A Proposed Framework for Effective Risk Management in Egyptian Sustainable Development Projects

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Abstract

The area of development has been a sector related to conditions of uncertainty. Activities within the development sector are exposed to many risks need to be considered considering social, environmental, and economic risks to all stakeholders. Risks are all events and situations that threaten the undisturbed execution of the project plan. Risk therefore relates to expectations of stakeholders regarding when and how the project will deliver, what the project will deliver and at what cost. Stakeholders would like to gain the maximum benefits and achieve successful results. So, risk must be effectively planned, monitored, and evaluated periodically by the project management team. Therefore, project risks are important factors determining whether the project will be a success or not. The main aim of this study is to identify the current risk management system adopted in sustainable development projects in Egypt, assess the importance of effective risk management procedure of sustainable development projects in Egypt, Evaluate and analyze the challenges of risk management procedure of sustainable development projects, Identify ways to reduce negative factors which are critical to the success of the sustainable development projects and develop a framework shows how the risk management procedure could improve the sustainable development project chances of success and Increase its efficiency and effectiveness.

Keywords: Risk Management, Sustainable Development, Stakeholders, Egyptian Market

1. Introduction

Project Risk Management as integrant part of management aims to increase the probability and impact of positive events and decrease the probability and impact of negative events in the project. In advance of their occurrence, risk management prioritizes risks and provides action-oriented information to project managers. This orientation requires consideration of events that may or may not occur and are therefore described in terms of likelihood or probability of occurrence in addition to other dimensions such as their impact on objectives. Managing the risk is aiming to avoid failure the objectives, Project objectives sit between the strategic and tactical levels, since they are defined in relation to the strategic vision, and they in turn define the requirement for projects. Objectives are also used to measure the value of project deliverables. Many projects fail because of disconnect between strategic vision and tactical project deliverables, often because of poorly defined project objectives. This space between the two levels of strategy and tactics requires careful and proactive management if projects are to succeed in delivering the required benefits to the business. Yet it is precisely in this area occupied by project objectives that businesses are most at risk. All business activity is undertaken in an environment of uncertainty, arising from a range of sources (Hillson 1999).

Institutions such as the Project Management Institute (PMI) and the Association of Project Management (APM) promote 'best' practice project management standards. Project risk management, as one of the key disciplines of project management, is defined as the systematic process of identifying, analysing, and responding to risk as project-related events, or managerial behavior, that is not definitely known in advance, but that has potential for adverse consequences on a project objective (Project Management Institute, 2004). Project risk management claims to enable project managers to effectively manage risk-related information.

The area of development has been a sector related to conditions of uncertainty. Activities within the development sector are exposed to many risks that need to be considered in light of social, environmental and economic risks to all stakeholders. Risks are all events and situations that threaten the undisturbed execution of the project plan. Risk therefore relates to expectations of stakeholders regarding when and how the project will deliver, what the project will deliver and at what cost. Stakeholders would like to gain the maximum benefits and achieve successful results. So, risk must be effectively planned, monitored, and evaluated periodically by the project management team. Project management requires effective oversight and quality management of risk factors associated with all the project activities from identification stages to completion to release best outcomes and impact on the community and ensure sustainable development. Therefore, project risks are important factors determining whether the project will be a success or not.

Risk management has developed over many years into a mature discipline with its own processes, tools and techniques, and with consensus over the main concepts and practices. Nevertheless, a review of number of projects has shown those either fail to achieve their intended goals or exceeded their budget or have longer period to be completed, despite the theoretical principle that risk management should contribute to project and business success. Unfortunately, despite indications that risk management is very influential in project success, the same research found that risk management is the lowest scoring of all project management techniques in terms of effective deployment and use, suggesting that although many organizations recognize that risk management matters, they are not implementing it effectively. As a result, projects still fail, businesses still struggle, too many foreseeable downside threat-risks turn into real issues or problems, and too many achievable upside opportunity-risks are missed.

1.1 Research objectives

The aim of this research is to gain better understanding of risk management procedures in sustainable development projects and examine the critical success factors for effective risk management procedures, study of the impact of adoption the risk management procedures on the project's success, evaluate the challenges that are facing the project risk management to be applied. Identify the areas of improvements to adopt the risk management procedures and outline how to increase the efficiency of risk management procedure to increase the project's success. These results will lead:

1. To identify the current situation of risk management procedures adopted in sustainable development projects in Egypt.

2. To examine the relation between adopting effective risk management procedures and its success factors for in sustainable development projects in Egypt.

