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STRATEGIC RISK MANAGEMENT TOWARDS INFORMATION TECHNOLOGY PROJECT ENVIRONMENT IN THE UNITED ARAB EMIRATES (UAE)

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Abstract:
The research inspects and attempts to conceptualise strategic risk management of IT projects towards a precise definition of the role of top management. The study adds to the body of knowledge in the area of strategic management in IT as there is limited literature in the area. The study builds on known theories towards the establishment of unknown theories which can serve as grounds for future investigations in the area of strategic management of IT projects. The population of the study includes all IT professionals and senior management officials of institutions in UAE with a dedicated IT department and the sample size was determined as 384 respondents, and finally collected 371 altogether. After a careful analysis of findings, results revealed significant and positive predictive effects of both strategic planning processes and strategic risk integration on IT project environment.

JEL: G30; G32

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Keywords: strategic risk management, IT projects, strategic management, risk assessment

1. Introduction

Even though much has been done to change the CEO mentality which was in the direction that IT systems simply drained money and did not add commensurate values, there is still a way to go regarding the management of IT risks from the strategic point of view. It is astonishing to consider that some top management executives still look down on IT project risk management, top management must not only be concerned with decision making but must be concerned with understanding the operational circumstances in order to assure organizational stakeholders under what circumstances that targets will be met. Information remains a key source of competitive advantage and value creation in contemporary organisations (Nehari Talet et al., 2014; Nehari Talet et al., 2013; Baccarini et al., 2004). It is therefore no surprise that information technology (IT) has evolved as the fastest growing industries in developed countries and on the global platform (Hartman & Ashrafi, 2002; Nehari Talet et al., 2014). Nehari Talet et al., (2014) stress that the need to develop dynamic core competences on the global terrain has called for IT as an essential ingredient for this purpose. The use of IT projects is critical to the installation of an array of machines, management decision making systems, enterprise resource management and other state-of-the-art systems that equip the business in areas of management decision-making, business process efficiency, effective cooperation among others (Wang, 2001; Yang, 2001). Considering the benefits associated with IT systems, the presently turbulent macro and microenvironments have compelled businesses to acknowledge the execution of activities and change management in the form of projects (Nehari Talet et al., 2013). It is established that increased IT project failure rate derives from a number of complexities, dynamism and turbulence including rapid change in technology in combination with evolution in approaches to business processes (Besner & Hobbs, 2012). A combined effort between these two areas of constantly evolving environments presents rather challenging management problems on how to best align IT projects with unexpected changes in cost-benefit expectations as well as the feasibility of any specific activity within the business (Nehari Talet et al., 2014; Nehari Talet et al., 2013). More significantly, Besner & Hobbs, (2012) argue that the interrelationship between risk management and project uncertainty presents a key paradox. This paradox is embedded in the assertion that risk is inseparable from uncertainty since uncertainty is defined as a source of risk by Sicotte & Bourgault (2008); however, uncertainty is equally an integral dimension of project management. Whereas risk can be defined based on specific occurrence of an event, uncertainty cannot be defined. A number of propositions have therefore been made on how IT projects may be managed and risks curbed; these include Bruckner et al., (2001), Bandyopadhyay et al., (1999), Boehm & Bose (1994), Beck et al., (2000) and more recently Javini & Rwenlamila (2016). Dafikpaku, (2011) argue that the need for strategic risk management is essential considering the need to make appropriate decisions on outcomes that have very little amount of certainty. Such measures, according to Dafikpaku, (2011) and COSO (2009), help manage or reduce the risks that are associated with uncertainty and build on the opportunities that emanate from uncertainties.

Combined with the role of external environment within the micro (reaction to customer preference and competitors for example) and macro (response to regulations, economic trends and socio-cultural effects among others) environments, and the attitude or behaviour of parties internal to the firm, these factors combine to create uncertainty in project delivery require management from the strategic perspective (Dafikpaku, 2011). More importantly, the associated strategic risk assessment and equalization of IT projects has been lost over a long period of time until more recently. The ability of IT projects on the other hand to enhance creative strategic solutions and build on the success of meeting strategic objectives of the organization has equally gone unattended (Pati & Daisy, 2005). Studies on strategic risk management in the area of IT are very limited. Very little could be inferred from existing literature on this area. Observing risk management of IT projects from the strategic level would help gain an overarching perspective of key risks associated with the IT project delivery towards establishment of competitive advantage as originally argued by Frigo & Anderson (2009). Specifically, the current study will focus on the questions split into two parts that is how IT project environment is influenced by strategic planning and strategic risk integration. The present study explores risks associated with management of IT projects from a strategic perspective. It builds on existing literature on strategic risk management, which is an essential and foundational aspect of enterprise risk management, in combination with a newly explored strategic risk management process towards, holistic model of Strategic Risk Management in Information Technology Projects.

1.1 Review of the Literature

The review provides a theoretical foundation for the current study and the selection of variables from the recent literature, which are strategic risk planning, strategic risk integration and IT project environment. On the basis of these variables' hypotheses will be formulated in part three.

