



# INTERNATIONAL JOURNAL OF ADVANCE RESEARCH AND DEVELOPMENT

(Volume2, Issue4)

Available online at [www.ijarnd.com](http://www.ijarnd.com)

## Management Information System

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### ABSTRACT

*It has for a while been widely accepted that an appropriate mathematical model for studying data types is the category of domains, i.e. consistently complete algebraic cpos, and continuous functions. What has not fared as well in acceptance is a method of representation, or implementation, of domains. The most recent method of representation—Information Systems—was introduced by Dana Scott and is gaining acceptance, as indicated by its appearance in a number of recent research papers. The role of information, as an essential tool for managers in planning and decision making. MIS is a well-coordinated information system, a database that is to provide management with needed information to plan and make decisions. Modern technology has further made the resort to MIS in management imperative because of the changing circumstances and the environment. Also, identifies some problems which can hinder effective use of MIS. achieve this, many modern organizations, either mid or large sized, have concerned with a cycle of progressive investments in and adopted new management information systems components. During last decade, a high percentage of financial organizations frequently used Management Information Systems to facilitate the provision of services; and that the speed of the adoption is expected to grow further as the technology expands.*

*Whitten et al. (2004, p.12.), stated that "information is an arrangement of people, data, process, and information technology that interact to collect, process, store and provide as output the information needed to support an organization," which indicates that information system is an arrangement of groups, data, processes, and technology that act together to accumulate, process, store and provide information output needed to enhance and speed up the process of decision making.*

**Keywords:** *Information Systems, Information Technology, Management Information, Management Information Systems, Strategic Planning, Tactical Planning, Decision Making Process.*

## 1. INTRODUCTION

### 1.1 Background

Currently, organizations are in the race for enhancing their capability in order to survive in the competitions of the new century global market. Therefore, organizations are attempting to advance their agility level by improving the decision-making process to be more efficient and highly effective to meet the successive fluctuations of the market. In an effort to

### 1.2 Aim and Objective

Accordingly, the stored information must then be recalled and distributed for the use of an organization leadership and top management as well as mid-level managers to take effective long-term (strategic) and short term (Tactical) decision-making.

This paper aims to evaluate the impact of current MIS models being developed at the selected organizations, and show far they practice this concept in order to enhance their tactical and strategic planning. The purpose of this research is to explore the extent to which management information systems are used to make effective decisions of long and short term planning in two financial organizations at the Kingdom of Bahrain. The study will examine whether the Government financial institution (Case one) and the Private financial institution (Case two) differ as to the use of management information systems for leadership decision makes in short and long term planning.

### **1.3 Motivation**

The conception of information catches the attention of different professionals from different fields such as computer science, economics, business and management, political science, statistics, communication and information studies (Newman 2001). However, the question is "what type of information"? How can Information management play an essential role in the decision making process? How can the coordination between different departments (internal and/or external) and sharing information at the real time accelerate and enhance the process of decision making and avoid decision-making errors?

This paper focuses on how information management is needed to generate proper planning and then decisions at both strategic and tactical levels in the two selected financial organizations.

## **2. LITERATURE SURVEY**

There is a lot of research on the approaches, techniques, and technologies for the design and development of MIS. However, there are a few articles that cover the impact of Management Information Systems on planning strategies and decision making. While there are no universally accepted definitions of MIS and those that exist in literature are just prejudices of the researchers (Adeoti-Adekeye, 1997). Lee, (2001) defined MIS as "*a system or process that provides information needed to manage organizations effectively*".

Additionally, Baskerville and Myers (2002) broadly define MIS as "*the development, use, and application of information systems by individuals, organizations and society*". In his study, Becta (2005) describes an information system as "*a system consisting of the network of all communication channels used within an organization*". In their study, Laudon and Laudon (2003) have defined MIS as "*the study of information systems focusing on their use in business and management*". The abovementioned definitions showed that MIS has underlined the development, application, and validation of relevant theories and models in attempts to encourage quality work in the area. Referring to the literature, the field of Management Information Systems (MIS) has had a variegated development in its relatively short lifespan. MIS has developed its own theme of research and studies (Baskerville and Myers, 2002).

### **2.1 Related work**

Tracing previous literature, we can report that during its first few decades, MIS concentrated on the information in the context of:

Electronic data processing which carries out transaction processing functions and records detailed factual data.  
Management reporting systems which scrutinize the operational activities of an organization, providing summaries, information, and feedback to management.

Only during the last two decades, the MIS field has shifted to the primary, considered the second type of communication, namely, instruction-based. This has become known as the domain of expert systems (Sasan Rahmatian, 1999).

## **3. PROPOSED SYSTEM**

### **3.1 Structure of MIS**

The subsystem of an MIS:

- According to the organizational functions which they support
- According to managerial activities for which they are used.