3. To study of the impact of adoption the risk management procedures on the project's success.

4. To evaluate the challenges of adoption risk management procedure of sustainable development projects.

5. To identify areas to improve the adoption of risk management procedures in the sustainable development projects.

6. To develop a framework shows how the risk management procedure could improve the sustainable development project chances of success and increase its efficiency and effectiveness

1.2 Research Questions

To achieve the purpose of this research, the following research questions are investigated:

RQ1. What is the current situation of the risk management procedures adopted in sustainable development projects in Egypt?

RQ2. What is the relation between adopting effective risk management procedures and its critical success factors for in sustainable development projects in Egypt?

RQ3. What is the impact of adoption the risk management procedures on the project's success?

RQ4. To what extent the challenges of adopting risk management procedures that face the sustainable development projects in Egypt?

RQ5. How could we improve the areas of adoption the risk management procedures in the sustainable development projects?

RQ6. Is it feasible to develop a framework shows how the risk management procedure could improve the sustainable development project chances of success and increase its efficiency and effectiveness?

2. Research Approach and Hypotheses

This research is exploratory in nature, as it seeks to define and understand the factors that affect risk management procedure and its impact on the project's performance and its success factors. It followed the deductive approach because it is the most suitable for this study. It started with the theory in the literature section, reviewed a set of critical success factors based on existing theories and published articles, Described the way in which the data were collected through questionnaires and semi structure interviews. The results of the data collection analyzed. The challenges of adopting risk management procedures were discussed and the areas of improvement were highlighted. Investigating the reality through observations is called the inductive approach in research concepts (Lundahl & Skarvad, 1999). By examining the findings of the observations and making patterns, the researcher becomes able to generalize. A comparison of the generalizations with the existing theories can be made to constitute new theories. Whereas the inductive approach moves from reality to theory formation, the deductive approach starts from theories to forming hypothesis about the reality (Saunders et al, 1997).

Another distinction can be made between the qualitative and quantitative methods of research. Qualitative research seeks to explore issues, understand phenomena, and answer the questions (Kvale, 1997). On the other hand, the quantitative research is grounded in a great number of study objects that are quantifiable liable to be interpreted into statistics and figures. In conjunction with the deductive research approach, the research strategy that used is quantitative and qualitative. The results from semi structure interviews and questionnaire with several respondents. Therefore, this method is able to generalize the findings beyond this study.

Based on the literature review and the theoretical foundation two streams of the research around adoption of the effective risk management procedures have been developed. The first one is derived from identify the current risk management procedures adopted in sustainable development projects in Egypt and its relationship with the risk management factors and the project's success factors. The second one is derived from adoption of the risk management procedures and its relative importance regards of the main challenges and the areas of improvements to adopt it's fully procedures. To address RQ1& RQ2 about the current risk management procedures adopted in sustainable development projects in Egypt and its success factors, the following hypothesis was developed:

H1: There is no significant relation between adoption of the risk management procedures and its success factors "Policy, culture, training, resourcing, communication, integration, and responsibility" in the organizations.

H2: There is no significant difference between adoption of the risk management procedures and the project's success factors

To address RQ3 and RQ4 about the relative importance of risk management factors in sustainable development projects in Egypt regards the main challenges and the area of improvement, the following hypothesis was developed:

H3: There is no significant difference between the board director's view and the project manager's view regarding the relative importance of the main challenges to more deeply embedding fully risk management procedures

H4: There is no significant difference between the board director's view and the project manager's view regarding the relative importance of the areas of improvements to help the senior management / board more fully understand the risk landscape. At the end the result of testing we presented which hypotheses were confirmed or rejected contributed to the conclusions of this study.

3. Data Analysis

This study uses quantitative method to collect data. The basic techniques for analysing quantitative data have been examined. There are different kinds of analysis that depend on the relationship between variables (1) Univariate analysis (2) Bivariate analysis and (3) Multivariate analysis (Bryman and Bell, 2003). This study refers to

Multivariate analysis that refer to all statistical techniques that simultaneously analyse the relation between dependent variables and multiple independent variables. Descriptive statistics were used to identify the percent of quantitative information, all of number and percentage are produced with SPSS. Multiple ordinal regression used to test the relationship between adoption risk management procedures as independent variable and its success factors "Policy, culture, training, resourcing, communication, integration, and responsibility" in the organizations as dependent variables. Also, ANOVA test conducted to test the association between them. Spearman rank correlation coefficient used to specify highly correlated independent variables. The data obtained from the interviews were interpreted about the main objectives of the research. Information was reorganized and the interviews were interpreted in meaningful ways. Analysing data obtained from the interviews, documents called for mapping out links between the different ideas and processes elicited through these data sources. Also, there were Associations between the findings of the interviews and the concepts given through the documents. All sources of data were interpreted to identify the content of these sources and how they relate to the objectives of the research.