2. Theoretical Background

Nehari Talet et al., (2014) argued that risk can be quantified and that it is "*susceptible to measurement*". In other words, even though risk involves a high level of uncertainty, it may be considered that risk is a measurable uncertainty. Looking into literature concerning project management, it can be found that Knight's argument is widely supported by other scholars in this area as established by Nehari Talet et al., (2014). Sicotte & Bourgault (2008) agreed with Nehari Talet et al., (2014) and mention that even though risk is uncertain, it is identifiable. On this note, a number of definitions of risk have been offered. Schneider & Levin (1997) for instance define risk as an event that poses a threat to the fortune of an entity if it happens. According to Richardson (2010), risk management of IT projects is not a simple concept as it seems in other aspect of business management; rather, it involves a combination of anticipation, planning, and monitoring of activities in order to be able to minimize the impact of potential undesirable events.

Even though risk management may be conceptualized based on principles, framework (risk life cycle) or risk management process as argued by AIRMIC, Alarm & IRM (2010), or from the risk management context perspective which involves the risk architecture, strategy, protocols as mentioned by the Bureau of Indian Standards (2011), the area of IT risk management has been excessively limited to the process perspective of risk management. The appropriate execution of the risk management process is fundamental to improve the chances of project success (Javani & Rwelamila, 2016). Javani & Rwelamila (2016) emphasize that there have been doubts by several researchers as to whether IT project managers really follow the risk management process in practice.

2.1 Risk Assessment in IT Project Management

After project risk identification, the next stage of the risk management process is risk analysis. This stage deals with the exploration of identified risks in order to arrive at a specific timeframe, level of impact as well as the level of possibility of their occurrence (Susser, 2012). According to Javani & Rwelamila (2016), during this step, both quantitative and qualitative method of analysis can be employed.

2.2 Risk Response Planning in IT Project Management

The PMI (2008) assert that, when project managers respond to risks, it enables them to come up with procedures to tackle the identified risks and help them to keep track of these risks. In addition, risk response planning helps project managers identify new risks that occur in the project, and to enforce risk response plans. Richardson (2010) defines risk response planning as activities associated with the generation of responses to identified risks. Ultimately, risk response planning helps improve opportunities and reduce the threats to the objectives of IT projects. According to Taylor et al. (2008), IT project managers sometimes fail to use the results of the project risk identification process in the following steps of risk analysis and response planning. This refusal to put findings of risk identification into effect has been attributed to the uncertainty regarding the validity of any given risk as a threat to the IT project.

2.3 Strategic Planning and IT Project Environment

McAfee (2006) argued that when plans are well defined and clearly described by top management, IT projects become more capable of managing project processes and risk. It may be acknowledged that strategic plans do impact on IT project teams, processes and activities that make up the IT Project Environment. Brandas et al. (2012) points out that, as IT projects get more and more complex, the risks associated with them also increase and equally become more complex to decipher and manage. Due to this, several scholars as well as practitioners have directed their attention to strategies of handing risks. This perspective to risk management deviates from the process perspective and focuses on the underlying principles of project management as presented by the Bureau of Indian Standards (2011). According to Bannerman (2008) there is the need to consider risk in both technical and managerial aspects. Bannerman (2008) also add overarching perspective to risk management helps enforce organizational change through IT, which ultimately leads to the achievement of organizational and business goals.

2.4 Strategic Risk Integration and IT Project Environment

The second hypothesis is supported by Dafikpaku (2011), Kaplan & Mikes (2012), Miller & Waller (2003), Frigo & Anderson (2009) among several others. Ultimately, senior management must be able to integrate IT risk management with their various areas of responsibility. They must also be able to comply with IT project risk management and processes. Senior management can do this by paying more attention to IT project team and project activities (Baccarini et al., 2004); whereas this is backed by theory and not observed in the present study, senior executives' roles in this area must translate or correspond with the Director General's ability to control affairs internally and manage then enterprise's risks.

3. Methodology of the Research

The part chapter elaborates on the methodological considerations of the study. It outlines the various considerations in the area of research design, instrumentation and other procedures adopted to establish empirical evidence in the area.

3.1 Design of the Research

This study is outlined utilizing cross-sectional survey research plan strategy. A cross-sectional survey configuration is a technique in which the researcher gathers data to make derivations about a population of interest at one point in time. It can likewise be portrayed as descriptions of the populations about which they assemble data. Cross-sectional survey configuration is methodology in which the researcher directs a survey to a little gathering of individuals with a specific end goal to distinguish "*ideas in state of mind, sentiments, practices or qualities of a huge gathering of individuals*" which called population (Creswell, 2008). The researcher in this study utilized the descriptive research design. It has the advantage of gathering both qualitative and quantitative data and this was considered essential in investigating the IT project management.

