

# Perceived Project Complexity in Terms of Uncertainty and RM in the Kingdom of Bahrain

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**Abstract:-** The failure of the projects and their complexity it has increased over the years. The main reasons of failure are uncertainty and RM. Uncertainty is a completely unknown outcome, with a lack of background information of an event. The research will be conducted through qualitative method, survey (questionnaires), from 94 respondents, to offer in-depth and thorough data study. Qualitative technique is used to explain the collected data in terms of the applied process. A Questionnaire will be used from Project Managers in the period of 2018. The ANOVA analysis will be applied in the research, five points Likert scaling as well as Standard Multiple Regression Analyses. The study analyses the obstacles and provides suggestions and recommendations in solving the difficulties that the management is facing with uncertainty and enterprise risk in complex projects in the Kingdom of Bahrain.

**Keywords:-** Uncertainty, RM, Complex Projects.

## I. INTRODUCTION

Uncertainty it has many meanings such as less of sureness for something. It can vary from little certainty to entire lack of knowledge particularly for outcome (Merriam-Webster, 2017). The globalization brought industries to face global competition and changes in expectation and demand of clients. This huge supply is very complex and brings risks to the companies that they need to manage it properly (Subhani & Osman, 2011). Organizations need to make more practical methods in managing the risks and not just relying on the studies and future analytical plans (Jolly, 2003).

## II. OBJECTIVES OF THE STUDY

The objectives of the study are the following:

- To increase the knowledge of the performance utilized by Project Managers in supervising uncertainty and RM of perceived project complexity in the Kingdom of Bahrain.
- To explore the relationship between uncertainty and RM approaches and processes in terms of perceived project complexity.
- Impression for the accomplishment of the project in connection to uncertainty and RM.
- To investigate how much risk and uncertainty is present in the complex projects perceived by construction managers in the Kingdom of Bahrain.

## III. STATEMENT OF THE PROBLEM

RM and uncertainty is important element in the success of the organization. The research questions that this study finds more significant and answerable are the following:

- What is the implemented level of uncertainty and RM approaches and processes by project managers on projects they perceive as more complex, than on projects that they perceive as less complex?
- What is the relationship at more complex projects perceived by the Project Managers between applied level of uncertainty and RM approach?
- Is uncertainty and risk managed in the same way at the more complex projects perceived by Project Managers?
- Do the more complex projects perceived by Project Managers have different approaches of uncertainty and RM?
- What is the level of success in the more complex projects that applied uncertainty and RM approach?

## IV. HYPOTHESIS

- 1H0: Project Managers do not implement higher level uncertainty and RM approaches and processes on projects they perceive as more complex, than on projects that they perceive as less complex.
- 2H0: At more complex projects perceived by the Project Managers there is positive correlation between applied level of uncertainty and RM approach.
- 3H0: Uncertainty and risk are managed in the same way at the more complex projects perceived by Project Managers.
- 4H0: The projects that are considered more complex by Project Managers have different approaches of uncertainty and RM.
- 5H0: The more complex projects that applied uncertainty and RM approach are more successful.

## V. SIGNIFICANCE OF THE STUDY

It is expected that the study is going to make a considerable contribution in increasing the consciousness of all stakeholders in this process. Scientific value will be for AMAIUB students as well as the students from other Universities and for further analysis by other researchers. It can be used as fruitful information for other public institutions, academics, business sector and others that have

interest to increase their knowledge and to further study the issues of uncertainty and RM.

process. It adds a step before analysis — to identify the risks — and it adds a step after analysis — to evaluate the risks.

**VI. SCOPE AND LIMITATION**

The scope of the study is to examine the relationship of uncertainty and RM and added value to complex projects and how could the different stages of risks (Severe, Medium, and high impacts) influence added value to projects and enterprise stakeholders. During the research it is faced a time constraints – a short time to do a thorough study; the questionnaires are filled unanimously, from project managers and therefore are analyzed in general and not in individual basis. As a limitation of the study it can be considered that are analyzed only the project managers of building contractors, that are registered within the Ministry of Housing.