3.1 Reliability and Validity

Reliability is concerned with the question of whether a result is stable (Bryman and Bell, 2007). The idea of reliability is important for measuring. Our method is carefully explained throughout this research. The sample selection is based upon non-probability. The people are selected because of their positions of authority and responsibility in this area. The respondents are free to answer the questionnaire without undue stress which would have negative effects upon the reliability of this study. This study is possible to reproduce with consistent results. The questionnaires were collected from small samples of respondents. To improve the reliability of questionnaire, we used Cronbach' alpha tested the reliability. It is commonly used measure of internal consistency reliability is Cronbach's Alpha. "The Cronbach's Alpha provides a coefficient of inter-item correlations that is the correlation of each item with the sum of all the other items." (Cohen, Manion, and Morrison, 2007, p.506) as shown in Figure1.

Case Processing Summary

		N	%
Cases	Valid	60	92.3
	Excluded[a]	5	7.7
	Total	65	100

Reliability Statistics

Cronbach's Alpha	N of Items
0.937	47

Figure 1 Research Reliability and Validity

Cronbach' alpha quantified this reliability by proposing a coefficient which theoretically ranges from 0 to 1. If alpha (α) is near 0 then the quantified answers are no reliable, and if alpha (α) is close to 1 the answers are very reliable. (Cronbach,L. J., (1951)). The reliability level is acceptable at 0.6 or above and the number of Cronbach's Alpha was 0.937 that is acceptable level therefore this research is very reliable.

Validity is concerned with "the integrity of the conclusions that are generated from a piece of research" (Bryman and Bell, 2007, p.41). The process of survey, the questionnaire was sent to the pilot to ensure the questionnaire is understandable and acceptable. And the empirical data was analysed with excel. As a result, we thought that will be supposed to our study. Therefore, this research can be safely said to be highly valid.

This chapter shows the overall methodologies were used in this study. Begin with the choice of study that gave the reason why the authors are interested in this subject, research philosophy, research approach which is deductive that related to quantitative methods as research strategy. Followed by the data collection method presented the process to collect data and the data analysis. Finally, how the reliability and validity results in this study. The next chapter will be present the empirical data from the data collection methods.

4. Empirical findings and Results

The empirical data collected from the self-completion questionnaire were presented. The questions were initially checked for usability and validity; the variables are coded and entered in statistical package format. The Statistical Package for Social Science (SPSS) was used to analyze the data to provide frequencies, cross tabulation, correlations, Chi-square tests and multivariate regression. The questionnaires were sent to 125 of potential samples, top-level positions in sustainable development projects in Egypt. We were received 66 respondents from a wide range of the sustainable development projects. The response rate is 53 %. The respondents gave us the data that was

https://doi.org/10.54216/AJBOR.000102

analyzed and discussed. The results of this survey were processed with the SPSS program. Firstly, we will show the demographic results to demonstrate the general information of our sample.

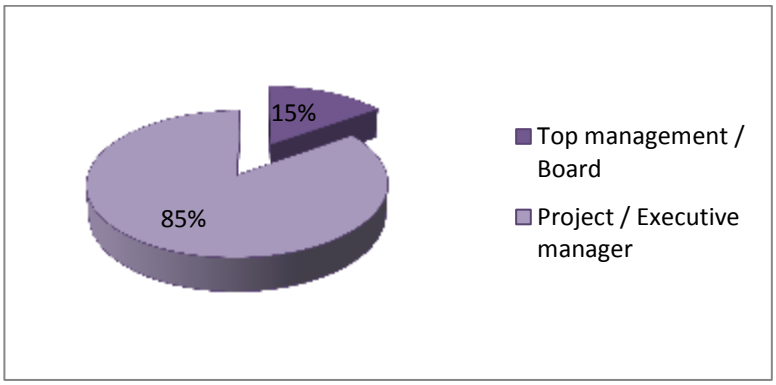

Figure 2: The percentage breakdown of the respondents.

Most of the respondents 56 about (85%), work as project managers and executives. We can see the number of respondents 10 work as top management and board director's about (25%). To initially answer the first research question (RQ1). What is the current situation of adoption the risk management procedures in sustainable development projects in Egypt, we analyzed the data as shown in Figure 2 and Table1.

Table1: adoptions of risk management procedures

Adoption of RM Procedures		
	Frequency	Percent
Not at all	32	48.5
No, less of a priority	17	25.8
Yes, to a limited extent	11	16.7
Yes, to a great extent	6	9.1
Total	66	100.0

According to table 1 we asked the respondents about the percentage of adoption the risk management procedures in their organizations; the results show that most of the respondents (74%) have no risk management procedures. (17%) have risk management procedures to limited extent and just (9%) have a risk management procedure adopted in their organizations.