3.2 Technique of Sampling

Key aspects of the sampling technique for the present study were adapted from Baccarini et al., (2004). Baccarini et al., (2004) adopted the use of purposive and snowball sampling for IT professionals from the State of Western Australia. The present study adopts a similar approach; first and foremost, the purposive sampling would ensure that institutions selected ate with IT departments; the next point was to request approval for data collection, and further request referrals and business associates of the participants who can contribute to the study easily. The use of snowballing would help receive good response to collect data than an absolute want-in situation. According to Sarantakos (1998), whereas the purposive sampling help collect data based on the suitability of the candidate to answer the specific set of questions (whether project member of senior manager), snowball sampling technique helps gain leads to teach others who would be able to contribute to the study. The respondents do not have to be within the organizational setting but only acknowledge that he or she works within an organization with an IT department and that he or she is in any of these two positions of project member (or project leader) or a senior manager (including executives).

3.3 Conceptional Framework

As other strategic risk management frameworks in the area of study, the present study builds on multiple frameworks and models with particular attention to those proposed for the area of strategic risk management and IT project management (Figure 3.1). The positions of the hypotheses are presented as part of the figure. Discussed literature in support of any of these inter-relationships is mentioned together with a restatement of the hypotheses.

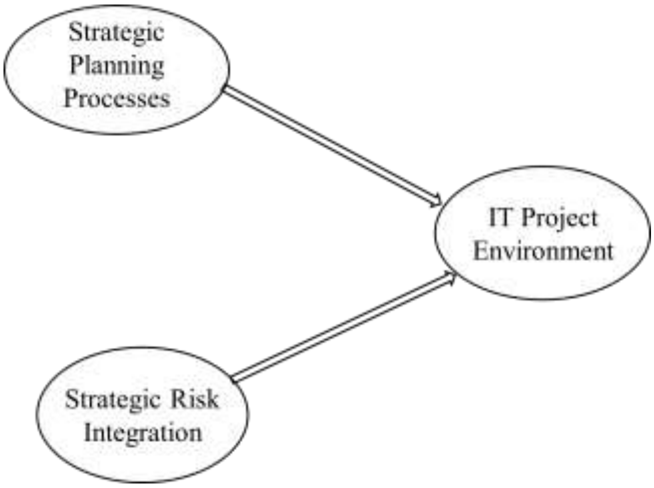

Figure 3.1: The Conceptual Framework

Brandas et al. (2012) points out that, as IT projects get more and more complex, the risks associated with them also increase and equally become more complex to decipher and manage. Due to this, several scholars as well as practitioners have directed their attention to strategies of handing risks. This perspective to risk management deviates from the process perspective and focuses on the underlying principles of project management as presented by the Bureau of Indian Standards (2011). According to Bannerman (2008) there is the need to consider risk in both technical and managerial aspects. Bannerman (2008) also add overarching perspective to risk management helps enforce organizational change through IT, which ultimately leads to the achievement of organizational and business goals.

3.4 Hypothesis of the Research

H(x)	Hypothesis
H1	Strategic planning has a positive influence on the IT Project Environment.
H2	Strategic risk integration has a positive influence on IT Project Environment.

There is no doubt that risk management is essential to minimize uncertainties and threats associated with projects lifecycle (Alhawari et al. (2012). A line of efforts in literature on project management have been directed at the analysis of project risk factors. According to Taylor et al., (2008), there is the need to adopt a comprehensive list of risk factors that need to be considered during the management of an IT project. According to Fowler & Horan (2007), some popular risk factors associated with IT projects include "lack of effective management skills/involvement, lack of adequate user involvement, lack of top management commitment to the project, lack of required knowledge/skills in the project personnel, poor/inadequate user training and lack of cooperation from users" among others (p. 17). Among these risk factors, Akkermans & van Helden (2002) and Keil et al. (1998) argue that top management commitment, user commitment and user participation are the most dominant risk factors. It has been argued by several scholars that directions for project risk factors as well as project risk management are based on decision-making models which are based on probability and expected utility (Kutsch & Hall, 2005; Pender, 2001; Ward & Chapman, 2003).

3.5 Population

The population of the study represent all IT professionals and senior management officials of institutions in UAE with a dedicated IT department. This population is critical to collect data in context of the conceptual framework of the study and conduct a critical comparative analysis of what project members think and how this differs from what senior management perceive. For the purpose of the study, data on top management is collected in two main areas of senior management and top executives. To management include director general and other directors within the organization whereas senior management include other members within the organization who play a supervisory role over the IT project and other senior management areas of the organization, both private and public institutions that fall into this criterion are considered as part of this population.

3.6 Sampling Size

In order to ensure generalizability of findings to the population of the study, it was important to ensure that the sample size to be used for the study is adequate (Saunders et al., 2012). A major challenge in this area is that since the actual population of the study is unknown (replaced by a wild estimate named 'dummy') and the sampling frame is not well defined, the minimum sample size required to meet the level of generalizability of the population can only be based on the pieces of information discussed in the previous section on the study population. However, due to some statistical reasons there are some responses were removed, and after being removed and excluded from all subsequent analyses, the final sample used for all analyses and hypothesis testing was 384.