Fig 1:- The RM cycle

**VII. THEORETICAL FRAMEWORK**

A RM cycle is found originally in the Australian / New Zealand Standard for RM (AS/NZS 4360:2004) and it is now part of the ISO 31000:2009, Standard for RM. The process has five sequential steps and two ongoing activities, shown in Figure 1 (Canadian Conservation Institute, 2017). A single-risk analysis presumes that you already have a sense of context for the question you are asking and that you already have the risk identified. In this case, proceed directly to step 3, Analyze Risks. You may find, however, that you need to subdivide the risk into several parts in order to analyze it well. Risk assessment is the fundamental institutional

**VIII. CONCEPTUAL FRAMEWORK**

The conceptual framework is based on Independent and Dependent Variables. The dependent variable is project complexity level and independent variables are higher level uncertainty and RM approaches, positive correlation between applied level of uncertainty and RM approach, same way of uncertainty and RM, different approaches of uncertainty and RM and successful projects with uncertainty and RM approach (see figure 2).

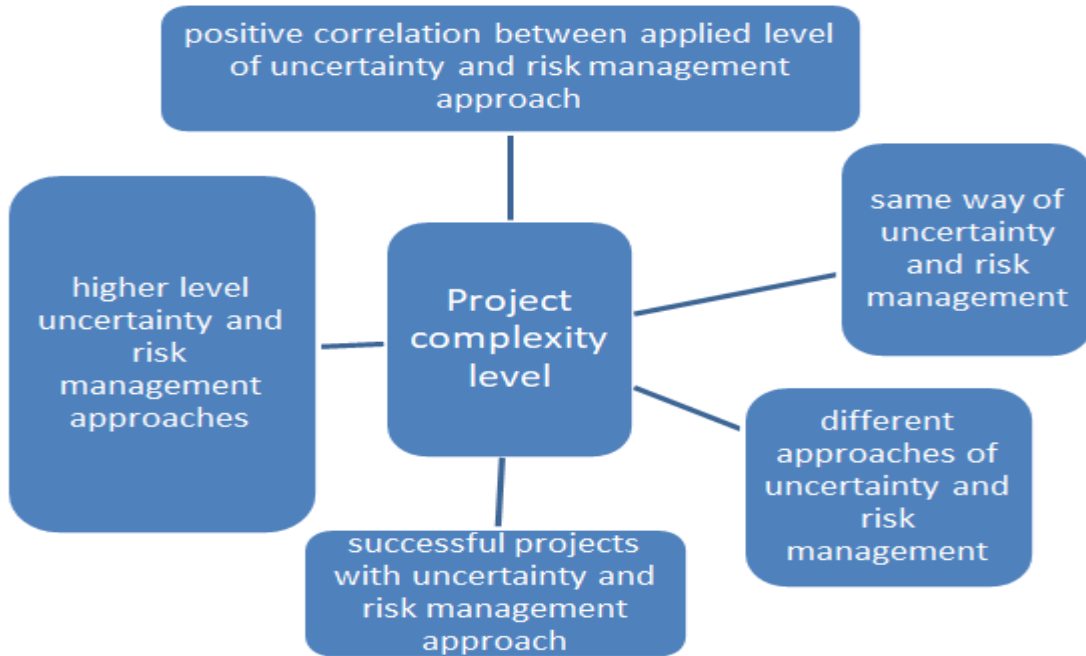


Fig 2:- Independent and Dependent Variables

## IX. LITERATURE REVIEW

The view of Williams (1999) is that the methods of classical project management are not suitable for handling project complexity; therefore they need to adopt new techniques. Also Atkinson (2006) has similar opinion about the conventional project management and that they should not be focused only on procedural sides but at the concept of the project. Hence, Setapa (2015) proposed a conceptual model regarding the relation of enterprise RM and the outcome of the company. According to Nocco et al (2006) ERM adds value to the organization if the employees and managers cautiously assess the tradeoff of risk and return. In the article of Mark S. B. et al (2005) it is concluded that in terms of the situation in the Kingdom of Bahrain, the Central Bank of Bahrain is forcing organizations to have independent auditors, but so far ERM is at its initial stage.

