items	Highly ineffective 1	Ineffective 2	Neither 3	Effective 4	Highly effective 5
With respect to products or services offered by your firm, please indicate the overall effectiveness of the strategic decision making over the last three years in terms of ….						
Q42.	the right choice of decision					
Q43.	successfully achieving the objectives of the decision					
Q44.	expected revenue					
Q45.	fixing estimated highest retail price					
Q46.	the speed at which the firm could introduce its new products/services into the market					

Thank you for your support in this research and for taking the time to complete my questionnaire.

Please return it to: **Wael.Al-Jassim@brunel.ac.uk**

Appendix II

Guarantee letter from consultant firm

Victory
Consultancy & Services

6 March 2012

Letter of Guarantee

The undersigned hereby guarantee that Victory Consultancy with its partners conducted self-administered survey for the study entitled "An empirical study on the relationship between strategic decision characteristic and decision process output in Small and Medium-size Enterprises (SMEs) in the electronic, telecommunication and information technology sectors in the Gulf Corporation Council (GCC). The questionnaires were sent to 800 participants. There were 464 respondents from the Kingdom of Bahrain, Kingdom of Saudi Arabia, Kuwait, and United Arab Emirates who eventually participated in the survey conducted in a professional and ethical manner as instructed by our client in line with fulfilling the ethical requirements of the University in which he is enrolled. The collected data were sent to our client in its raw form and we guarantee that we do not hold the data anymore. The data were collected over a period of around two months from January 2012 to first week of March 2012.

The respondents, are specifically (50) from the Kingdom of Bahrain, (172) from the Kingdom of Saudi Arabia, (79) from Kuwait, and (163) from United Arab Emirates. They are legitimate individuals who were fit the criteria indicated. The undersigned guarantees that Victory Consultancy and its partners did not force any respondent to participate in the survey, and did instead honor each respondent's right to privacy with respect to their answers to the survey questions, to decide voluntarily whether to participate in the survey, and to be informed about the purposes, scope, and importance of that involvement.

Information learned about the respondents in the course of the survey will not be disclosed with anyone, other than appropriate members of the research team as necessary for research purposes only. The undersigned also guarantees that Victory Consultancy and its partners used carefully trained staffs that were constantly monitored for quality assurances. Victory Consultancy was able to collect survey data from the respondents, only in situations which do not compromise their privacy, and will do nothing that would influence or bias the respondents' answers. Victory Consultancy will also keep completed research documents only in areas with limited access.

Sincerely yours,

Victory
Training & Development Consult

Dr. Ahmed Al Obaidli

Tel. +97 - 1740 104 Fax. +973 - 1740 2490 Email. info@victoryconsultancy.com

Appendix III

The complete details regarding the number of responses received from each one the four countries, demographic details and others.

No.	No. of Respondents	Place of Residence	Gender	Age Group	Years of Managerial Experience	Education	Position of Respondents
1	50	Kingdom of Bahrain	Female = 4 Male = 46 Total = 50	20 – 29 = 1 30 – 39 = 12 40 – 49 = 30 50 above = 7 Total = 50	5 or below = 1 6 – 10 = 14 11 – 15 = 9 16 – 20 = 23 20 above = 3 Total = 50	Primary School = 0 Secondary School = 5 High School = 3 Add'l Training Diploma = 5 Undergraduate University = 1 ~~Postgraduate University Degree = 36~~ Total = 50	CEO = 1 Managing Director = 22 General Manager = 8 Senior Manager = 6 Middle Manager = 13 Total = 50
2	172	Kingdom of Saudi Arabia	Female = 0 Male = 172 Total = 172	20 – 29 = 5 30 – 39 = 45 40 – 49 = 99 50 above = 26 Total = 172	5 or below = 7 6 – 10 = 41 11 – 15 = 28 16 – 20 = 80 20 above = 16 Total = 172	Primary School = 0 Secondary School = 2 High School = 0 Add'l Training Diploma = 3 Undergraduate University = 0 ~~Postgraduate University Degree = 167~~ Total = 172	CEO = 13 Managing Director = 28 General Manager = 47 Senior Manager = 42 Middle Manager = 42 Total = 172
3	79	Kuwait	Female = 3 Male = 76 Total = 79	20 – 29 = 2 30 – 39 = 17 40 – 49 = 51 50 above = 9 Total = 79	5 or below = 1 6 – 10 = 19 11 – 15 = 18 16 – 20 = 35 20 above = 6 Total = 79	Primary School = 0 Secondary School = 4 High School = 3 Add'l Training Diploma = 8 Undergraduate University = 0 ~~Postgraduate University Degree = 64~~ Total = 79	CEO = 3 Managing Director = 16 General Manager = 25 Senior Manager = 26 Middle Manager = 9 Total = 79
4	163	United Arab Emirates	Female = 16 Male = 147 Total = 163	20 – 29 = 3 30 – 39 = 40 40 – 49 = 99 50 above = 21 Total = 163	5 or below = 2 6 – 10 = 37 11 – 15 = 29 16 – 20 = 78 20 above = 17 Total = 163	Primary School = 0 Secondary School = 0 High School = 3 Add'l Training Diploma = 5 Undergraduate University = 8 ~~Postgraduate University Degree = 147~~ Total = 163	CEO = 6 Managing Director = 19 General Manager = 39 Senior Manager = 76 Middle Manager = 23 Total = 163

Appendix IV

Detailed variable and coding list

Code	Question No	Description	Value	Measure
Section A				
Demographic questions				
Gender	--	Gender	2	Nominal
Place	--	Place of residence	3	Ordinal
Age	--	Age	4	Ordinal
Mgrlexp	--	Years of Managerial Experience	5	Ordinal
Edulevel	--	Level of Education	6	Ordinal
Position	--	Position held in your company	5	Ordinal
Section B				
Decision Magnitude of Impact				
Please indicate the extent of the impact that Strategic Decisions have had on the following organizational areas in your firm over the past three years…				
DMI1	Q1	Profit	5-point	Ordinal
DMI2	Q2	Quality of service/ products	5-point	Ordinal
DMI3	Q3	Total production	5-point	Ordinal
DMI4	Q4	Cost	5-point	Ordinal
DMI5	Q5	Sales	5-point	Ordinal
DMI6	Q6	Market share	5-point	Ordinal
DMI7	Q7	Call for changes in existing program	5-point	Ordinal
DMI8	Q8	Organizational adjustment required to serve the decision	5-point	Ordinal
Rationality in decision making				
Please indicate how rational your firm usually is in making important strategic decisions…				
RDM9	Q9	to gather relevant information	5-point	Ordinal
RDM10	Q10	to analyse relevant information	5-point	Ordinal
RDM11	Q11	to use analytic techniques	5-point	Ordinal
RDM12	Q12	to focus attention on crucial information	5-point	Ordinal
Intuition				
While making decisions in your firm				
Intuition13	Q13	to what extent senior managers rely on personal judgment?	5-point	Ordinal
Intuition14	Q14	to what extent senior managers depend on gut feeling? (gut feeling could mean the managers' instinct)	5-point	Ordinal
Intuition15	Q15	how much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by managers using their previous experience in a similar situation)	5-point	Ordinal
Intuition16	Q16	how much emphasis is placed on intuition as a useful decision making tool?	5-point	Ordinal
Intuition17	Q17	to what extent do managers trust in their intuition?	5-point	Ordinal
Firm performance				
Compared to firms similar in size and scope to your firm, how does your firm compare on each of the following measures over a three year period during which strategic decisions were made?				
FP18	Q18	Long-run level of profitability	5-point	Ordinal
FP19	Q19	Growth rate of sales or revenues	5-point	Ordinal
FP20	Q20	Return on assets	5-point	Ordinal
FP21	Q21	Efficiency of operations	5-point	Ordinal
FP22	Q22	Public image and goodwill	5-point	Ordinal
FP23	Q23	Quality of product	5-point	Ordinal

Appendix IV (contd)