3.7 Measurement and Instrument

Questionnaires were used to gather the required data. A questionnaire is an instrument that a researcher can use to gather data from a chosen sample. It contains some laid down questions requesting responses on the area of study (Chisaka, 2000). Blumberg et al, 2011 added that it is a survey instrument that the researcher delivers to the respondent through personal or non-personal means with the aim of getting it completed by the respondent without necessarily having any additional contact with the researcher. This research used closed questions in the study. The Likert scale was adopted in constructing the questionnaires. Respondents were asked to select an answer that expresses their agreement or disagreement to a question on a scale as shown below; (Saunders et al 2009; Kaplan and Saccuzzo, 2012)

1) Strongly agree;
2) Agree;
3) Neutral;
4) Disagree;
5) Strongly disagree.

3.8 Data Collection Method

The data were collected from IT personals of UAE. For the motivation behind the study, the researcher utilize online survey technique since a large number of the employee are exceptionally occupied and they can't be effortlessly gotten to. So, the researcher acquired an endorsement letter from the university, particularly the workplace i.e. Postgraduate and Research office. The survey was sent to the respondents utilizing by means of their messages. The respondent was told to tap on a connection that guides them to the survey page. In the wake of demonstrating their particular idea or recognition by putting a tick, they were required to tap on submit catch which automatically store the survey to the archive data record that were separated from the web later. The period for the survey took about 1month after which the reactions were grouped and the store in a protected place for analysis. Respondents who did not top off the survey on time were follow-up by sending them update messages. For the purposes of this research, data was collected from the targeted population, through self-administered questionnaires. The researcher opted to use primary data as it is related to the problem under study. It gives data that is current problem specific and the data was original and reliable as it was collected from the contributors who are the subjects of evading or complying in terms of social security contributions payment. In as far as it is very important and useful to use primary data in research for quality purposes, this researcher faced some challenges that are usually associated with the gathering of primary data in the form of costs of data collection and the fact that collecting primary data is time consuming.

3.9 Data Analysis

With the help of IBM SPSS Statistics as recommended by Dancey & Reidy (2008) and Kinnear & Gray (2007), the analyses of primary data were conducted. The online form in Microsoft Office Excel Format was imported into IBM SPSS version 23 and analyzed accordingly. Later, the software used was SMART PLS; this was especially useful for the preparation of structural equation models for the present study. Prior to the main statistical analysis, the demographic statistics are first presented; the demographic statistics offer important overview of the collected data and the profile of respondents. A data summary of important descriptive statistics is then presented for all the main indicators and variables of the study. Mainly the mean statistics ($\overline{x}$) and standard deviation ($\sigma\overline{x}$) as measures of central tendency. The reliability of the various dimensions is observed by testing key reliability and validity statistics. Reliability is checked with the help of Cronbach Alpha check for internal consistency. The use of Cronbach Alpha as a measure of reliability and internal consistency is recommended by (Gliem & Gliem, 2003). Inter-item correlations were also observed in order to validate the dataset and ensure that no excessive correlations are observed (Gliem & Gliem, 2003). The multiple regression analysis was used to assess the interaction or predictive effect of independent variable elements over the dependent variable elements where:

$$y = a_1(x_1) + a_2(x_2) + a_3(x_3) + a_4(x_4) + \cdots + a_n(x_n) + c \quad (1)$$

Where,

y = each stage within the risk management process,

$a_1 \sim a_n$ = the coefficient of the various strategic planning (or independent variables) elements the linear regression model,

$x_1 \sim x_n$ = elements of the independent variables,

and c = the constant of the regression model.

Same form of analysis will be conducted for all research hypotheses.

4. Research Output

This chapter presents the results of the data analysis. The analysis addresses three research hypotheses. Through a confirmatory factor analysis (CFA), this study estimated the construct validity of variables. The Structural Equation Modelling (SEM) was employed to address the research hypotheses. To begin with, this study analyzed the dissemination of the demographic variables (Gender, Qualifications, and Experiences) for all respondents. From that point onward, this study talks about the expressive analysis of the variables and the theory testing. This study utilized the SPSS to inspect the external and inward model appraisal and speculations testing. The decency of the external model related to the constructs of this study specifically IT project environment, strategic planning and strategic risk integration. At that point, the nature of the auxiliary model was analyzed through the construct validity.

Next, the discoveries of the speculation testing techniques are accounted for and in addition the impact of independent variables (strategic planning and strategic risk integration) on the dependent variable (IT project environment). At long last, this study contrasts the outcomes and past studies in part five. Data on the demographics of the respondents are presented in Table 4.1. Out of the 371 valid responses, 205 (55.3%) were males while 166 (44.7%) were females. A total of 100 (27%) of the respondents were within the age range of 25 to 34, this was the highest among all the age ranges. The age range with the least responses was "55 and above"; this accounted for 40 (10.8%) of the responses. A total of 197 (53.1) of the respondents had university education or a 1st Degree while only 53 (14.3%) of them had postgraduate education or above. The remaining respondents had high school education or less.