## X. RESEARCH METHODOLOGY

The subject of the study is based only on construction industry companies. The applied technique in this study is purpose sampling that is actually a non-probability sampling by the characteristics of the population and the objective of the study. According to the nature of this research, targeted respondents are project managers of building contractors, registered with Ministry of Housing, Kingdom of Bahrain. Based on the approved updated contractors list of the Ministry of Housing, (2018), building contractors are divided in three grades. Grade A over 6 M, grade B up to 6 M and grade C up to 1.5 M. The total registered companies with grade A are 37, with grade B are 30 and grade C are 56, hence total building contractors as in the Kingdom of Bahrain are 123. This shows that the population size is 123. From this total population, the sample size is calculated with the confidence level of 95%, and margin of error 5%, the minimum recommended size of the survey is 94. The instrument that was applied in this research was questionnaire. The remarks and criticisms given by the five irregular respondents for modifying the questionnaire that really not part of some portion of the research made is making the instrument substantial and valid. For testing the null hypothesis, the ANOVA analysis is applied in the research, and Standard Multiple Regression Analyses.

## XI. DATA ANALYSIS, INTERPRETATION AND DISCUSSION

Following the distribution of questionnaires personally by the researcher to the respondents, brought to get a 100% response rate from the respondents, that are actually 94 sample size from which 52 (55.3%) individuals from the respondents were male while female respondents were 42 (44.7%). Concerning the age scope of the participants with the scope of "21-30" are 48 respondents (51.1%) and with master degree are 40 (42.6%),

The Shapiro-Wilk test statistics from test of normality is based on the first null hypothesis that "Project Managers do not implement higher level uncertainty and RM approaches and processes on projects they perceive as more complex, than on projects that they perceive as less complex". The data shows that most of p-values are above 0.05, therefore the null hypothesis is kept. The Shapiro-Wilk test thus indicates that our data are approximately normally distributed. The Shapiro-Wilk test statistics from test of normality based on the second null hypothesis that "At more complex projects perceived by the Project Managers there is positive correlation between applied level of uncertainty and RM approach". Most of data are above 0.05, therefore the null hypothesis is kept. The Shapiro-Wilk test thus indicates that our data are approximately normally distributed. The Shapiro-Wilk test statistics from test of normality based on the third null hypothesis that "Uncertainty and risk are managed in the same way at the more complex projects perceived by Project Managers". The data shows that most of the means of p-values are above 0.05, therefore the null hypothesis is kept. The Shapiro-Wilk test thus indicates that our data are approximately normally distributed. The Shapiro-Wilk test statistics from test of normality is based on the fourth hypothesis that "The projects that are considered more complex by Project Managers have different approaches of uncertainty and RM". The data shows that most of the means of p-values are above 0.05, therefore the null hypothesis is kept. The Shapiro-Wilk test thus indicates that our data are approximately normally distributed. The Shapiro-Wilk test statistics from test of normality is based on the fifth hypothesis that "The more complex projects that applied uncertainty and RM approach are more successful". The data shows that most of the means of p-values are above 0.05, therefore the null hypothesis is kept. The Shapiro-Wilk test thus indicates that our data are approximately normally distributed.

The table 1 shows that the dependent variable is the Mean of Project Complexity and independent variables are uncertainty and RM approach. Uncertainty and RM approach is composed by several parts such as: higher level uncertainty and RM approaches, positive correlation between applied level of uncertainty and RM approach, same way of uncertainty and RM, different approaches of uncertainty and RM and successful projects with uncertainty and RM approach.

Model	Variables Entered	Variables Removed	Method
1	MeanProjectSuccess, MeanImplementedLevelofUncertaintyandRisk, MeanApproachUncertaintyandRisk, MeanManagementUncertaintyandRisk, MeanRelationshipUncertaintyandRisk <sup>b</sup>	.	Enter
a. Dependent Variable: MeanProjectComplexity			
b. All requested variables entered.			