(Refer Figure 1. Structure of MIS)

Process Interactive Support Applications:

The information system contains applications designed to support systems for planning, analysis and decision-making.

(Refer Figure 2. Process Interactive Support Applications)

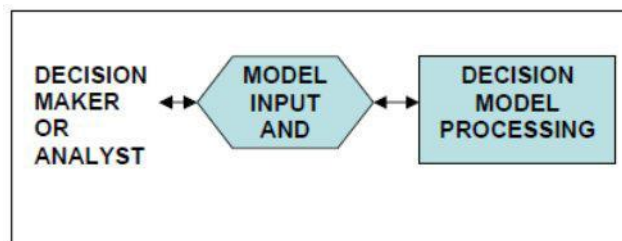


Figure 2. Process Interactive Support Applications

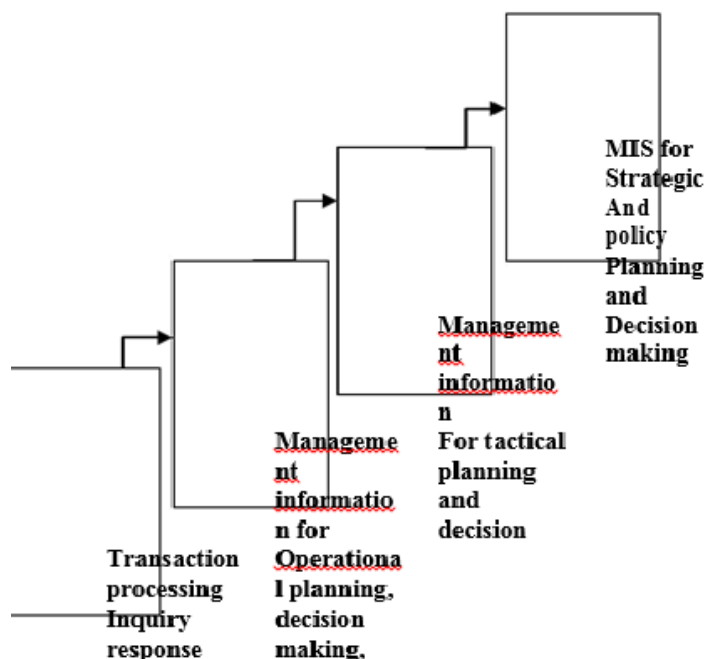


Figure 1. Structure of MIS

#### 4. WORKING METHODOLOGY

The current study attempts to explain the relationship between various factors. Due to the nature of the current study and its hypothesis, the primary research purpose of the current study is, thus, explanatory. Explanatory (or causal) explains the complexity of the interrelated variables identified that were posted in the hypothesis and research.

By developing several hypotheses, the study thus adapt the quantitative research design to better test those hypotheses. Quantitative research uses the survey as the main instrument to collect data.

##### 4.1. Research questions and hypotheses

To achieve the purpose of the current study, the following research questions have been formulated:

To what extent is MIS being utilized to support Strategic planning for decisions in Bahrain's financial organizations?

To what extent is MIS being utilized to support Tactical planning for decisions in Bahrain's financial organizations?

To answer these questions, the current study carries out various hypotheses that developed from previous literature and studies (Ajayi et. al, 2007). Figure 3

Figure 3. Proposed model and factors affecting the process of decision making.

Thus, we consider the hypothesis below:

H1: The Tactical Planning (short term) generated by MIS is positively affecting the decision making process.

H2: The Strategic Planning (long term) generated by MIS is positively affecting the decision making process.

#### **4.2. Population and Data collection**

The population for the study is the top management (strategic), mid-level management (tactical) and normal staff in Case one (government financial institution) and Case two (private financial institution). This population is deemed to be fully aware of the MIS-use at the bank level.

A total of 190 forms were distributed equally (each bank with 95 survey forms). 12% for case one and 14% for case two are having management positions. In a convenience sample, the managers and bank staff were randomly approached.

The distribution took place for a three-week period in early March 2010. The survey was designed in the English language. The research tested the time to fill the survey and it took approximately 5-8 minutes to be completed.

#### **4.3. Data Analysis**

The current study used SPSS (Statistical Package for Social Science), software V.19 to analyze the data obtained from the survey. The current study uses ANOVA to see if there are any differences between Case one and Case two when using MIS for supporting decision-making processes. Moreover, the simple Regression was implemented to test the hypothesis and the linkages between dependent and independent variables.

### **5. RESULTS AND ANALYSIS**

This section presents the factor analysis test. Then, the results of correlation analysis of the three variables (Strategic planning, Tactical Planning, and The Effectiveness of Decision-making) are discussed. Finally, the results of the paper are discussed in accordance with the research objectives and the hypothesis of the study.