The A total of 142 (38.3%) of the respondents belonged to senior management while 129 (34.8%) of them were project leaders or members, the remaining 100 (27%) respondents were top executives. Under institutions the respondents were nearly evenly distributed with 187 (50.4%) of them belonging to private institutions and 184 (49.6%) of them belonging to public institutions. Fifty-nine (59) of the respondents belonged to organizations that were established within the year range of 1981 to 1985, this was the highest. The lowest was 2016 and beyond which recorded only 2 responses. Table 4.1 shows all the demographic statistics in a comprehensive summary.

Table 4.1: Demographic Statistics

Item	**Category**	**Frequency**	**Percentage**
Gender	Male	205	55.3
	Female	166	44.7
Age	15-24	79	21.3
	25-34	100	27
	35-44	80	21.6
	45-54	72	19.4
	55 and above	40	10.8
Education	High School or less	121	32.6
	University of 1st Degree	197	53.1
	Postgraduate or above	53	14.3
Position	Project Leader or Member	129	34.8
	Senior Management	142	38.3
	Top Executive (Directors and Director Generals)	100	27
Institution	Public Institution	184	49.6
	Private Institution	187	50.4
Establishment Year	before 1970	12	3.2
	1971 – 1975	36	9.7
	1976 – 1980	39	10.5
	1981 – 1985	59	15.9
	1986 – 1990	46	12.4
	1991 – 1995	57	15.4
	1996 – 2000	52	14
	2001 – 2005	46	12.4
	2006 – 2010	17	4.6

	2011 – 2015	5	1.3
	2016 and beyond	2	0.5
Total		**371**	**100**

4.1 Data Cleaning and Screening and Unengaged Responses

Both case screening and variable screening were conducted on the collected data. The data was first screened for missing responses, and then unengaged responses were determined.

4.2 Summary of Basic Findings of the Survey

After the collected data was screened for missing values and unengaged responses, descriptive statistics for the remaining 371 cases were generated. Descriptive statistics were generated in areas of mean, standard deviation and variance. The indicators were then grouped in terms of the variables they represent and ranked within each variable. All items had minimum and maximum values of 1 and 5 respectively, all items also had means above the midpoint of 3.5. Among the four indicators for strategic planning, human resource management and development ranked highest with a mean of 4.85. The lowest ranked indicator under strategic planning was programs of change with a mean of 4.14. Under strategic risk integration, establish and maintain a suitable system of risk management ranked first with a mean of 5.59 while comply with IT project risk management framework and processes ranked last with a mean of 4.61. For IT project environment, there were six indicators, and the highest mean was 5.60. The lowest ranked indicator for IT project environment was control of IT projects with a mean of 4.85. All generated descriptive statistics are presented in Table 4.2 below.

Table 4.2: Descriptive Results of the Data

S/N	Dimensions - Indicators	Mean	Rank	Std. D.	Var.
B - Strategic Planning = 4.4795					
1	Strategic Planning and Management	4.62	2nd	1.597	2.549
2	Programs of Change	4.14	4th	1.563	2.442
3	Capital and Funding	4.34	3rd	1.58	2.498
4	Human Resource management and Development	4.83	1st	1.482	2.198
C - Strategic Risk Integration = 5.054					
5	Establish and maintain a suitable system of Internal Controls	5.14	2nd	1.351	1.826
6	Establish and maintain a suitable system of risk management	5.59	1st	1.385	1.919
7	Integration of IT risk management into various areas of responsibility.	4.88	3rd	1.454	2.114
8	Comply with IT project risk management framework and processes	4.61	4th	1.5	2.25
D - IT Project Environment = 5.1589					
9	Project team performance	5.05	5th	1.293	1.672
10	Project team innovativeness	5.14	3rd	1.203	1.448
11	IT Project tasks and organizational objectives	5.18	2nd	1.116	1.246
12	Tasks challenges from top management	5.60	1st	1.184	1.402
13	Planning of IT Projects is conducted smoothly with high level of success	5.13	4th	1.241	1.539
14	Control of IT Projects	4.85	6th	1.191	1.418

4.3 Dimensions of the Variables

The study aimed to identify the construct validity of Strategic Planning (SP), Strategic Risk Integration (SRI) and IT Project Environment (IPE) on the basis of data collected from all respondents. The dimensionality of the Strategic Planning (SP), Strategic Risk Integration (SRI) and IT Project Environment (IPE) were sought through a principal component analysis (PCA) after which a confirmatory factor analysis (CFA) was conducted to confirm the dimensionality obtained through PCA.

4.3.1 Exploratory Factor Analysis (EFA)

The PCA was to explore the underlying dimensions of Strategic Planning (SP), Strategic Risk Integration (SRI) and IT Project Environment (IPE) within the research context. First, the statistical assumptions of PCA were tested. The exercise revealed that a substantial number of variables were correlated ($r \geq .30$). In addition, the two measures for inter-correlations among variables supported the use of PCA (Hair et al., 2010; Kline, 2011; Kothari, 2004; Neuman, 2007). Bartlett's Test of Sphericity was statistically significant [4190.487, $p = .000$], while the Kaiser-Meyer-Olkin (KMO) measure of the sampling adequacy (MSA) was .857, indicating that the inter-correlations were sufficient for PCA (Pallant, 2007) (Table 4.3).

