

A study to determine influential factors on implementation of management information system

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ABSTRACT

Management information system (MIS) plays an important role on sharing necessary information within organization. In this paper, we study to find out important factors influencing the implementation of MIS in banking industry. The study designs a questionnaire in Likert scale and distributes it among 253 randomly selected people. Cronbach alpha has been calculated as 0.82, which is within an acceptable limit. The study uses factor analysis to find important factors and detects six important factors including fear of technology, organizational instability, informal groups, cultural factors, organizational development and understanding that change is always good.

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1. Introduction

During the past few years, there have been growing interests in implementation of management information system (MIS) in various organizations. However, any MIS implementation may face various challenges such as lack of cooperation from human resource management, complexity in system integration, etc. (Mahmood et al., 1995; Lederer & Hannu, 1996; Moshref Javadi & Delshad Dastjerdia, 2011). There are different studies to detect important factors as barriers for MIS implementation. Véronneau and Cimon (2007) examined how to keep robust and effective decision capabilities for firms involved in critical operations using an integrated MIS. They proposed an integrative and cumulative view that was articulated threefold. First, they presented an operations resource management and suggested an integrative approach for decision capabilities as they rest on the interaction between humans and systems. Finally, they derived a decision model and demonstrated that careful consideration could be given to the interplay among humans, systems, and the environment in which they operate.

Renzl (2008) discussed trust in management and knowledge sharing by looking into the mediating effects of fear and knowledge documentation. Rom and Rohde (2007) performed a comprehensive

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review on management accounting and integrated information systems. Some experts believe that MIS implementation in any kind of business model may create different risk in the system and we need to control the risk to prevent any possible damages. Bojanc and Jerman-Blažič (2008), for instance, presented an economic modelling approach to information security risk management. Nevertheless, any MIS implementation has been accompanied by appropriate action plans (Gottschalk, 1999). Factor analysis has been used in banking industry for detecting important factors. Azad and Hassanabadi (2013), for instance, presented an empirical investigation on factors influencing on brand loyalty. In this paper, we present another empirical investigation to find important factors influencing MIS adaptation in banking industry.

2. The proposed method

The proposed model of this paper uses factor analysis to determine important factors influencing MIS adaptation in banking industry. The study designs a questionnaire consists of 28 questions and in Likert scale. The study is performed among all existing employees of one of Iranian banks named Bank Eghtesad Novin in city of Tehran, Iran and the sample size is calculated as follows,

$$n = \frac{N \times z_{\alpha/2}^2 \times p \times q}{\varepsilon^2 \times (N-1) + z_{\alpha/2}^2 \times p \times q}, \quad (1)$$

where N is the population size, $p=1-q$ represents the yes/no categories, $z_{\alpha/2}$ is CDF of normal distribution and finally ε is the error term. Since we have $p=0.5$, $z_{\alpha/2}=1.96$ and $N=2600$, the number of sample size is calculated as $n=253$. Cronbach alpha has been calculated as 0.82, which is within an acceptable limit. In addition, Kaiser-Meyer-Olkin Measure of Sampling Adequacy is calculated as 0.742, which is within an acceptable limit and validates the results. Since factor analysis is sensitive on skewness of factors, we have decided to delete seven questions. Fig. 1 demonstrates Scree plot on questions of the survey. In addition, Table 1 shows details of principles component analysis before and after rotation

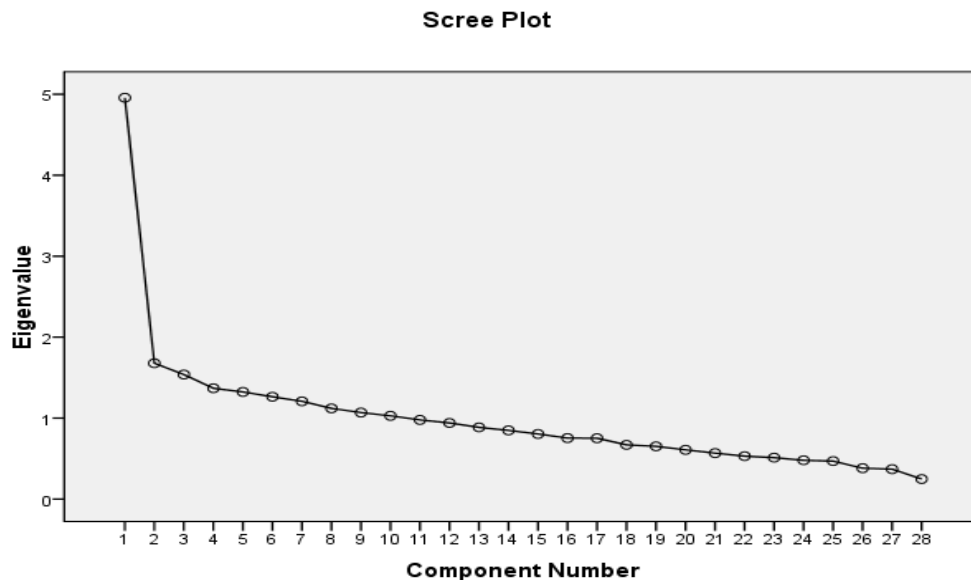


Fig. 1. The Scree plot

Based on the results of Table 2 we detect six important factors including fear of technology, organizational instability, informal groups, cultural factors, organizational development and understanding that change is always good.