#### **5.1. Correlation Tests**

Correlation analysis was incorporated to describe the strength and direction of the linear relationship between the two independent variables and the dependent variable (Pallant, 2001). The effectiveness of the bank's decision-making processes, which are the dependent variables considered to be the bank's succession in management building and facility, financial aspects and staff issues. Previous studies underpinned the importance of conducting correlation tests before the regression testing, the correlation between variables thus necessary (Coakes and Steed, 2007). The result of the correlations is presented in the following table (table 1).

The results of correlation reveal that Strategic planning ( $r=0.318$ ,  $p < 0.01$ ) found to be strongly and positively correlated with the bank's Decision Making (D.M) Effectiveness, while Tactical Planning ( $r=0.263$ ,  $p < 0.05$ ) found to be positively correlated with the bank's D.M Effectiveness.

#### **5.2. Regression**

For further analysis, a Linear Regression analysis was conducted to examine the extent to which the independent variables (Strategic planning and Tactical Planning) influence the succession Effectiveness of the bank's decision making (dependent variable). The independent variables were regressed across organizational outcomes. Tables 2, 3 and 4 summarized the results of the Linear Regression analysis.

The results of regression reveal that the model is significant ( $p < 0.01$ ) and the coefficient of determination ( $R^2$ ) for the regression is (0.490), indicating that (49%) of the variation in the dependent variable (decision-making effectiveness) was explained by the independent variables included in the regression. The results of regression indicated that the variance in the Effectiveness of the bank's decision-making is explained by only one variable; Strategic planning, while Tactical Planning found not to affect the Effectiveness of the bank's decision-making process.

The regression analysis was implemented to support the correlation test. However, the study revealed that the Tactical planning is found to have no effect on D.M Effectiveness ( $\text{Sig}=.128 > 0.05$ ). The regression analysis showed that Strategic planning, on the other hand ( $\text{Sig}=.016 < 0.05$ ), affects the D.M Effectiveness in the bank.

**Table 5 reveals the research hypotheses accepting/rejecting based on the regression analysis**

Table 1: the results of Correlations test

The results of Correlations test		Strategic planning	Tactical planning	D.M Effectiveness
Strategic planning	<i>r</i>	1		
	P			
Tactical planning	<i>r</i>	.252**	1	
	P	.001		
D.M Effectiveness	<i>r</i>	.318**	.263*	1
	P	.000	.001	

Notes:

*r* = the value of Personal Correlation

P= the significant level (2-tailed)

\*\* . Correlation is significant at the 0.01 level (2-tailed).

\*. Correlation is significant at the 0.05 level (2-tailed).

Table 2: Results of ANOVA test

ANOVA test						
Model		R	df	Mean Square	F	Sig.
1	Regression	0.490	3	4.240	9.594	.000 <sup>a</sup>
	Residual		131	.442		
	Total		134			
a. Predictors: (Constant), Tactical planning, Strategic planning						
b. Dependent Variable: D.M Effectiveness						

Table 3: Results of Model Summary

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.490	.180	.161	.665	1

a. Predictors: (Constant), Tactical planning, Strategic planning  
b. Dependent Variable: D.M Effectiveness

Table 4 Coefficients

coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	<i>t</i>	<i>Sig</i>
		B	Std. Error	Beta ( $\beta$ )		
1	(Constant)	1.395	.415		3.364	.001
	Strategic planning	.212	.087	.218	2.441	.016
	Tactical planning	.124	.081	.136	1.532	.128

a. Dependent Variable: D.M Effectiveness

Notes:

P= the significant level,

β = Standardized Coefficients

Table 5 Research Hypothesis accepting/ rejecting

Hypothesis	Accept the proposed hypothesis
Hypothesis 1: Strategic planning	✓
Hypothesis 2: Tactical planning	X

## 6. CONCLUSION

Management Information Systems is of paramount importance to reach effective decisions in an organization. The literature presented in this study explained the significant role of MIS in the decision-making process enhancing in an organization. The study has highlighted that MIS should be accessible in supplying appropriate and high quality of information from its generation to its users. To MIS, to be vital and effective, a carefully conceived, designed and executed database should exist to communicate the adaptive decisions.

The study has developed two independent variables (Strategic planning and Tactical planning) and one dependent variable (the Effectiveness of Bank Decision-making). To answer the research questions and to test the hypotheses, the study adopted the quantitative research design and implemented advanced statistic methods (Correlation, ANOVA, and regression).

In short, the results of the descriptive statistics revealed that MIS primarily used to enhance Strategic planning in the banks. The study also revealed that MIS is the least implemented in the Tactical planning. For further analysis, a Linear Regression analysis was conducted to examine the extent to which the independent variables (Strategic planning and Tactical Planning) influence the succession Effectiveness of the bank decision making (dependent variable). The results of regression revealed that the model is significant and the coefficient of determination (R) for the regression is (0.490). The result of regression indicated that the variance in the Effectiveness of the bank decision making is explained by only one variable: Strategic planning. However, the study revealed that Tactical Planning is found to have no effect on D.M Effectiveness.

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