Table 4.3: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.857
Bartlett's Test of Sphericity	Approx. Chi-Square	4190.487
	df	406
	Sig.	.000

PCA with Varimax rotation was performed on the data collected. Three latent factors were extracted with eigenvalues greater than one, explaining 55.70% of total variance. Thus, the results show that three latent factors were successfully extracted on 14 items. Table 4.5 shows that factor loadings are between .596 and .784. Following the guideline provided by the scholars (Byrne, 2010; Hair et al., 2010, Kline, 2011; Nunnally & Berstein, 1994), all three factors were renamed as Strategic Planning (SP), Strategic Risk Integration (SRI) and IT Project Environment (IPE).

Table 4.4: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.818	26.960	26.960	7.818	26.960	26.960	5.845	20.156	20.156
2	3.766	12.987	39.946	3.766	12.987	39.946	3.604	12.427	32.583
3	2.490	8.587	48.533	2.490	8.587	48.533	3.476	11.987	44.571
4	2.078	7.167	55.700	2.078	7.167	55.700	3.227	11.129	55.700
5	.942	3.249	58.948						
6	.914	3.151	62.099						
7	.880	3.034	65.133						
8	.845	2.914	68.047						
9	.785	2.708	70.755						
10	.720	2.484	73.239						
11	.702	2.421	75.660						
12	.548	1.888	81.917						
13	.518	1.785	83.702						
14	.460	1.588	88.610						

Table 4.5: Loadings Four Rotated Factors

Code	Item	Strategic Planning (SP)	Strategic Risk Integration (SRI)	IT Project Environment (IPE)
Q1	Strategic Planning and Management	.697		
Q2	Programs of Change	.728		
Q3	Capital and Funding	.752		
Q4	Human Resource management and Development	.730		
Q5	Establish and maintain a suitable system of Internal Controls		.704	
Q6	Establish and maintain a suitable system of risk management		.773	
Q7	Integration of IT risk management into various areas of responsibility.		.743	
Q8	Comply with IT project risk management framework and processes		.707	
Q9	Project team performance			.767
Q10	Project team innovativeness			.763
Q11	IT Project tasks and organizational objectives			.784
Q12	Tasks challenges from top management			.756
Q13	Planning of IT Projects is conducted smoothly with high level of success			.650
Q14	Control of IT Projects			.707

4.3.2 Reliability and Validity of the Data Collection Instrument

In order to check the reliability of the data collection instrument, SPSS was used to generate Cronbach's Alpha values for all four variables on the questionnaire. All the variables produced Alpha values above 0.7 as shown in Table 4.3. The data collection instrument was therefore considered as reliable since the alpha values were all at acceptable levels.

Table 4.6: Reliability Statistics

	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Strategic Planning	0.732	0.731	4
Strategic Risk Integration	0.774	0.774	4
IT Project Environment	0.709	0.708	6

After the test for reliability was conducted, inter-item correlations were also generated in order to determine the validity of the data collection instrument. After careful observation of all inter-item correlations, no abnormally high correlation was observed as all correlations fell below 0.6 with the exception of integration of IT risk management into various areas of responsibility and comply with IT project risk management framework and processes which recorded a correlation of 0.61.

However, these indicators belong to the same dimensions and this level of correlation was therefore considered acceptable for convergent validity. The inter-item correlation matrix is presented in Table 4.7 below; none of the indicators loaded or correlates extremely out of their dimensions. The results were thus considered valid for Hypothesis testing.

Table 4.7: Inter-item Correlation Matrix: Test for Validity

	B1	B2	B3	B4	C1	C2	C3	C4	D1	D2	D3	D4	D5	D6
B1	1													
B2	0.397	1												
B3	0.502	0.363	1											
B4	0.530	0.384	0.254	1										
C1	0.280	0.227	0.149	0.115	1									
C2	0.073	0.096	0.016	-0.018	0.485	1								
C3	0.067	0.086	0.08	0.031	0.452	0.477	1							
C4	0.081	0.115	0.048	0.011	0.393	0.351	0.610	1						
D1	0.250	0.069	0.159	0.131	0.167	-0.012	0.181	0.275	1					
D2	0.095	0.151	0.140	0.129	0.181	0.053	0.282	0.342	0.550	1				
D3	0.156	0.187	0.182	0.117	0.121	-0.013	0.059	0.182	0.343	0.403	1			
D4	0.266	0.173	0.25	0.102	0.278	0.220	0.132	0.219	0.300	0.363	0.277	1		
D5	0.272	0.159	0.297	0.090	0.185	0.135	0.156	0.093	0.258	0.321	0.287	0.451	1	
D6	0.027	0.041	-0.073	0.139	-0.077	-0.061	-0.112	-0.083	0.225	0.168	0.139	0.066	0.166	1