Detailed variable and coding list

Code	Question No	Description	Value	Measure
Section B				
Dynamism in the industry				
With respect to the industry served by your firm, please indicate the changes seen over the last three years (i.e. dynamism in your industry) with respect to each of the following ….				
Dyms24	Q24	the mix of products/brands carried in the industry	5-point	Ordinal
Dyms25	Q25	the sales strategies in the industry are	5-point	Ordinal
Dyms26	Q26	the sales promotion/advertising strategies in the industry	5-point	Ordinal
Dyms27	Q27	the competitor's mix of products/brands	5-point	Ordinal
Dyms28	Q28	the competitor's sales strategies	5-point	Ordinal
Dyms29	Q29	the competitor's sales promotion/advertising strategies	5-point	Ordinal
Dyms30	Q30	the consumer preferences in product features	5-point	Ordinal
Dyms31	Q31	the consumer preferences in brands	5-point	Ordinal
Dyms32	Q32	the consumer preferences in product quality/price	5-point	Ordinal
Decision process output				
(i) Quality of the decision process output				
Please indicate the degree of precision of goals usually achieved in your firm in the following decision process stages ….				
QODPO33	Q33	Situation diagnosis	5-point	Ordinal
QODPO34	Q34	Alternative generation	5-point	Ordinal
QODPO35	Q45	Alternative evaluation	5-point	Ordinal
QODPO36	Q36	Decision integration	5-point	Ordinal
QODPO37	Q37	Making of the final decision	5-point	Ordinal
(ii) The firm's (organisation's) commitment				
Please indicate the organizational commitment level in your firm usually, as a measure of the following decision process outputs ….				
FC38	Q38	Specification of corporate objectives/aims	5-point	Ordinal
FC39	Q39	Specification of business objectives/aims	5-point	Ordinal
FC40	Q40	Generation of strategic decisions	5-point	Ordinal
FC41	Q41	Evaluation of strategies decisions	5-point	Ordinal
(iii) Decision making effectiveness				
With respect to products or services offered by your firm, please indicate the overall effectiveness of the strategic decision making over the last three years in terms of				
DME42	Q42	the right choice of decision	5-point	Ordinal
DME43	Q43	successfully achieving the objectives of the decision	5-point	Ordinal
DME44	Q44	expected revenue	5-point	Ordinal
DME45	Q45	fixing estimated highest retail price	5-point	Ordinal
DME46	Q46	the speed at which the firm could introduce its new products/services into the market	5-point	Ordinal

Appendix V

SPSS output: Missing Values, Mean, Median and Standard Deviation

Description	Valid	Missing	Mean	Median	Std. Deviation
Male/Female	464	0	1.0409	1.0000	.19838
GCC	464	0	1.8987	2.0000	.30204
Age range	464	0	2.8297	3.0000	.71326
Yrs of exp	464	0	3.3039	4.0000	1.07208
Pri/Sec/High/Dip/UG/PG	464	0	5.0409	5.0000	.99048
CEO/MD/GM/SM/MIDMGR	464	0	3.4310	4.0000	1.09366
Profit	464	0	3.7996	4.0000	.94373
Quality of service/product	464	0	3.4483	4.0000	1.11417
Total production	464	0	3.2457	4.0000	1.04540
Cost	464	0	3.1918	4.0000	.99668
Sales	464	0	3.6444	4.0000	.91817
Market share	464	0	2.8879	3.0000	1.13474
Call for changes in existing program	464	0	3.2026	3.0000	.88783
Organisational adjustment required to serve the decision	464	0	3.3642	3.0000	.79339
To gather relevant information	464	0	4.1681	4.0000	.57464
To analyse relevant information	464	0	3.7672	4.0000	.98899
To use analytic techniques	464	0	3.2651	4.0000	1.10212
To focus attention on crucial information	464	0	4.1875	4.0000	.82964
To what extent senior managers rely on personal judgment?	464	0	3.3103	3.0000	.90034
To what extent senior managers depend on gut feeling?	464	0	3.2586	3.0000	.88051
How much emphasis is placed on past experience?	464	0	3.5259	4.0000	.70126
How much emphasis is placed on intuition as a useful decision making tool?	464	0	2.5560	2.0000	1.02300
To what extent do managers trust in their intuition?	464	0	2.6853	3.0000	.81038
Long-run level of profitability	464	0	4.0517	4.0000	.70291
Growth rate of sales or revenues	464	0	3.7845	4.0000	.69935
Return on assets	464	0	3.5582	4.0000	.64802
Efficiency of operations	464	0	4.1573	4.0000	.85884
Public image and goodwill	464	0	4.3448	5.0000	.85039
Quality of product	464	0	4.2672	5.0000	.84022
The mix of product/brands carried in the industry are	464	0	3.2478	3.0000	.79482
The sales strategies in the industry are	464	0	3.4526	4.0000	.84034
The sales promotion/advertising strategies in the industry are	464	0	3.5690	4.0000	.76899
The competitor’s mix of products/brand are	464	0	2.6379	2.0000	.88809
The competitor’s sales strategies are	464	0	3.6940	4.0000	.65813
The competitor's sales promotion/advertising strategies are	464	0	3.8190	4.0000	.53150
The consumer preferences in product features are	464	0	2.8060	2.0000	1.27828
The consumer preferences in brands are	464	0	3.5905	4.0000	.93665
The consumer preferences in product quality/price are	464	0	2.9504	3.0000	1.14769
Situation diagnosis	464	0	4.0302	4.0000	.62624
Alternative generation	464	0	3.8879	4.0000	.65423
Alternative evaluation	464	0	3.5819	4.0000	.65211
Decision integration	464	0	3.7435	4.0000	.94843
Making of the final decision	464	0	4.0797	4.0000	.89882
Specification of corporate objectives/aims	464	0	3.9095	4.0000	.86721
Specification of business objectives/aims	464	0	3.8211	4.0000	1.01836
Generation of strategic decisions	464	0	3.6487	4.0000	.83361
Evaluation of strategies decisions	464	0	3.8147	4.0000	.94567
The right choice of decision	464	0	3.8276	4.0000	.75541
Successfully achieving the objectives of the decision	464	0	3.6810	4.0000	.97351
Expected revenue	464	0	3.2974	4.0000	.89026
Fixing estimated highest retail price	464	0	3.3254	3.0000	.68280
The speed at which the firm could introduce its new products/services into the market	464	0	3.6272	4.0000	.67106

Appendix VI

SPSS Output: Skewness and Kurtosis measures

	N	Skewness	Std. Error of Skewness	Kurtosis	Std. Error of Kurtosis	Range	Minimum	Maximum
	Valid							
Profit	464	-.318	.113	-.824	.226	3.00	2.00	5.00
Quality of service/product	464	-.227	.113	-.890	.226	4.00	1.00	5.00
Total production	464	-.505	.113	-.802	.226	4.00	1.00	5.00
Cost	464	-.773	.113	-.603	.226	4.00	1.00	5.00
Sales	464	-.364	.113	-.591	.226	4.00	1.00	5.00
Market share	464	-.126	.113	-1.020	.226	4.00	1.00	5.00
Call for changes in existing program	464	-.613	.113	.057	.226	4.00	1.00	5.00
Organisational adjustment required to serve the decision	464	-.642	.113	.649	.226	4.00	1.00	5.00
To gather relevant information	464	-.221	.113	.767	.226	3.00	2.00	5.00
To analyse relevant information	464	-.569	.113	-.282	.226	4.00	1.00	5.00
To use analytic techniques	464	-.452	.113	-.648	.226	4.00	1.00	5.00
To focus attention on crucial information	464	-.636	.113	-.541	.226	3.00	2.00	5.00
To what extent senior managers rely on personal judgment?	464	-.010	.113	-.825	.226	4.00	1.00	5.00
To what extent senior managers depend on gut feeling?	464	-.033	.113	-.782	.226	4.00	1.00	5.00
How much emphasis is placed on past experience?	464	-.319	.113	.467	.226	4.00	1.00	5.00
How much emphasis is placed on intuition as a useful decision making tool?	464	.729	.113	.049	.226	4.00	1.00	5.00
To what extent do managers trust in their intuition?	464	.511	.113	-.712	.226	4.00	1.00	5.00
Long-run level of profitability	464	-.222	.113	-.495	.226	3.00	2.00	5.00
Growth rate of sales or revenues	464	-.513	.113	1.098	.226	4.00	1.00	5.00
Return on assets	464	-1.078	.113	.461	.226	4.00	1.00	5.00
Efficiency of operations	464	-.452	.113	-1.133	.226	3.00	2.00	5.00
Public image and goodwill	464	-.809	.113	-.890	.226	3.00	2.00	5.00
Quality of product	464	-.647	.113	-.971	.226	3.00	2.00	5.00
The mix of product/brands carried in the industry are	464	-.318	.113	.381	.226	5.00	1.00	6.00
The sales strategies in the industry are	464	-1.100	.113	.743	.226	5.00	1.00	6.00
The sales promotion/advertising strategies in the industry are	464	-1.006	.113	1.181	.226	5.00	1.00	6.00
The competitor’s mix of products/brand are	464	.758	.113	-.173	.226	5.00	1.00	6.00
The competitor’s sales strategies are	464	-1.679	.113	3.432	.226	5.00	1.00	6.00
The competitor's sales promotion/advertising strategies are	464	-1.881	.113	5.576	.226	5.00	1.00	6.00
The consumer preferences in product features are	464	.673	.113	-.904	.226	4.00	1.00	5.00
The consumer preferences in brands are	464	-.431	.113	-.532	.226	4.00	1.00	5.00
The consumer preferences in product quality/price are	464	.390	.113	-.982	.226	4.00	1.00	5.00
Situation diagnosis	464	-1.029	.113	4.023	.226	4.00	1.00	5.00
Alternative generation	464	-.672	.113	1.210	.226	3.00	2.00	5.00
Alternative evaluation	464	-1.151	.113	.650	.226	4.00	1.00	5.00
Decision integration	464	-.154	.113	-.774	.226	4.00	1.00	5.00
Making of the final decision	464	-.534	.113	-.687	.226	4.00	1.00	5.00
Specification of corporate objectives/aims	464	-.662	.113	.132	.226	4.00	1.00	5.00
Specification of business objectives/aims	464	-.474	.113	-.681	.226	4.00	1.00	5.00
Generation of strategic decisions	464	-.546	.113	.192	.226	4.00	1.00	5.00
Evaluation of strategies decisions	464	-.330	.113	-.632	.226	4.00	1.00	5.00
The right choice of decision	464	-.639	.113	.763	.226	4.00	1.00	5.00
Successfully achieving the objectives of the decision	464	-.412	.113	-.384	.226	4.00	1.00	5.00
Expected revenue	464	-.749	.113	-.151	.226	4.00	1.00	5.00
Fixing estimated highest retail price	464	-.434	.113	.741	.226	4.00	1.00	5.00
The speed at which the firm could introduce its new products/services into the market	464	-1.118	.113	1.144	.226	4.00	1.00	5.00