3. The results

In this section, we explain details of our finding on six factors.

3.1. The first factor: Fear of technology

The first factor, fear of technology, consists of six sub-factors, which are summarized in Table 2.

Table 2
The results of factors associated with fear of technology

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Change in working habit	0.63			
Fear of losing job	0.524			
Fear of how to use the system	0.64			
Feeling uncomfortable of using the new system	0.646			
Complexity of new systems	0.69	1.326	26.512	26.512
Fear of losing independence	0.585			

Cronbach alpha =0.573

As we can observe from the results of Table 2, complexity of new system is blamed the most as a barrier of MIS implementation in this category followed by feeling uncomfortable and fear of how to use the system.

3.2. The second factor: Instability in organization

The second factor, instability in organization, consists of four sub-factors summarized in Table 3.

Table 3
The results of factors associated with instability in organization

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Entering too much risk in organization	0.709			
Replacing uncertainty with certainty	0.854	1.640	54.675	54.675
Change in responsibilities	0.684			
Change in budging methods	0.758			

Cronbach alpha =0.75

According to Table 3, replacing uncertainty with certainty is the most important issue as a barrier of MIS implementation in this category followed by change in budgeting method.

3.3. The third factor: Informal groups

The third factor, informal group, consists of three sub-factors, which are summarized in Table 4 as follows,

Table 4
The results of factors associated with informal groups

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Existence of various informal groups	0.719			
Pressure from group for accepting changes	0.729			
Fear of losing cooperation with colleagues	0.827	1.857	61.916	61.916

Cronbach alpha =0.65

As we can observe from the results of Table 4, fear of losing cooperation with colleagues is the most important issue as a barrier of MIS implementation in this category followed by pressure from group for accepting changes.

3.4. The fourth factor: Cultural factors

The fourth factor, informal group, consists of two sub-factors, which are summarized in Table 5 as follows,

Table 5
The results of factors associated with cultural factors

Option	Factor weight	Eigenvalues	% of variance	Accumulated
General culture of accepting changes	0.690	1.652	55.082	55.082
Conflict with existing norms	0.636			

Cronbach alpha =0.68

As we can observe from the results of Table 5, general culture of accepting changes is the most important issue as a barrier of MIS implementation in this category followed by conflict with existing norms.

3.5. The fifth factor: Organizational change

The fifth factor, organizational change, consists of three sub-factors, which are summarized in Table 6 as follows,

Table 6
The results of factors associated with organizational change

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Organizational structure	0.674			
Change in rules and regulations	0.621			
Lack of cooperation	0.733	1.479	36.972	36.972

Cronbach alpha =0.64

As we can observe from the results of Table 6, lack of cooperation is the most important issue as a barrier of MIS implementation in this category followed by organizational structure.

3.6. The sixth factor: Perception of benefit of having change

The last factor, perception of benefit of having change, consists of three sub-factors, which are summarized in Table 7 as follows,

Table 7
The results of factors associated with perception of benefit of having change

Option	Factor weight	Eigenvalues	% of variance	Accumulated
Feeling that the new system is unnecessary	0.674			
Implementation of MIS is a matter of wasting time	0.621			
Feeling needs for learning more	0.733	1.479	36.972	36.972

Cronbach alpha =0.61

As we can observe from the results of Table 7, feeling needs for learning more is the most important issue as a barrier of MIS implementation in this category followed by feeling that the new system is redundant.

4. Conclusion

In this paper, we have presented an empirical investigation to find important factors influencing implementation of management information system in banking systems. The study designed a questionnaire and distributed it among some experts and, using principle component analysis, we have extracted six factors including fear of technology, organizational instability, informal groups, cultural factors, organizational development and understanding that change is always good.

The first factor, fear of technology, consists of six sub-factors where complexity of new system is blamed the most as a barrier of MIS implementation in this category followed by feeling uncomfortable and fear of how to use the system. The second factor, instability in organization, consists of four sub-factors where replacing uncertainty with certainty is the most important issue as a barrier of MIS implementation in this category followed by change in budgeting method. The third factor, informal group, consists of three sub-factors, where fear of losing cooperation with colleagues is the most important issue as a barrier of MIS implementation in this category followed by pressure from group for accepting changes. The fourth factor, informal group, consists of two sub-factors, , general culture of accepting changes is the most important issue as a barrier of MIS implementation in this category followed by conflict with existing norms. The fifth factor, organizational change, consists of three sub-factors, where, lack of cooperation is the most important issue as a barrier of MIS implementation in this category followed by organizational structure. Finally, the last factor, perception of benefit of having change, consists of three sub-factors, where feeling needs for learning more is the most important issue as a barrier of MIS implementation in this category followed by feeling that the new system is redundant.

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