Table 2: the importance of adopting risk management procedures

The risk management is a higher priority for your company now than 3 years ago		
	Frequency	Percent
Not at all	19	28.8
No, less of a priority	24	36.4
Yes, to a limited extent	16	24.2
Yes, to a great extent	7	10.6
Total	66	100.0

According to table 2 we asked the respondents about the frequency of risk management importance in their organizations compared by 3 years ago. The results show that most of the respondents (65%) the risk management is less of a priority than 3 years ago. (24%) risk management is more of a priority than 3 years ago to limited extent and just (11%) the risk management is higher of a priority than 3 years ago in their organizations.

https://doi.org/10.54216/AJBOR.000102

Table 3: increased the level of investment in adoption of risk management procedures

The organization increased the level of investment in risk management today compare to three years ago		
	Frequency	Percent
Not at all	22	33.3
No, less of a priority	23	34.8
Yes, to a limited extent	18	27.3
Yes, to a great extent	3	4.5
Total	66	100.0

In table 3, we asked the respondents about the frequency of increased the level of investment in risk management compared by 3 years ago. The results show that most of the respondents (68%) didn't increase the level of investment in the risk management, (27%) increased the level of investment in the risk management to limited extent and just (5%) increased the level of investment in the risk management today compared by 3 years ago.

Table 4 using primary tool for adopting risk management procedures

The organization has a primary tool to identify, assess, and/or quantify risk		
	Frequency	Percent
Not at all	20	30.3
No, less of a priority	23	34.8
Yes, to a limited extent	14	21.2
Yes, to a great extent	9	13.6
Total	66	100.0

In table 4, we asked the respondents about the frequency of having a primary tool to identify, assess, and/or quantify risk in their organizations. The results show that most of the respondents (65%) don't use a primary tool to identify, assess, and/or quantify. (21%) a primary tool to identify, assess, and/or quantify risk to limited extent and just (14%) have a primary tool to identify, assess, and/or quantify risk in their organizations.

Descriptive statistics, as in Table 5, were carried out, including frequencies, mean and standard deviation. A standard deviation close to 0 indicates that the data points tend to be very close to the mean or the expected value and the responses are uniform.

Table 5. the mean & the standard deviation results of adopting RM procedures and its factors

https://doi.org/10.54216/AJBOR.000102

Descriptive Statistics			
	Mean	Std. Deviation	N
Adoption of RM Procedure	1.8615	1.01361	66
policy	2.1846	1.01385	66
responsibility	2.3692	.97739	66
Integration	2.2615	1.06473	66
culture	2.0923	.96377	66
Resourcing	2.0308	.98376	66
training .	2.2154	1.02305	66
communication	2.0769	.98912	66

To address the second research question what is the relation between adopting effective risk management procedures and its critical success factors in sustainable development projects in Egypt? The correlation matrix especially between independent variables is a key issue in interpreting regression variables to evaluate the model data. The value of r is such that -1 < r < +1. The + and – signs are used for positive linear correlations and negative linear correlations, respectively. A correlation greater than 0.8 is generally described as strong, whereas a correlation less than 0.5 are generally described as weak. There is a little correlation between several independent variables and the dependent variable but with high correlation among themselves.

Table 6: represents a little correlation between adoption of the risk management procedures and "Policy, communication, culture, training, resourcing, integration, and responsibility". Additionally, most of the correlations between independent variables are moderate.

Covariance provides a measure of the strength of the correlation between two or more sets of random variables.

Table 6: represents that adoptions of the risk management procedures tends to increase as Policy & Objectives, Culture, Training, Communication, accountability & responsibility , integration and resourcing increase.

Table 6: the correlation between adoption of risk management procedures and its factors

Correlations									
		Adoption of RM Procedure	policy	responsibility	Integration	culture	Resourcing	training	communication
Pearson Correlation	Adoption of RM Procedure	1.000	.527	.447	.353	.397	.365	.300	.525
	policy	.527	1.000	.655	.577	.718	.746	.624	.640
	responsibility	.447	.655	1.000	.641	.560	.476	.388	.552
	Integration	.353	.577	.641	1.000	.448	.425	.564	.455
	culture	.397	.718	.560	.448	1.000	.755	.566	.730
	Resourcing	.365	.746	.476	.425	.755	1.000	.614	.640
	training .	.300	.624	.388	.564	.566	.614	1.000	.447
	communication	.525	.640	.552	.455	.730	.640	.447	1.000

In table 7: The data represent that, R = (0.696) , moderate positive relation between the adoption of risk management & the seven factors.