Appendix VII

Constructs of the Research Model

Construct	Definition	Items	Code
1*	Decision Magnitude of Impact	**Please indicate the extent of the impact that Strategic Decisions have had on the following organizational areas in your firm over the past three years…**	
		Profit	DMI1
		Quality of service/ products	DMI2
		Total production	DMI3
		Cost	DMI4
		Sales	DMI5
		Market share	DMI6
		Call for changes in existing program	DMI7
		Organizational adjustment required to serve the decision	DMI8
2**	Rationality in decision making	**Please indicate how rational your firm usually is in making important strategic decisions....**	
		to gather relevant information	RDM9
		to analyse relevant information	RDM10
		to use analytic techniques	RDM11
		to focus attention on crucial information	RDM12
3**	Intuition	**While making decisions in your firm**	
		to what extent senior managers rely on personal judgment?	Intuition13
		to what extent senior managers depend on gut feeling? (gut feeling could mean the managers' instinct)	Intuition14
		how much emphasis is placed on past experience? (emphasis placed on past experience means the decision made by managers using their previous experience in a similar situation)	Intuition15
		how much emphasis is placed on intuition as a useful decision making tool?	Intuition16
		to what extent do managers trust in their intuition?	Intuition17
4*	Firm Performance	**Compared to firms similar in size and scope to your firm, how does your firm compare on each of the following measures over a three year period during which strategic decisions were made….**	
		Long-run level of profitability	FP18
		Growth rate of sales or revenues	FP19
		Return on assets	FP20
		Efficiency of operations	FP21
		Public image and goodwill	FP22
		Quality of product	FP23
5*	Dynamism	**With respect to the industry served by your firm, please indicate the changes seen over the last three years (i.e. dynamism in your industry) with respect to each of the following ….**	
		the mix of products/brands carried in the industry	Dyms24
		the sales strategies in the industry	Dyms25
		the sales promotion/advertising strategies in the industry	Dyms26
		the competitor's mix of products/brands	Dyms27
		the competitor's sales strategies	Dyms28
		the competitor's sales promotion/advertising strategies	Dyms29
		the consumer preferences in product features	Dyms30
		the consumer preferences in brands	Dyms31
		the consumer preferences in product quality/price	Dyms32
6**	Decision Quality	**Please indicate the degree of precision of goals usually achieved in your firm in the following decision process stages ….**	
		Situation diagnosis	QODP33
		Alternative generation	QODP34
		Alternative evaluation	QODP35
		Decision integration	QODP36
		Making of the final decision	QODP37
		Situation diagnosis	QODP38

Appendix VII (contd)

Constructs of the Research Model

Construct	Definition	Items	Code
7**	Firm Commitment	**Please indicate the organizational commitment level in your firm usually, as a measure of the following decision process outputs**	
		Specification of corporate objectives/aims	FC38
		Specification of business objectives/aims	FC39
		Generation of strategic decisions	FC40
		Evaluation of strategies decisions	FC41
8**	Decision effectiveness	**With respect to products or services offered by your firm, please indicate the overall effectiveness of the strategic decision making over the last three years in terms of ….**	
		the right choice of decision	DME42
		successfully achieving the objectives of the decision	DME43
		expected revenue	DME44
		fixing estimated highest retail price	DME45
		the speed at which the firm could introduce its new products/services into the market	DME46
* Exogenous Construct / ** Endogenous Construct			