Hypothesis 1: Impact of Strategic Planning on IT project Environment
The first hypothesis of the study stated that: *"Strategic planning has a positive influence on the IT Project Environment"*

After running regression analysis to test this hypothesis, a statistically significant impact was revealed at a significance level of 0.05 as shown in Table 4.6. As shown in the model summary in Table 4.5, strategic planning explains around 10.1% of the variance in IT project environment. An observation of the significance of the separate indicators showed that (1) strategic planning and management and (2) capital and funding were statistically significant as shown in Table 4.7. The full results from the regression analysis are presented in Table 4.8, Table 4.9 and Table 4.7. Strategic planning and management was observed as a positive predictor of a favourable IT Project Environment (b= .168, t [361] = 2.528, p<0.05). On the other hand, Capital and Funding was also observed as a positive predictor of a favourable IT Project Environment (b = .130, t [361] = 2.208, p<0.05). These variables explain about 10.1% of the variance in IT project environment (R^2= .101, F (4, 361) = 10.142, p < 0.001).

Table 4.8: Model Summary: Strategic Planning – IT Project Environment

Model	R	R Sq.	Adj. R Sq.	Std. Err.
1	.318a	0.101	0.091	0.7337

Note: a. Predictors: (Constant), B1, B2, B3, B4.

Table 4.9: ANOVA: Strategic Planning – IT Project Environment

Model		Sum of Squares	df	Mean Sq.	F	Sig.
1	Regression	21.838	4	5.46	10.142	.000b
	Residual	194.334	361	0.538		
	Total	216.173	365			

Note: a. Dependent Variable: D - IT Project Environment. B. Predictors: (Constant), B1, B2, B3, B4

Table 4.10: Coefficients: Strategic Planning – IT Project Environment

Model		Unstd. Coeff.		Std. Coeff.	t	Sig.
		B	Std. Err.	Beta		
1	(Constant)	4.273	0.157		27.276	0.000
	Strategic Planning and Management	0.081	0.032	0.168	2.528	0.012*
	Programs of Change	0.037	0.028	0.074	1.304	0.193
	Capital and Funding	0.064	0.029	0.13	2.208	0.028*
	Human Resource management and Development	0.018	0.031	0.034	0.56	0.576

Note: a. Dependent Variable: D - IT Project Environment. * Significant at 0.05 significance level

Based on these results, the first hypothesis (H1) was accepted for the impact of (1) strategic planning and management and (2) capital and finding on IT Project Environment.

Hypothesis 2: Impact of Strategic Risk Integration on IT Project Environment
The second hypothesis sought to assess the following: *"Strategic risk integration has a positive influence on IT Project Environment."*

The second hypothesis was tested for the impact of strategic risk integration on IT project environment. Regression analysis in SPSS was used here as well. With the composite of the indicators of IT project environment as the dependent variable and the indicators of strategic risk integration as the independent variables, the impact of strategic risk integration on IT project environment was found to be statistically significant as shown in Table 4.12.

In addition, Table 4.11 shows that strategic risk integration accounts for 8.4% of the variance in IT project environment. It must however be noted that only two indicators of strategic risk integration; (1) Establish and maintain a suitable system of Internal Controls(b = .172, t [361] = 2.843, $p<0.01$)and (2) Comply with IT project risk management framework and processes(b = .225, t [361] = 3.516, $p<0.001$). These factors accounted for about 9.4% of the variance explained in IT Project Environment (R^2= .094, F (4, 361) = 9.398< 0.001).

Table 4.11: Model Summary: Strategic Risk Integration – IT Project Environment

Model	R	R Sq.	Adj. R Sq.	Std. Err.
1	.307a	0.094	0.084	0.73644

Note: a. Predictors: (Constant), C1, C2, C3, C4

Table 4.12: ANOVA: Strategic Risk Integration – IT Project Environment

Model		Sum of Squares	Df	Mean Sq.	F	Sig.
1	Regression	20.388	4	5.097	9.398	.000b
	Residual	195.785	361	0.542		
	Total	216.173	365			

Note: a. Dependent Variable: D - IT Project Environment. b. Predictors: (Constant), C1, C2, C3, C4

Table 4.13: Coefficients: Strategic Risk Integration – IT Project Environment

Model		Unstd. Coeff.		Std. Coeff.	t	Sig.
		B	Std. Err.	Beta		
1	(Constant)	4.355	0.187		23.282	0
	Establish and maintain a suitable system of Internal Controls	0.098	0.034	0.172	2.843	0.005
	Establish and maintain a suitable system of risk management	-0.046	0.034	-0.083	-1.371	0.171
	Integration of IT risk management into various areas of responsibility.	0.005	0.036	0.01	0.149	0.882
	Comply with IT project risk management framework and processes	0.116	0.033	0.225	3.516	0.000

Note: a. Dependent Variable: D - IT Project Environment.