Table 7: Model Summary

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.696[a]	0.485	-0.03	0.49526

a. Predictors: (Constant), Communication, Resourcing, Integration, Culture, Policy & Objectives, Accountability and responsibility , Training

b. Dependent Variable: The organization has a Risk Management Program

The coefficient of determination, r 2, is useful because it gives the proportion of the variance (fluctuation) of one variable that is predictable from the other variable. It is a measure that allows us to determine how certain one can be in making predictions from a certain model/graph. The coefficient of determination is the ratio of the explained variation to the total variation, The coefficient of determination is such that $0 < r\ 2 < 1$, and denotes the strength of the linear association between dependent and independent variables. The coefficient of determination represents the percent of the data that is the closest to the line of best fit.

The data represent that, $r = 0.696$, then $r^2 = 0.485$, which means that 48% of the total variation in s even factors can be explained by the linear relationship between adoption of risk management procedure and the seven factors. The other 52% of the total variation in y remains unexplained.

- **Analysis of Variance**

To investigate the second research question ANOVA test is performed.

Table 8: ANOVA test

ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1.616	7	0.231	0.941	.531[a]
Residual	1.717	7	0.245		
Total	3.333	14			

a. Predictors: (Constant), Communication, Resourcing, Integration, Culture, Policy & Objectives, Accountability and responsibility , Training

b. Dependent Variable: The organization has a Risk Management Program

We can assume that the homogeneity of variance because the observed P-Value of .531 is greater than 0.05. The first hypotheses H1: There is no significant relation between adoption of the risk management procedures and its success factors "Policy, culture, training, resourcing, communication, integration, and responsibility" in the organizations should be rejected.

To study the impact of adoption the risk management procedures on the project's success we analyzed this section:

Table 9: The relation between adoptions of the RM procedures & requesting from the donor to extend the project time

https://doi.org/10.54216/AJBOR.000102

Crosstab

		Time				
		Not at all	No, less of a priority	Yes, to a limited extent	Yes, to a great extent	Total
Adoption of RM Procedures	Not at all	17	9	4	2	32
	No, less of a priority	4	8	5	0	17
	Yes, to a limited extent	0	4	6	1	11
	Yes, to a great extent	0	1	2	3	6
Total		21	22	17	6	66

*Chi-Square (9df) =30.913 a at p=0.000
*Spearman correlation: 0.520

In Table 9: The chi square value is in the region of rejection of the null hypothesis, and the null hypothesis of no relationship between adoptions of the RM procedures & requesting from the donor to extend the project time can be rejected. . P < 0.001 there is very strong evidence against the null hypothesis in favour of the alternative. The Spearman correlation coefficient is 0.520, adoptions of the RM procedures & requesting from the donor to extend the project time are moderate related.

Table 10: The relation between adoptions of the RM procedures & requesting from the donor to extend the project budget

Crosstab

		Budget				
		Not at all	No, less of a priority	Yes, to a limited extent	Yes, to a great extent	Total
Adoption of RM Procedures	Not at all	20	4	4	4	32
	No, less of a priority	6	6	3	2	17
	Yes, to a limited extent	1	3	5	2	11
	Yes, to a great extent	0	0	3	3	6
Total		27	13	15	11	66

*Chi-Square (9df) =24.121 at p=0.004
*Spearman correlation: 0.460

In table 10 the chi square value from the table is in the region of rejection of the null hypothesis, and the null hypothesis of no relationship between adoptions of the RM procedures & requesting from the donor to extend the project budget can be rejected. 0.001 < P < 0.01 there is strong evidence against the null hypothesis in favor of the alternatives. The Spearman correlation coefficient is 0.460, adoptions of the RM procedures & requesting from the donor to extend the project budget are moderate related.

Table 11: The relation between adoptions of the RM procedures & achieving the goals as planned

Crosstab

		Goals				
		Not at all	No, less of a priority	Yes, to a limited extent	Yes, to a great extent	Total
Adoption of RM Procedures	Not at all	15	9	3	5	32
	No, less of a priority	3	10	3	1	17
	Yes, to a limited extent	1	3	5	2	11
	Yes, to a great extent	0	0	4	2	6
Total		19	22	15	10	66

*Chi-Square (9df) 25.919 at p=0.002
*Spearman correlation: 0.411

In table 11 the chi square value from the table is in the region of rejection of the null hypothesis, and the null hypothesis of no relationship between adoptions of the RM procedures & achieving the goals as planned can be

rejected. 0.001 < P < 0.01 there is strong evidence against the null hypothesis in favor of the alternative. The Spearman correlation coefficient is 0.411, adoptions of the RM procedures & achieving the goals as planned are moderate related.