Appendix VIII

SPSS output: Sample correlations of Indicators for all eight latent constructs

	FP23	DMI8	DMI4	QODPO33	Intuition14	DMI7	Dyms28	Intuition13	Intuition16	Intuition17	QODPO37	QODPO36	QODPO35	QODPO34	DME46	DME45	DME44	DME43	DME42
FP23	1																		
DMI8	0.158	1																	
DMI4	0.369	0.433	1																
QODPO33	0.366	0.1	0.119	1															
Intuition14	-0.172	-0.039	-0.128	-0.12	1														
DMI7	0.211	0.735	0.503	0.024	-0.07	1													
Dyms28	0.297	0.127	0.235	0.127	-0.012	0.169	1												
Intuition13	-0.173	-0.065	-0.144	-0.112	0.953	-0.103	-0.014	1											
Intuition16	-0.095	0.205	0.185	-0.127	0.521	0.171	0.077	0.523	1										
Intuition17	-0.165	0.027	0.005	-0.113	0.659	-0.016	-0.007	0.661	0.792	1									
QODPO37	0.487	0.262	0.4	0.414	-0.187	0.248	0.333	-0.188	0.041	-0.084	1								
QODPO36	0.414	0.32	0.351	0.428	-0.22	0.293	0.268	-0.225	-0.015	-0.116	0.822	1							
QODPO35	0.492	0.157	0.293	0.454	-0.078	0.18	0.245	-0.073	0.093	-0.004	0.632	0.619	1						
QODPO34	0.451	0.191	0.252	0.657	-0.19	0.18	0.176	-0.179	-0.045	-0.103	0.511	0.514	0.654	1					
DME46	0.403	0.118	0.282	0.268	-0.041	0.134	0.299	-0.044	0.101	0.03	0.501	0.47	0.492	0.411	1				
DME45	0.368	0.016	0.264	0.386	-0.151	0.076	0.241	-0.126	0.04	-0.018	0.443	0.413	0.428	0.425	0.694	1			
DME44	0.497	0.164	0.362	0.387	-0.051	0.153	0.336	-0.043	0.091	0.046	0.591	0.546	0.572	0.491	0.66	0.544	1		
DME43	0.495	0.198	0.388	0.398	-0.14	0.205	0.265	-0.128	0.061	-0.034	0.626	0.583	0.575	0.571	0.647	0.634	0.775	1	
DME42	0.471	0.123	0.282	0.481	-0.108	0.142	0.263	-0.083	-0.004	-0.029	0.545	0.568	0.515	0.599	0.665	0.624	0.709	0.815	1
FC41	0.5	0.179	0.349	0.392	-0.181	0.209	0.266	-0.176	-0.067	-0.141	0.637	0.612	0.543	0.528	0.565	0.492	0.648	0.663	0.629
FC40	0.477	0.161	0.339	0.281	-0.032	0.213	0.28	-0.05	0.029	-0.023	0.591	0.574	0.536	0.403	0.549	0.41	0.65	0.58	0.545
FC39	0.533	0.198	0.366	0.435	-0.158	0.217	0.324	-0.161	-0.031	-0.102	0.639	0.605	0.612	0.534	0.575	0.5	0.728	0.751	0.67
FC38	0.481	0.17	0.26	0.466	-0.156	0.147	0.277	-0.147	-0.138	-0.142	0.563	0.615	0.533	0.538	0.536	0.455	0.676	0.662	0.738
FP22	0.902	0.217	0.393	0.354	-0.105	0.222	0.316	-0.106	0.037	-0.052	0.512	0.45	0.498	0.458	0.438	0.383	0.523	0.527	0.486
FP21	0.702	0.274	0.457	0.357	-0.168	0.307	0.318	-0.169	0.048	-0.084	0.568	0.545	0.465	0.454	0.424	0.428	0.518	0.546	0.458
FP20	0.614	0.188	0.402	0.299	-0.121	0.205	0.27	-0.12	0.081	-0.01	0.48	0.465	0.467	0.423	0.485	0.389	0.558	0.533	0.541
FP19	0.558	0.165	0.279	0.237	-0.102	0.213	0.283	-0.11	0.029	-0.048	0.498	0.512	0.493	0.381	0.477	0.296	0.547	0.489	0.469
FP18	0.565	0.168	0.306	0.355	-0.13	0.18	0.249	-0.152	-0.016	-0.07	0.472	0.529	0.443	0.454	0.403	0.298	0.503	0.479	0.521
Dyms24	0.324	0.257	0.275	0.328	-0.052	0.296	0.364	-0.065	0.064	-0.026	0.438	0.448	0.317	0.348	0.251	0.177	0.39	0.309	0.352
Dyms25	0.406	0.16	0.329	0.142	-0.086	0.273	0.466	-0.123	0.038	-0.031	0.444	0.333	0.303	0.261	0.319	0.228	0.394	0.359	0.324
Dyms26	0.329	0.017	0.226	0.256	-0.058	0.103	0.405	-0.072	-0.063	-0.079	0.4	0.289	0.299	0.277	0.228	0.21	0.396	0.35	0.314
RDM12	0.501	0.257	0.434	0.222	-0.241	0.309	0.295	-0.243	-0.077	-0.179	0.577	0.528	0.449	0.421	0.428	0.388	0.506	0.558	0.486
RDM11	0.565	0.275	0.431	0.214	-0.211	0.278	0.279	-0.235	-0.018	-0.155	0.598	0.542	0.521	0.41	0.481	0.333	0.593	0.6	0.522
RDM10	0.488	0.235	0.3	0.35	-0.221	0.219	0.216	-0.234	-0.134	-0.205	0.497	0.526	0.455	0.44	0.399	0.301	0.515	0.54	0.524
RDM9	0.399	0.33	0.234	0.376	-0.176	0.242	0.136	-0.172	-0.134	-0.151	0.388	0.46	0.332	0.418	0.286	0.202	0.354	0.386	0.435
DMI6	0.199	0.576	0.613	0.023	0.001	0.651	0.133	-0.027	0.311	0.117	0.314	0.324	0.246	0.166	0.152	0.067	0.202	0.263	0.144
DMI5	0.291	0.466	0.714	0.128	-0.097	0.558	0.188	-0.12	0.172	-0.035	0.309	0.275	0.249	0.246	0.177	0.164	0.251	0.344	0.241
DMI3	0.373	0.342	0.771	0.088	-0.029	0.423	0.207	-0.051	0.173	0.025	0.338	0.266	0.284	0.208	0.251	0.199	0.339	0.359	0.245
DMI2	0.368	0.431	0.675	0.151	-0.101	0.474	0.199	-0.109	0.167	0.027	0.346	0.281	0.291	0.294	0.27	0.242	0.342	0.429	0.297
DMI1	0.378	0.409	0.654	0.167	-0.171	0.479	0.169	-0.191	0.026	-0.108	0.365	0.336	0.281	0.275	0.233	0.195	0.302	0.372	0.273

Appendix IX

Residual Covariances (Default model)

	FP23	DMI8	DMI4	QODPO33	Intuition14	DMI7	Dyms28	Intuition13	Intuition16	Intuition17	QODPO37	QODPO36	QODPO35	QODPO34
FP23	0													
DMI8	-0.05	0												
DMI4	0.021	-0.028	0											
QODPO33	0.013	-0.019	-0.052	0										
Intuition14	-0.023	0.018	-0.029	-0.001	0									
DMI7	-0.041	0.262	-0.026	-0.074	0.003	0								
Dyms28	0.007	-0.006	0.019	-0.02	0.026	0.006	0							
Intuition13	-0.023	0	-0.043	0.003	0.001	-0.023	0.025	0						
Intuition16	-0.014	0.195	0.243	-0.039	-0.011	0.192	0.073	-0.012	0					
Intuition17	-0.044	0.047	0.058	-0.016	-0.005	0.025	0.018	-0.006	0.345	0				
QODPO37	-0.039	0.032	0.072	-0.039	-0.002	0	0.033	-0.002	0.133	0.033	0			
QODPO36	-0.092	0.079	0.035	-0.028	-0.032	0.041	-0.002	-0.036	0.084	0.009	0.062	0		
QODPO35	0.012	-0.017	0.009	0.013	0.048	-0.021	0.001	0.052	0.123	0.058	-0.019	-0.022	0	
QODPO34	0.015	0.01	0	0.113	-0.025	-0.008	-0.018	-0.019	0.024	0	-0.052	-0.047	0.056	0
DME46	-0.03	-0.03	0.017	-0.026	0.024	-0.038	0.035	0.023	0.101	0.048	-0.013	-0.027	0.016	0
DME45	-0.029	-0.078	0.019	0.035	-0.045	-0.064	0.018	-0.031	0.058	0.02	-0.022	-0.038	0.004	0.021
DME44	-0.01	-0.022	0.066	0.009	0.032	-0.054	0.053	0.04	0.129	0.08	0.006	-0.023	0.036	0.018
DME43	-0.041	-0.008	0.08	0.002	-0.036	-0.028	0.002	-0.026	0.116	0.027	0.003	-0.028	0.02	0.051
DME42	-0.034	-0.046	-0.009	0.048	-0.009	-0.057	0.005	0.008	0.038	0.023	-0.037	-0.015	-0.004	0.062
FC41	-0.035	-0.022	0.04	-0.004	-0.033	-0.024	0.004	-0.029	0.012	-0.032	0.007	-0.006	-0.003	0.02
FC40	-0.025	-0.023	0.041	-0.049	0.074	-0.008	0.019	0.063	0.089	0.047	0	-0.006	0.011	-0.034
FC39	-0.022	-0.013	0.052	0.017	-0.011	-0.024	0.038	-0.014	0.053	0	-0.005	-0.028	0.033	0.017
FC38	-0.034	-0.022	-0.032	0.043	-0.014	-0.064	0.014	-0.007	-0.054	-0.032	-0.035	0.014	0.001	0.033
FP22	0.074	-0.016	0.034	0.001	0.03	-0.039	0.014	0.03	0.103	0.034	-0.031	-0.076	0.009	0.012
FP21	-0.019	0.037	0.115	0.019	-0.027	0.043	0.03	-0.028	0.107	0.007	0.049	0.039	0.013	0.032
FP20	-0.034	-0.008	0.066	0	0.001	-0.016	0.01	0.002	0.1	0.04	0.006	0.002	0.024	0.022
FP19	-0.049	-0.015	-0.003	-0.02	0.009	-0.004	0.023	0.005	0.068	0.02	0.033	0.05	0.048	0.014
FP18	-0.045	-0.014	0.016	0.032	-0.008	-0.024	0.007	-0.022	0.036	0.007	0.017	0.061	0.025	0.048
Dyms24	0.013	0.068	0.043	0.069	0.007	0.088	0.012	-0.003	0.08	0.011	0.1	0.117	0.03	0.059
Dyms25	-0.014	-0.033	0.018	-0.064	0	0.026	-0.006	-0.028	0.074	0.02	0.021	-0.061	-0.033	-0.037
Dyms26	-0.024	-0.099	-0.029	0.014	0.01	-0.069	-0.002	0.002	-0.017	-0.017	0.029	-0.045	-0.006	-0.002
RDM12	-0.005	0.017	0.078	-0.051	-0.022	0.034	0.031	-0.023	0.035	-0.02	0.054	0.025	0.005	0.013
RDM11	-0.001	0.015	0.059	-0.098	0.023	-0.014	0.01	0	0.128	0.009	0.037	-0.009	0.023	-0.023
RDM10	-0.052	-0.012	-0.068	0.002	0.007	-0.059	-0.028	-0.004	-0.006	-0.035	-0.043	-0.011	-0.014	0.006
RDM9	-0.02	0.059	-0.034	0.036	0.004	0.007	-0.027	0.006	-0.018	-0.01	-0.025	0.017	-0.018	0.028
DMI6	-0.119	0.12	-0.041	-0.119	0.09	0.149	-0.045	0.064	0.418	0.165	0.012	0.03	-0.013	-0.053
DMI5	-0.049	-0.013	0.003	-0.047	0.001	0.006	-0.015	-0.018	0.213	0.025	-0.017	-0.044	-0.024	-0.008
DMI3	0.034	-0.093	0.108	-0.071	0.058	-0.087	0.005	0.039	0.24	0.076	0.026	-0.039	0.009	-0.025
DMI2	0.013	-0.046	-0.037	-0.041	-0.003	-0.074	-0.009	-0.011	0.253	0.087	0.016	-0.046	0.003	0.025
DMI1	0.035	-0.034	-0.013	-0.017	-0.066	-0.032	-0.019	-0.084	0.075	-0.033	0.046	0.027	0.006	0.019