Table 1:- Variables Entered/Removed<sup>a</sup>

The model summary is shown in table 2 that represents the R Square and adjusted R Square are 71.8% (.718) and 70.2% (.702), and these are good results accounting for 72% of the variance in the perceived project complexity related to uncertainty and RM in the Kingdom of Bahrain, that is a good prediction since its more than 70%, close to 1.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.848 <sup>a</sup>	.718	.702	.30732
a. Predictors: (Constant), MeanProjectSuccess, MeanImplementedLevelofUncertaintyandRisk, MeanApproachUncertaintyandRisk, MeanManagementUncertaintyandRisk, MeanRelationshipUncertaintyandRisk				

Table 2:- Model Summary

In the table 3 is given ANOVA analysis. Since significance in our case is less than 0.05, that is 0.000, the value of R Square is significantly 72%, or 0.72 that means that our independent variables (predictors) are able to account for a significant amount of variance in perceived project complexity in terms of uncertainty and RM.

Model <sup>a</sup>		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	21.193	5	4.239	44.878	.000 <sup>b</sup>
	Residual	8.311	88	.094		
	Total	29.505	93			
a. Dependent Variable: MeanProjectComplexity						
b. Predictors: (Constant), MeanProjectSuccess, MeanImplementedLevelofUncertaintyandRisk, MeanApproachUncertaintyandRisk, MeanManagementUncertaintyandRisk, MeanRelationshipUncertaintyandRisk						

Table 3:- ANOVA

The further analysis is done for coefficient of variables given in the table 4. The first column is the “constant” that is not important, the focus is on p values that are given with the label “Sig.” for each independent variable given as a mean of variables. Most of the independent variables are statistically not significant for predicting the project complexity, since only mean of approach of uncertainty and RM is less than 0.05 given in the label of sig last column. The conclusion is that most of the independent variables don’t explain a unique variance in project complexity.

Model <sup>a</sup>		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.438	.452		.968	.336
	MeanImplementedLevelofUncertaintyandRisk	-.053	.071	-.052	-.753	.454
	MeanRelationshipUncertaintyandRisk	.059	.071	.060	.827	.411
	MeanManagementUncertaintyandRisk	.056	.073	.047	.760	.449
	MeanApproachUncertaintyandRisk	.893	.060	.844	14.787	.000
	MeanProjectSuccess	-.094	.063	-.087	-1.503	.136
a. Dependent Variable: MeanProjectComplexity						

Table 4:- Coefficient Table

## XII. SUMMARY OF THE FINDINGS, CONCLUSION AND RECOMMENDATION

The survey was distributed to 94 respondents with all of them being valid for analyzing in this research. Moreover, the R Square and adjusted R Square have showing a high value, actually 71.8% and 70.2%, by showing the significance of the variance of the dependent variable of project complexity by which they can predict its significance. ANOVA also brought high significance in predicting the project complexity, since the results was less than 0.05. Looking at Coefficients, only mean of approach uncertainty and risk is significant.

The summary of research hypotheses discussed in this study is the following:

- 1H0: Project Managers do not implement higher level uncertainty and RM approaches and processes on projects they perceive as more complex, than on projects that they perceive as less complex. Null hypothesis is kept.
- 2H0: At more complex projects perceived by the Project Managers there is positive correlation between applied level of uncertainty and RM approach. Null hypothesis is kept.
- 3H0: Uncertainty and risk are managed in the same way at the more complex projects perceived by Project Managers. Null hypothesis is kept.
- 4H0: The projects that are considered more complex by Project Managers have different approaches of uncertainty and RM. Null hypothesis is kept.
- 5H0: The more complex projects that applied uncertainty and RM approach are more successful. Null hypothesis is kept.

It is recommended to be assessed the barriers of adoption for approaches of uncertainty and RM and their implementation. To be evaluated more deeply the different standards for RM as well to check the difference in local and international ones. The subject for further discussion is the level of proficiency by project managers for the RM.

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