Table 12: The relation between adoptions of the RM procedures & satisfying the shareholders

Crosstab

		Satisfaction				
		Not at all	No, less of a priority	Yes, to a limited extent	Yes, to a great extent	Total
Adoption of RM Procedures	Not at all	14	10	3	5	32
	No, less of a priority	3	8	1	5	17
	Yes, to a limited extent	0	2	7	2	11
	Yes, to a great extent	0	0	3	3	6
Total		17	20	14	15	66

*Chi-Square (9df) = 31.554 at p=0.000
*Spearman correlation: 0.466

In table 12 the chi square value is in the region of rejection of the null hypothesis, and the null hypothesis of no relationship between adoptions of the RM procedures & satisfying the shareholders can be rejected. . P < 0.001 there is very strong evidence against the null hypothesis in favor of the alternative. The Spearman correlation coefficient is 0.466, adoptions of the RM procedures & satisfying the shareholders are moderate related.

- The effect of adopting risk management procedures on the project's success factor

Table 13: The effect of adopting risk management procedures on the project's success factors

Descriptive Statistics

	Mean	Std. Deviation	N
Adoption of RM Procedures	1.8636	1.00593	66
Time	2.1212	.96898	66
Budget	2.1515	1.14007	66
Goals	2.2424	1.03865	66
Satisfaction	2.4091	1.10909	66

Correlations

		Adoption of RM Procedures	Time	Budget	Goals	Satisfaction
Pearson Correlation	Adoption of RM Procedures	1.000	.538	.474	.415	.464
	Time	.538	1.000	.638	.567	.540
	Budget	.474	.638	1.000	.618	.632
	Goals	.415	.567	.618	1.000	.634
	Satisfaction	.464	.540	.632	.634	1.000

Wilks' Lambda

Test of Function(s)	Wilks' Lambda	Chi-square	df	Sig.
1	.644	27.304	4	.000

https://doi.org/10.54216/AJBOR.000102

Project's Success Factors	The organizations adopt risk management Procedures		The organizations do not adopt risk management Procedures	
	Frequency	Percent	Frequency	Percent
The organization's shareholders are satisfied	15	88%	14	29%
The organization's goals achieved as planned	13	76%	12	24%
The organization complete the project within the allocated budget	4	24%	36	73%
The organization complete the projects on time	5	29%	38	78%

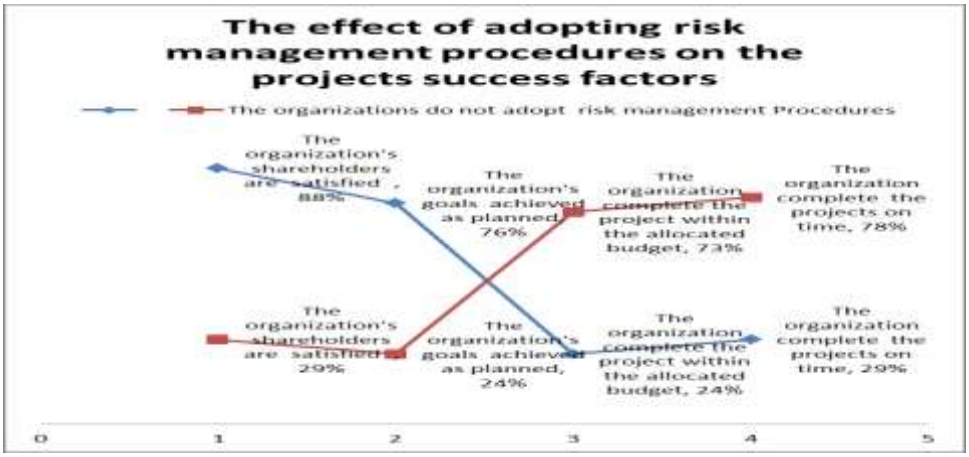

Figure 3: The effect of adopting risk management procedures on the project's success factor

Table 13 and Figure 3: represent that the difference between adopting and not adopting the RM procedures on the project's success factors. Also, it represents that, adoptions of the RM procedures have positive relation between achieving the projects goals and satisfying the shareholders and have negative relation between complete the projects on time and within the allocated budget. Vise verses not adopting the RM procedures have negative relation between achieving the projects goals and satisfying the shareholders and have positive relation between complete the projects on time and within the allocated budget. The standard deviations that measure the spread of the data are close to the mean indicating that the responses are uniform. The correlations table represents a moderate correlation between adoption of the risk management procedures and the project's success factors "Complete project on time, complete project within allocated budget, achieved goals as planned and satisfy the shareholders". Additionally, most of the correlations between independent variables are moderate. The chi square value from the table is in the region of rejection of the null hypothesis, and the null hypothesis of the second hypotheses H2: There is no significant difference between adoption of the risk management procedures and the project's success factors should be rejected.