Appendix IX (contd)

Residual Covariances (Default model)

	DME46	DME45	DME44	DME43	DME42	FC41	FC40	FC39	FC38	FP22	FP21	FP20	FP19	FP18
DME46	0													
DME45	0.075	0												
DME44	0.008	-0.03	0											
DME43	-0.028	0	0.002	0										
DME42	0	0.007	-0.023	0.015	0									
FC41	-0.007	-0.024	0.003	-0.023	-0.023	0								
FC40	0.004	-0.049	0.033	-0.054	-0.048	0.08	0							
FC39	-0.01	-0.029	0.062	0.045	-0.006	-0.019	-0.027	0						
FC38	-0.012	-0.034	0.04	-0.003	0.064	-0.027	-0.026	0.025	0					
FP22	-0.018	-0.027	-0.001	-0.027	-0.034	-0.055	-0.027	-0.02	-0.029	0				
FP21	-0.002	0.021	0.03	0.029	-0.022	-0.006	0.007	0	-0.026	0.004	0			
FP20	0.038	0.01	0.065	0.036	0.041	0.026	0.031	0.044	0.025	-0.023	0.006	0		
FP19	0.047	-0.024	0.078	0.026	0.019	0.064	0.103	0.067	0.055	-0.051	-0.005	0.059	0	
FP18	0.012	-0.023	0.051	0.019	0.047	0.034	0.045	0.027	0.074	-0.044	0.007	0.038	0.109	0
Dyms24	0.008	-0.021	0.089	0.021	0.048	0.041	0.042	0.078	0.082	0.016	0.074	0.037	0.058	0.084
Dyms25	-0.006	-0.043	0.018	-0.029	-0.036	-0.016	-0.021	-0.02	-0.064	-0.014	0.016	0.006	0.018	-0.011
Dyms26	-0.029	-0.026	0.054	0.008	-0.007	-0.02	-0.019	0.04	0.003	-0.06	-0.016	-0.017	0.019	-0.014
RDM12	0.004	0	0.025	0.044	0.001	0.021	0.016	0.002	-0.008	-0.023	0.045	0.011	0.032	0.022
RDM11	0.009	-0.073	0.067	0.043	-0.014	-0.012	0.035	0.017	-0.019	-0.001	0.011	0.044	0.101	0.046
RDM10	-0.038	-0.08	0.004	-0.006	-0.001	-0.018	-0.035	-0.002	0.037	-0.074	-0.059	0.008	0.075	0.067
RDM9	-0.03	-0.052	-0.028	-0.028	0.007	-0.007	-0.024	-0.025	0.018	-0.041	-0.012	0.003	0.037	0.06
DMI6	-0.068	-0.12	-0.069	-0.029	-0.115	-0.047	-0.029	-0.048	-0.146	-0.092	0.06	-0.052	-0.044	-0.054
DMI5	-0.054	-0.049	-0.037	0.025	-0.043	-0.022	-0.034	-0.02	-0.078	-0.056	0.012	-0.046	-0.094	-0.054
DMI3	0.002	-0.02	0.057	0.063	-0.032	0.038	0.054	0.034	-0.071	0.034	0.063	0.061	0.018	-0.001
DMI2	0.005	0	0.047	0.123	-0.005	0.074	0.026	0.084	-0.078	0.012	0.071	0.019	-0.006	-0.019
DMI1	-0.01	-0.021	0.02	0.069	-0.009	0.081	0.041	0.07	-0.021	0.01	0.087	0.033	0.004	0.024

	Dyms24	Dyms25	Dyms26	RDM12	RDM11	RDM10	RDM9	DMI6	DMI5	DMI3	DMI2	DMI1
Dyms24	0											
Dyms25	-0.012	0										
Dyms26	-0.03	0.02	0									
RDM12	0.045	0.023	0.012	0								
RDM11	0.047	0.017	0.017	0.006	0							
RDM10	0.029	-0.045	-0.028	-0.033	0.012	0						
RDM9	0.029	-0.036	-0.021	0.009	-0.046	0.054	0					
DMI6	0.112	-0.017	-0.089	0.01	-0.045	-0.153	-0.039	0				
DMI5	0.034	0.013	-0.035	0.03	-0.001	-0.049	-0.012	0.067	0			
DMI3	0.016	0.019	-0.024	0.054	0.05	-0.053	-0.044	-0.072	-0.043	0		
DMI2	-0.01	0.015	-0.055	0.058	0.044	-0.024	-0.021	-0.039	-0.011	0.086	0	
DMI1	0.058	0.046	-0.029	0.073	0.037	-0.014	0.026	-0.045	0.011	-0.026	0.062	0

Appendix X

Residual Covariances (Group number 1 - Default model) after deleting DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45

	DMI5	Dyms28	FP18	Intuition17	Intuition13	DME43	DME44	DME46	QODPO37	QODPO36	QODPO35	FC40	FC39
DMI5	0												
Dyms28	-0.01	0											
FP18	-0.07	-0.006	0										
Intuition17	0.025	0.022	0.013	0									
Intuition13	-0.04	0.022	-0.034	0	0								
DME43	0.01	-0.003	-0.025	0.002	-0.078	0							
DME44	-0.071	0.036	-0.012	0.061	-0.002	-0.004	0						
DME46	-0.062	0.032	-0.013	0.033	-0.007	0.003	0.005	0					
QODPO37	-0.016	0.025	-0.027	0.044	-0.03	0.017	-0.02	-0.004	0				
QODPO36	-0.039	-0.009	0.02	0.018	-0.067	-0.005	-0.043	-0.013	0.01	0			
QODPO35	-0.005	0.007	0.019	0.057	0.027	0.064	0.052	0.041	-0.013	-0.009	0		
FC40	-0.018	0.024	0.018	0.055	0.045	-0.032	0.016	0.017	0.019	0.021	0.051	0	
FC39	-0.017	0.033	-0.033	0.015	-0.031	0.03	-0.002	-0.018	-0.017	-0.03	0.065	-0.01	0
FC38	-0.073	0.012	0.03	-0.02	-0.022	-0.009	-0.004	-0.015	-0.039	0.017	0.03	-0.006	0.01
FP19	-0.114	0.007	0.051	0.027	-0.006	-0.025	0.009	0.018	-0.017	0.002	0.038	0.07	0
FP20	-0.055	0.001	-0.003	0.044	-0.012	0.004	0.013	0.019	-0.027	-0.027	0.023	0.013	-0.002
FP21	0.02	0.03	-0.019	0.007	-0.054	0.019	-0.009	-0.007	0.036	0.033	0.032	0.011	-0.025
FP22	-0.019	0.03	-0.03	0.028	-0.007	0.01	0.001	0.004	-0.002	-0.039	0.053	0.014	0.005
Dyms24	0.04	0.012	0.068	0.017	-0.007	0.014	0.068	0.004	0.089	0.109	0.037	0.049	0.072
Dyms25	0.021	-0.006	-0.036	0.029	-0.035	-0.039	-0.014	-0.012	0.004	-0.073	-0.022	-0.012	-0.03
Dyms26	-0.029	-0.003	-0.033	-0.01	-0.004	0	0.028	-0.033	0.016	-0.055	0.002	-0.013	0.032
RDM12	0.034	0.029	-0.012	0.004	-0.036	0.041	-0.006	0.003	0.045	0.022	0.024	0.034	-0.003
RDM11	-0.011	-0.001	-0.02	0.052	-0.011	0.016	-0.001	-0.006	0.001	-0.037	0.039	0.042	-0.017
RDM10	-0.037	-0.027	0.031	-0.007	-0.025	0.001	-0.027	-0.033	-0.045	-0.005	0.017	-0.003	0.005
DMI4	0.023	0.017	-0.012	0.06	-0.063	0.047	0.015	-0.001	0.058	0.025	0.02	0.046	0.038
DMI3	-0.047	-0.002	-0.038	0.08	0.021	0.018	-0.007	-0.024	0	-0.06	0.014	0.05	0.008
DMI2	0.003	-0.014	-0.054	0.09	-0.033	0.081	-0.017	-0.019	-0.004	-0.062	0.013	0.028	0.063
DMI1	0.031	-0.02	0	-0.031	-0.102	0.04	-0.025	-0.026	0.035	0.019	0.017	0.047	0.058