Based on these findings, the second hypothesis is accepted. Establishing and maintenance of a suitable system of Internal Controls (b = .172, t [361] = 2.843, $p<0.01$) and Comply with IT project risk management framework and processes (b = .225, t [361] = 3.516, $p<0.001$) significantly predict efficiency of processes in the IT project environmental (R^2 = .094, $p < 0.001$).

Table 4.14: Summary of the Main Findings of the Study

H(x)	Hypothesis	Finding
H_1	Strategic planning has a positive influence on the IT Project Environment	Accepted
H_2	Strategic risk integration has a positive influence on IT Project Environment.	Accepted

5. Discussion, Recommendations and Conclusion

5.1 Discussion

Information technology continuous to play a central role in the development of competitiveness at both institutional and national levels; at the national level, IT has remained critical to business process efficiency, effective cooperative behaviour and effective institutional and national participation (Wang, 2001; Yang, 2001). Regardless of the numerous benefits of IT Projects associated with decision-making systems and overall business and institutional efficiency, the high rate of failure of IT projects necessitate considerable attention to the subject area (Baccarini et al., 2004). Focusing on one area or the other to tackle IT project risks in the course of project operationalization and implementation may only lead to several perspectives with unique observations that are rather too fragmented to adapt. Work on this area such as Bruckner et al., (2001), Bandyopadhyay et al., (1999), Boehm & Bose (1994), Beck et al., (2000) and Javini & Rwenlamila (2016) support the diverse perspectives used to model IT project risk management.

Considering this background, the present study set of to investigate and propose an IT risk management model from the strategic perspective. Generally, response rate was very encouraging and not too far below the required sample size mentioned in event of the research methodology. Observed demographics of the study's respondents also indicate that satisfactory distribution exists across the different categories or groupings within the population. Other screening, bias observations, reliability and validity tests passed with highly convincing results. These results in the areas of validity and reliability, contribute significantly to the credibility of the data employed in analysis of the present study. Upon analysis, the findings of the study establish a strong operational perspective to strategic management of IT projects. Such findings are key in addressing the research gap identified by the study. Important practical implications may also be deduced from these results. The findings of the study also show that the hypotheses established by the study are significant and can be tested while the tests show the applicability of the methodology of the study. Particularly, the findings of the study affirm that the initially discussed methods of analysis in the methodology are applicable to the present study. Not only are they applicable, but the methods were successfully used to test key hypotheses which enabled the answering of the study's research questions. Most importantly, the findings of the study provide a basis for the establishment of implications and conclusions to meet the objectives of the study. Four main research questions were established from the onset of the study; these research questions were answered with the help of primary empirical data collected from IT companies. The extent to which data collected help answer the research questions, together with insight drawn from the various discussions, are presented here in the form of conclusions. It is observed that strategic planning a key predictor of IT project environment as the results revealed. It is concluded that strategic planning is an important factor required for optimizing IT project environments. Ultimately, if institutions provide strategic planning and management for IT projects as well as effective funding and capital requirements of these projects, there is a significant chance of achieving improvements in the overall IT project environment. Furthermore, the study investigated the impact of strategic risk integration on IT project environment. Based on the results of the study it is concluded that strategic risk integration is a true positive predictor of IT project environment. The conclusion here is that strategic risk integration makes a difference by helping achieve a more effective IT project environment. Specifically, businesses that establish and maintain effective systems of control, and also comply with IT project risk requirements, have a high chance of achieving IT project efficiency within the project execution environment

5.2 Future Implications

First, it is recommended that future researchers consider adopting a bigger sample size than that of this study. A bigger sample size would mean that more time has to be put into conducting the research but would also mean that the generalizability of the results would be even more strongly established. Focusing on an IT industrial centre might help reach the required sample size in a more representative manner than adopted by the present study.

Furthermore, it is recommended that future researchers make additions to the methodology used for the present study. Particularly, the approach of the present research is solely quantitative. It is recommended that future researchers adopt a mixed methodological research approach in conducting this research. This is because acquiring qualitative data in addition to quantitative data will complement the quantitative data and further affirm the results of the study with added insight.

5.3 Recommendations for IT Project Management

Strategic risk integration has been proven to be a good predictor of IT project environment. It is therefore recommended that IT project managers pay more attention to strategic risk integration processes. Project managers may make use of strategic risk integration processes as a way of ensuring that IT projects are implemented effectively by putting in place systems of internal risk control as well as following established risk management frameworks and processes. Strategic planning is also a key area where IT project managers need to pay attention. The present research has proven strategic planning to be a significant predictor of IT project environment. Particularly, project managers need to make use of strategic planning and management as well as careful planning in terms of capital and funding. These areas are key areas that contribute positively to effective and successful IT projects.

5.4 Conclusion

In conclusion, IT project management is one of the significant concerns in UAE past studies featured this issue in different sectors or enterprises. This study expected to research the essential factors that impact the IT projects in the industry of UAE. Therefore, this research explored the effect of strategic planning and strategic risk integration on IT projects, the outcomes found that all dependent and independent variables have positive significant effect.

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