The study revealed that there are several risk managements factors that could affect project performance. The findings of the interview's framework can be used to enhance risk management procedures in implementing the projects. It can be used to assess the weaknesses of the risk management process. Also, this framework can assist in developing the awareness and familiarity with the risk management concept by exploring its causes, effects, and controls. The findings of the research revealed that there is seven of risk management factors have been identified by the participants includes reflecting the risk management to the organization's policy, integrate all the organization's departments to manage the risk, train the staff on the risk management, communicate with the shareholders internally and externally to manage the risks, positive risk management culture, sufficient resources to manage the risk well and accountability and responsibility for risk management should be identified.

Also, the participants have proposed the relative importance of the primary barriers and the main challenges to more deeply embedding fully risk management procedure across their organizations from the most important to the less important. Failure to implement a workable system for measuring success of risk management efforts, Lack of management / Board direction on desired risk culture, Failure to integrate risk management into value-added assessments of core business, Lack of open and regular communication of risk management goals, objectives, and performance and Lack of clarity over embedding strategies, Lack of strong senior management support, Failure of key staff to acquire new skills or accept new roles and Failure to establish well-defined risk management goals and

objectives and insufficient resources and insufficient tools to establish or drive risk culture change. Also, the participants have proposed the relative importance of the areas of improvement to help the senior management / board more fully understand the risk landscape from the most important to the less important. Clearly link risk management to organization's strategies and objectives, Build resource allocation for risk treatment strategies into business planning and budgeting processes, Encourage managers to develop knowledge and skills in risk management through training programs and self-development Change the organizational structure, Increase awareness of concepts strategic risk management and demonstrate the value of risk management, Embed risk management in place to communicate both externally and internally, Establish consistent process and create documents of the risk management framework, Organizational structure and design should be reviewed regularly, Link risk information to strategic decision making and Invest in software to monitor/assess specific risk areas, and create a dedicated leadership position responsible for risk management. Further findings were related to the impacts of implementing the management procedures on the project performance. It was observed that four major project parameters are affected by the failure to implement the risk management: budget, schedule, goals, and shareholders satisfaction. There are detailed relations expressed of these major parameters. The literature about risk management conveys the same results of the study to a great extent and that budget, schedule, goals, and shareholders satisfaction are the elements that are normally affected by adopting risk management procedures. Adoptions of the RM procedures have positive relation between achieving the projects goals and satisfying the shareholders and have negative relation between complete the projects on time and within the allocated budget.

Unfortunately, despite indications that risk management is very influential in project success, the same research found that risk management is the lowest scoring of all project management techniques in terms of effective deployment and use, suggesting that although many organizations recognize that risk management matters, they are not implementing it effectively. As a result, projects still fail, businesses still struggle, too many foreseeable downside threat-risks turn into real issues or problems, and too many achievable upside opportunity-risks are missed. The research results represent that, risk must be effectively planned, monitored and evaluated periodically by the project management team. Effective risk management requires effective oversight to implement logical framework that integrate the project's objectives, activities, indicators, risks, time and budget, monitor and evaluate the project's performance, integrated management system to link the strategic vision and tactical project deliverables, effective communication system with the shareholders to share the critical decisions and quality management of risk factors associated with all the project activities from identification stages to completion stage.

5. Summary of the Research

The increasing value of the effective risk management in many sectors is rapidly growing in project management area. Risk management procedures are considered the key agent in ensuring sound project performance and as a critical success factor in all kinds of projects. It is the main way of ensuring proper functioning of projects. A great amount of research has been made of risk management, but some aspects are still open to completion and addition. No much research has been made on exploring risk management framework, and impact of the effective risk management on project performance and its success. This research aims to assess the factors that affect risk management procedures of sustainable development projects in Egypt, evaluate and analyze the challenges of adapting it, identify ways to increase the positive risk factors that improve the risk management procedures and develop a framework shows how the risk management procedures could improve the sustainable development project chances of success and Increase its efficiency and effectiveness. It attempts to elicit that the failure to apply risk management procedures could lead to improper project performance. The literature of project risk management has hardly introduced a learning-by-doing strategy to mitigate and minimize the impact of risks on project performance. Risk management would enhance project performance, a mature culture with risk awareness, and intact communications between project parties.

Initially, the literature of project risk management has been investigated. The previously developed studies on risk management have been examined. The aim was to shed light on the growing interest, usability, and effectiveness of such processes. Risk mitigation processes, risk management components, and project success factors have been identified. The key determination was to specify the impact of applying the risk management procedures on project performance. After the literature study, the applicability of this objective was examined through self-completion questionnaire, interviews, and documents. In this research project, risk management procedures were examined in different sectors in sustainable development projects in Egypt. Board directors, project managers and executives who have information about the issue were asked to take part in this research. Besides documents study were used as a supplement to the findings of the interviews.

As the next step, the findings of the interviews were collected and categorized. The results were represented regards the effects or impacts of applying the risk management procedures on the project performance. Finally, a discussion was made on the effective risk management with the aim of providing a framework for risk management based on the findings of the interviews, document study and literature review.