Appendix X (contd)

Residual Covariances (Group number 1 - Default model) after deleting DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45

	FC38	FP19	FP20	FP21	FP22	Dyms24	Dyms25	Dyms26	RDM12	RDM11	RDM10	DMI4	DMI3	DMI2	DMI1
FC38	0														
FP19	0.005	0													
FP20	-0.008	0.012	0												
FP21	-0.041	-0.039	-0.008	0											
FP22	-0.004	-0.045	0.002	0.08	0										
Dyms24	0.079	0.039	0.026	0.075	0.038	0									
Dyms25	-0.069	-0.011	-0.01	0.016	0.018	-0.012	0								
Dyms26	-0.001	-0.005	-0.031	-0.016	-0.036	-0.03	0.019	0							
RDM12	-0.008	-0.007	-0.013	0.04	0.009	0.043	0.019	0.009	0						
RDM11	-0.04	0.027	-0.007	-0.016	0.026	0.034	-0.003	0	-0.008	0					
RDM10	0.048	0.032	-0.016	-0.056	-0.024	0.031	-0.043	-0.027	-0.011	0.012	0				
DMI4	-0.04	-0.035	0.046	0.11	0.059	0.041	0.013	-0.033	0.067	0.025	-0.074	0			
DMI3	-0.089	-0.023	0.032	0.047	0.049	0.007	0.004	-0.036	0.032	-0.001	-0.074	0.067	0		
DMI2	-0.091	-0.046	-0.007	0.062	0.037	-0.016	0.006	-0.062	0.041	-0.001	-0.037	-0.064	0.028	0	
DMI1	-0.027	-0.025	0.016	0.083	0.034	0.056	0.043	-0.032	0.064	0.008	-0.018	-0.023	-0.061	0.04	0

Appendix XI I

Standardized Residual Covariances (Group number 1 - Default model) after deleting DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45

	DMI5	Dyms28	FP18	Intuition17	Intuition13	DME43	DME44	DME46	QODPO37	QODPO36	QODPO35	FC40	FC39
DMI5	0												
Dyms28	-0.361	0											
FP18	-2.214	-0.271	0										
Intuition17	0.718	0.904	0.487	0									
Intuition13	-1.033	0.796	-1.163	0	0								
DME43	0.222	-0.11	-0.7	0.068	-1.91	0							
DME44	-1.765	1.285	-0.363	1.812	-0.056	-0.083	0						
DME46	-2.103	1.52	-0.553	1.321	-0.237	0.081	0.139	0					
QODPO37	-0.406	0.861	-0.811	1.278	-0.78	0.355	-0.449	-0.132	0				
QODPO36	-0.908	-0.294	0.583	0.493	-1.673	-0.104	-0.933	-0.408	0.198	0			
QODPO35	-0.177	0.347	0.813	2.319	0.975	1.953	1.751	1.9	-0.403	-0.269	0		
FC40	-0.488	0.913	0.589	1.734	1.273	-0.73	0.394	0.589	0.472	0.494	1.836	0	
FC39	-0.382	1.032	-0.866	0.401	-0.714	0.533	-0.033	-0.488	-0.33	-0.562	1.888	-0.204	0
FC38	-1.892	0.431	0.934	-0.62	-0.592	-0.186	-0.103	-0.487	-0.91	0.392	1.029	-0.162	0.193
FP19	-3.638	0.33	1.874	1.009	-0.219	-0.707	0.263	0.742	-0.514	0.07	1.646	2.348	-0.011
FP20	-1.88	0.034	-0.121	1.811	-0.433	0.106	0.44	0.866	-0.888	-0.852	1.093	0.464	-0.055
FP21	0.532	1.095	-0.57	0.217	-1.512	0.442	-0.231	-0.247	0.892	0.769	1.13	0.292	-0.539
FP22	-0.497	1.13	-0.918	0.867	-0.189	0.228	0.017	0.142	-0.041	-0.929	1.914	0.375	0.11
Dyms24	1.163	0.48	2.511	0.563	-0.223	0.387	1.978	0.168	2.567	2.992	1.512	1.54	1.833
Dyms25	0.558	-0.228	-1.216	0.901	-0.988	-0.954	-0.365	-0.428	0.105	-1.822	-0.822	-0.343	-0.699
Dyms26	-0.864	-0.112	-1.251	-0.352	-0.112	0.004	0.842	-1.328	0.464	-1.529	0.085	-0.406	0.823
RDM12	0.896	1.1	-0.395	0.13	-1.028	0.979	-0.153	0.09	1.147	0.529	0.89	0.944	-0.07
RDM11	-0.213	-0.027	-0.484	1.219	-0.235	0.273	-0.014	-0.156	0.025	-0.658	1.066	0.865	-0.275
RDM10	-0.826	-0.873	0.862	-0.183	-0.589	0.029	-0.57	-0.988	-0.96	-0.099	0.52	-0.072	0.088
DMI4	0.444	0.546	-0.344	1.604	-1.516	0.994	0.354	-0.044	1.319	0.545	0.642	1.155	0.764
DMI3	-0.862	-0.066	-1.056	2.038	0.472	0.364	-0.148	-0.714	0.005	-1.24	0.419	1.19	0.144
DMI2	0.046	-0.389	-1.411	2.141	-0.703	1.512	-0.345	-0.533	-0.082	-1.189	0.363	0.629	1.128
DMI1	0.652	-0.695	-0.011	-0.881	-2.587	0.901	-0.618	-0.856	0.839	0.446	0.576	1.238	1.248

Appendix XI (contd)II

Standardized Residual Covariances (Group number 1 - Default model) after deleting DMI6, DMI7, DMI8, RDM9, Intuition14, Intuition16, FP23, QODPO33, QODPO34, FC41, DME42 and DME45

	FC38	FP19	FP20	FP21	FP22	Dyms24	Dyms25	Dyms26	RDM12	RDM11	RDM10	DMI4	DMI3	DMI2	DMI1
FC38	0														
FP19	0.154	0													
FP20	-0.281	0.483	0												
FP21	-1.061	-1.171	-0.247	0											
FP22	-0.112	-1.376	0.068	1.984	0										
Dyms24	2.39	1.443	1.062	2.28	1.153	0									
Dyms25	-1.9	-0.38	-0.384	0.444	0.5	-0.334	0								
Dyms26	-0.016	-0.174	-1.256	-0.499	-1.11	-0.968	0.552	0							
RDM12	-0.207	-0.234	-0.483	1.084	0.237	1.365	0.557	0.275	0						
RDM11	-0.769	0.66	-0.185	-0.323	0.533	0.797	-0.058	0.003	-0.145	0					
RDM10	1.049	0.897	-0.488	-1.273	-0.546	0.816	-1.044	-0.731	-0.248	0.194	0				
DMI4	-0.957	-1.032	1.464	2.635	1.435	1.08	0.321	-0.894	1.64	0.461	-1.522	0			
DMI3	-2.016	-0.653	0.976	1.078	1.136	0.171	0.102	-0.937	0.745	-0.014	-1.436	1.138	0		
DMI2	-1.938	-1.208	-0.212	1.318	0.805	-0.373	0.138	-1.51	0.899	-0.014	-0.681	-1.004	0.423	0	
DMI1	-0.692	-0.773	0.535	2.115	0.883	1.57	1.106	-0.906	1.658	0.149	-0.392	-0.443	-1.097	0.675	0