6. Limitations and recommendations of the Study

There were some limitations to this study in terms of the restricted time and access to projects. The study was limited to the projects in sustainable development projects in Egypt and it is not possible to reach all the development entities. It would have been difficult to survey projects overall Egypt. This limitation can be justified that Egypt is the big country and volume of development projects are carried out in it and within all sectors. Moreover, the credibility of the results would have been improved if the processes, resources, and documents of each project had been observed in detail concurrently with interviews. For future studies, this research gives a considerable amount of information that has been carried out on risk management. Further work can be of value to elaborate on specific industries or sectors in Egypt. A case study will be of a great importance for examining this issue in specific organizations. The current study can give a picture of the risk management in the sustainable development projects in Egypt and an extensive study is still needed. This study opens the door for more studies of risk management practices in all industries in the Egypt projects. Industries emphasize risk management. Moreover, effective risk management is so important that it can increase project success. This research studies what critical success factors are necessary for effective risk management procedures. A set of critical success factors has been found in previous studies. A quantitative approach, namely a self-completion questionnaire, was used to collect data. The questionnaires were sent to 125 of potential samples, top-level positions in sustainable development projects in Egypt. We were received 66 respondents from a wide range of the sustainable development projects. The response rate is 53 %. The respondents gave us the data that was analyzed and discussed. The discussion part shows the importance of each of the critical success factors in influencing risk management.

Now, we can answer the research question and confirm that the seven critical success factors in this study are acceptable which are: (1) policy & objectives (2) Communication (3) resourcing (4) Culture (5) integration, (6) accountability and responsibility and (7) Training. These seven factors can increase the effectiveness of risk management procedures, help the senior management / board more fully understand the risk landscape and enhance the projects performance and its success factors from the perspectives of the sustainable development project in Egypt.

7. Theoretical and Practical Implications

This research reveals the process of risk management that published by Standards Australia and Standards New Zealand (2004). From the previous studies, the seven critical success factors were informed for risk management. This study has revealed seven critical success factors for effective risk management in sustainable development projects in perspective of development organizations in Egypt.

The empirical study was analyzed and tested, the first & the second hypotheses should be rejected and the third and the fourth hypotheses should not be rejected by the empirical findings, the first hypotheses confirmed the relation between adoption of the risk management procedures and it success factors, the second hypotheses confirmed the difference between adoption of the risk management procedures and the project's success factors, the third hypotheses confirmed the no difference between the board director's view and the project manager's view with regard to the relative importance of the main challenges to more deeply embedding fully risk management procedure the and the fourth hypotheses confirmed the no difference between the board director's view and the project manager's view with regard to the relative importance of the areas of improvements to help the senior management / board more fully understand the risk landscape. Therefore, the seven critical success factors can be used to base on theory for effective risk management procedures in sustainable development projects in Egypt and the area of improvement to help the senior management / board more fully understand the risk landscape. Also, to enhance the projects performance and its success factors.

The following practical implications are suggestion for the future in risk management in sustainable development projects:

- Sustainable development projects would hesitate to use the critical success factors in their organizations. The literature review describes the definition of each factor and it is important for organizations.
- Top-level management plays a key role in risk management that related to all critical success factors in this study.
- To ensure success in risk management, effort and co-operation from every level in organization are the main issues. Implementers should be involved in the planning stage and formulating logical framework to connect all the projects parts.
- Integration between strategy and tactics should be enhanced.
- Effective communication with the shareholders should be adopted.
- Risk mitigation should not be stopped, but it should continue until the end of the project in order to capture data and lessons learnt that can be beneficial to future projects.

- The most important task for a risk management should be to ensure the rational decision-making to meet the objectives and enhance the project performance and its success factors.

This study described risk management procedures by step to step for supporting the audience understand our subject. It provides figures and table that easy to interpret. The set of Critical Success Factors formulated from the good theoretical background and used widely previous studies in the development areas. Regarding survey, the empirical findings came from the respondents were responsibility directly with the risk management. The targeted group was the top-level management, project managers and executives who understand risk management topic. Even though the questionnaire was conducted in English version but the all respondents well understand since the questionnaire was tested with the pilots to confirm it easy to understand.

Throughout working on this thesis, some suggestions concerning the expansion of the present study have arisen.

- In term of data collection, we suggest collecting data from different sources: further interviews and case studies to find more validated results.
- For more reliable results, the size of samples should be larger than in this study.
- Not only sustainable development projects are facing with risks but also other organizations: governments or business, for example, could be a sample for further research.
- The factors presented in this research should be tested in other business areas.

After performing this study, it would say that the project's success in organizations needs the effort from every level in organization. Risk management should be investigated in the future research.

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