Appendix XII

Implied (for all variables) Correlations (Default model)

	Intution	Decision_Effect	Decision_Quality	Firm_Commit	Firm_Perform	Dynamism	Rationality	Decision Mag_Impact	DMI5	Dyms28	FP18
Intuition	1										
Decision_Effect	-0.054	1									
Decision_Quality	-0.199	0.757	1								
Firm_Commit	-0.168	0.905	0.792	1							
Firm_Perform	-0.147	0.737	0.706	0.753	1						
Dynamism	-0.109	0.547	0.566	0.537	0.584	1					
Rationality	-0.294	0.729	0.712	0.771	0.756	0.543	1				
Decision Mag_Impact	-0.104	0.462	0.438	0.432	0.484	0.442	0.532	1			
DMI5	-0.086	0.38	0.36	0.355	0.398	0.363	0.438	0.822	1		
Dyms28	-0.062	0.309	0.319	0.303	0.329	0.564	0.306	0.249	0.205	1	
FP18	-0.117	0.588	0.562	0.6	0.797	0.465	0.602	0.386	0.317	0.262	1
Intuition17	0.793	-0.043	-0.158	-0.134	-0.116	-0.087	-0.233	-0.083	-0.068	-0.049	-0.093
Intuition13	0.833	-0.045	-0.166	-0.14	-0.122	-0.091	-0.245	-0.087	-0.072	-0.051	-0.097
DME43	-0.047	0.877	0.664	0.794	0.647	0.48	0.64	0.405	0.333	0.271	0.515
DME44	-0.048	0.889	0.673	0.805	0.656	0.487	0.648	0.411	0.338	0.274	0.522
DME46	-0.04	0.733	0.555	0.664	0.54	0.401	0.535	0.339	0.278	0.226	0.431
QODPO37	-0.182	0.692	0.915	0.724	0.646	0.518	0.651	0.4	0.329	0.292	0.514
QODPO36	-0.176	0.671	0.886	0.702	0.625	0.502	0.631	0.388	0.319	0.283	0.498
QODPO35	-0.142	0.541	0.715	0.567	0.505	0.405	0.509	0.313	0.257	0.228	0.402
FC40	-0.132	0.707	0.619	0.781	0.588	0.419	0.602	0.338	0.278	0.236	0.469
FC39	-0.153	0.821	0.718	0.907	0.683	0.487	0.7	0.392	0.322	0.274	0.545
FC38	-0.143	0.766	0.67	0.846	0.638	0.454	0.653	0.366	0.301	0.256	0.508
FP19	-0.119	0.6	0.574	0.613	0.814	0.475	0.615	0.394	0.324	0.268	0.648
FP20	-0.12	0.601	0.575	0.614	0.815	0.476	0.616	0.395	0.325	0.268	0.65
FP21	-0.119	0.596	0.57	0.609	0.808	0.472	0.611	0.391	0.322	0.266	0.644
FP22	-0.117	0.587	0.562	0.6	0.797	0.465	0.602	0.386	0.317	0.262	0.635
Dyms24	-0.066	0.331	0.342	0.325	0.353	0.604	0.328	0.267	0.22	0.341	0.281
Dyms25	-0.093	0.464	0.48	0.455	0.494	0.847	0.46	0.374	0.308	0.478	0.394
Dyms26	-0.08	0.398	0.412	0.391	0.425	0.728	0.395	0.322	0.264	0.41	0.338
RDM12	-0.233	0.578	0.565	0.612	0.599	0.43	0.793	0.422	0.347	0.243	0.478
RDM11	-0.269	0.668	0.652	0.706	0.692	0.497	0.916	0.487	0.401	0.28	0.552
RDM10	-0.247	0.614	0.599	0.649	0.636	0.457	0.841	0.448	0.368	0.257	0.507
DMI4	-0.087	0.387	0.367	0.362	0.406	0.37	0.446	0.838	0.689	0.209	0.323
DMI3	-0.088	0.389	0.369	0.364	0.408	0.373	0.449	0.843	0.694	0.21	0.325
DMI2	-0.091	0.404	0.383	0.378	0.423	0.386	0.465	0.875	0.719	0.218	0.337
DMI1	-0.085	0.374	0.354	0.35	0.392	0.358	0.431	0.81	0.666	0.202	0.312

Appendix XII (contd)

Implied (for all variables) Correlations (Default model)

	Intuition17	Intuition13	DME43	DME44	DME46	QODPO37	QODPO36	QODPO35	FC40	FC39	FC38	FP19	FP20	FP21	FP22
Intuition17	1														
Intuition13	0.661	1													
DME43	-0.038	-0.039	1												
DME44	-0.038	-0.04	0.78	1											
DME46	-0.031	-0.033	0.643	0.652	1										
QODPO37	-0.144	-0.151	0.607	0.616	0.507	1									
QODPO36	-0.14	-0.147	0.588	0.596	0.492	0.81	1								
QODPO35	-0.113	-0.118	0.475	0.482	0.397	0.654	0.634	1							
FC40	-0.104	-0.11	0.62	0.629	0.518	0.566	0.548	0.442	1						
FC39	-0.121	-0.127	0.72	0.73	0.602	0.657	0.636	0.514	0.708	1					
FC38	-0.113	-0.119	0.672	0.681	0.562	0.613	0.594	0.48	0.661	0.768	1				
FP19	-0.095	-0.099	0.526	0.533	0.44	0.525	0.509	0.411	0.479	0.556	0.519	1			
FP20	-0.095	-0.1	0.527	0.535	0.441	0.526	0.51	0.412	0.48	0.557	0.52	0.663	1		
FP21	-0.094	-0.099	0.523	0.53	0.437	0.522	0.505	0.408	0.476	0.552	0.515	0.658	0.659	1	
FP22	-0.093	-0.097	0.515	0.522	0.431	0.514	0.498	0.402	0.469	0.544	0.508	0.648	0.65	0.644	1
Dyms24	-0.052	-0.055	0.29	0.294	0.243	0.313	0.303	0.245	0.253	0.294	0.275	0.287	0.288	0.285	0.281
Dyms25	-0.073	-0.077	0.407	0.413	0.34	0.439	0.425	0.343	0.355	0.413	0.385	0.402	0.403	0.4	0.394
Dyms26	-0.063	-0.066	0.349	0.354	0.292	0.377	0.365	0.295	0.305	0.354	0.331	0.345	0.346	0.343	0.338
RDM12	-0.185	-0.194	0.507	0.514	0.424	0.517	0.5	0.404	0.478	0.555	0.518	0.488	0.489	0.485	0.478
RDM11	-0.213	-0.224	0.586	0.594	0.489	0.596	0.578	0.467	0.552	0.641	0.598	0.563	0.564	0.559	0.551
RDM10	-0.196	-0.206	0.538	0.546	0.45	0.548	0.531	0.429	0.507	0.589	0.549	0.517	0.519	0.514	0.507
DMI4	-0.069	-0.073	0.339	0.344	0.284	0.335	0.325	0.262	0.283	0.328	0.307	0.33	0.331	0.328	0.323
DMI3	-0.07	-0.073	0.342	0.346	0.285	0.337	0.327	0.264	0.285	0.331	0.308	0.332	0.333	0.33	0.325
DMI2	-0.072	-0.076	0.354	0.359	0.296	0.35	0.339	0.274	0.295	0.343	0.32	0.344	0.345	0.342	0.337
DMI1	-0.067	-0.07	0.328	0.333	0.274	0.324	0.314	0.254	0.273	0.318	0.296	0.319	0.32	0.317	0.312

	Dyms24	Dyms25	Dyms26	RDM12	RDM11	RDM10	DMI4	DMI3	DMI2	DMI1
Dyms24	1									
Dyms25	0.512	1								
Dyms26	0.44	0.617	1							
RDM12	0.26	0.365	0.313	1						
RDM11	0.3	0.421	0.362	0.726	1					
RDM10	0.276	0.387	0.332	0.667	0.771	1				
DMI4	0.224	0.314	0.269	0.354	0.408	0.375	1			
DMI3	0.225	0.316	0.271	0.356	0.411	0.377	0.707	1		
DMI2	0.234	0.327	0.281	0.369	0.426	0.392	0.733	0.738	1	
DMI1	0.216	0.303	0.261	0.342	0.395	0.363	0.679	0.683	0.709	1

Appendix XIII

Modification index of the initial model

Covariances: (Group number 1 - Default model)				
			M.I.	Par Change
z1	<-->	Decision Mag_Impact	44.902	-0.16
z1	<-->	Firm_Perform	109.56	0.21
z1	<-->	Dynamism	6.182	0.045
z1	<-->	z2	15.126	-0.116
z3	<-->	z5	23.686	0.024
z4	<-->	Decision Mag_Impact	5.204	-0.034
z4	<-->	z5	122.758	0.081
z4	<-->	z3	36.977	0.043
e5	<-->	Decision Mag_Impact	4.465	0.038
e5	<-->	Firm_Perform	31.997	-0.087
e5	<-->	Dynamism	4.213	0.028
e4	<-->	e5	5.085	0.035
e3	<-->	z2	12.759	0.089
e3	<-->	z1	4.22	-0.044
e3	<-->	e5	11.259	-0.055
e3	<-->	e4	33.717	0.098
e2	<-->	e4	30.041	-0.092
e2	<-->	e3	9.092	0.053
e1	<-->	e5	7.994	0.044
e1	<-->	e4	4.7	-0.035
e1	<-->	e3	22.727	-0.081
e1	<-->	e2	12.554	0.059
e28	<-->	e1	4.273	-0.032
e18	<-->	z1	8.306	0.047
e18	<-->	z5	7.031	-0.019
e17	<-->	z5	9.508	0.029
e17	<-->	e4	4.614	0.036
e17	<-->	e2	5.571	0.041
e17	<-->	e1	5.169	-0.038
e13	<-->	z1	4.913	-0.051
e13	<-->	e3	8.276	0.055
e43	<-->	Decision Mag_Impact	10.293	0.057
e43	<-->	z3	10.495	0.027
e43	<-->	z4	16.995	0.05
e43	<-->	e5	4.451	0.031
e43	<-->	e2	8.818	0.048
e44	<-->	Decision Mag_Impact	5.696	-0.038
e44	<-->	Dynamism	5.682	0.029
e44	<-->	z4	28.224	0.059
e44	<-->	e5	4.803	-0.029
e44	<-->	e17	4.586	0.03
e46	<-->	e28	5.083	0.028
e37	<-->	Firm_Perform	10.242	-0.04
e37	<-->	Dynamism	12.851	0.041
e37	<-->	e18	13.488	-0.037
e36	<-->	Dynamism	7.615	-0.035
e36	<-->	z2	4.583	-0.044
e36	<-->	z4	9.167	0.035

Appendix XIII (contd)

Modification index of the initial model

			M.I.	Par Change
e36	<-->	e3	4.983	-0.034
e36	<-->	e2	4.21	-0.031
e36	<-->	e18	14.511	0.043
e35	<-->	Firm_Perform	10.517	0.042
e35	<-->	z2	4.829	0.042
e35	<-->	z5	11.736	0.026
e35	<-->	z3	8.847	-0.021
e35	<-->	z4	9.654	0.033
e40	<-->	z2	7.66	0.061
e40	<-->	z3	6.029	0.02
e40	<-->	z4	6.226	-0.029
e40	<-->	e3	5.864	0.039
e40	<-->	e13	4.162	0.035
e40	<-->	e43	14.199	-0.054
e40	<-->	e44	6.181	0.032
e40	<-->	e46	6.826	0.032
e39	<-->	z5	47.247	0.059
e39	<-->	z3	5.055	0.018
e39	<-->	e2	12.068	0.055
e39	<-->	e18	18.612	-0.052
e39	<-->	e43	31.914	0.081
e39	<-->	e35	8.88	0.037
e38	<-->	Decision Mag_Impact	21.974	-0.078
e38	<-->	Firm_Perform	4.278	0.029
e38	<-->	z1	5.333	0.042
e38	<-->	z5	13.047	0.029
e38	<-->	e3	4.759	-0.033
e38	<-->	e2	10.358	-0.048
e38	<-->	e18	18.992	0.049
e38	<-->	e17	5.077	-0.033
e38	<-->	e44	4.676	0.026
e38	<-->	e37	8.196	-0.032
e38	<-->	e36	26.151	0.064
e19	<-->	Decision Mag_Impact	9.094	-0.044
e19	<-->	z1	27.851	0.084
e19	<-->	z5	4.348	-0.015
e19	<-->	e5	16.779	-0.05
e19	<-->	e4	5.609	-0.03
e19	<-->	e18	68.347	0.081
e19	<-->	e43	14.422	-0.045
e19	<-->	e37	6.226	-0.025
e19	<-->	e40	19.024	0.051
e19	<-->	e39	5.039	-0.026
e20	<-->	z3	8.586	-0.018
e20	<-->	e5	6.584	-0.028
e20	<-->	e4	4.243	0.023
e20	<-->	e3	6.016	0.029

Appendix XIII (contd)

Modification index of the initial model

			M.I.	Par Change
e20	<-->	e19	8.238	0.025
e21	<-->	Decision Mag_Impact	13.295	0.064
e21	<-->	Firm_Perform	4.573	-0.031
e21	<-->	z4	14.041	-0.045
e21	<-->	e5	4.546	0.031
e21	<-->	e18	4.098	-0.024
e21	<-->	e44	5.083	-0.029
e21	<-->	e37	4.124	0.024
e21	<-->	e35	4.795	-0.027
e21	<-->	e38	8.748	-0.039
e21	<-->	e19	17.135	-0.047
e22	<-->	e18	7.955	-0.034
e22	<-->	e36	16.459	-0.055
e22	<-->	e35	4.449	0.026
e22	<-->	e19	18.546	-0.05
e22	<-->	e21	56.776	0.105
e24	<-->	Firm_Perform	10.949	0.059
e24	<-->	Dynamism	4.606	-0.034
e24	<-->	z3	11.485	0.033
e24	<-->	e2	6.343	-0.048
e24	<-->	e18	10.923	0.047
e24	<-->	e36	19.691	0.071
e24	<-->	e38	8.535	0.047
e25	<-->	z5	5.694	-0.022
e25	<-->	z3	7.872	-0.024
e25	<-->	z4	20.823	-0.058
e25	<-->	e36	11.309	-0.047
e25	<-->	e38	14.404	-0.053
e25	<-->	e22	6.655	0.039
e26	<-->	e17	5.708	-0.039
e26	<-->	e46	9.238	-0.039
e26	<-->	e36	7.079	-0.037
e26	<-->	e40	4.465	-0.032
e26	<-->	e39	4.345	0.031
e26	<-->	e24	5.778	-0.043
e26	<-->	e25	8.038	0.042
e12	<-->	z4	4.408	-0.025
e12	<-->	e44	4.562	-0.027
e12	<-->	e37	4.351	0.025
e12	<-->	e21	21.65	0.065
e11	<-->	Firm_Perform	12.199	0.058
e11	<-->	z5	8.779	-0.028
e11	<-->	z3	8.173	-0.026
e11	<-->	z4	18.091	-0.057
e11	<-->	e43	7.826	-0.044
e11	<-->	e36	13.55	-0.055
e11	<-->	e40	5.586	0.037
e11	<-->	e39	4.872	-0.035

Appendix XIII (contd)

Modification index of the initial model

			M.I.	Par Change
e11	<-->	e38	16.947	-0.061
e11	<-->	e19	9.076	0.039
e11	<-->	e22	12.068	0.055
e11	<-->	e25	6.382	0.042
e10	<-->	Decision Mag_Impact	9.945	-0.062
e10	<-->	Firm_Perform	11.741	0.056
e10	<-->	z5	12.288	-0.033
e10	<-->	z3	8.182	-0.026
e10	<-->	e4	14.481	-0.064
e10	<-->	e18	33.786	0.077
e10	<-->	e17	6.525	-0.044
e10	<-->	e37	21.782	-0.062
e10	<-->	e36	6.965	0.039
e10	<-->	e40	10.7	-0.051
e10	<-->	e38	19.374	0.065
e10	<-->	e19	16.106	0.052
e10	<-->	e21	9.335	-0.047
e10	<-->	e11	13.944	0.06