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Determinants influence of the management information system in small and medium-sized enterprises in Hanoi, Vietnam

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Abstract

The management information system (MIS) plays an important role in the operation and development of enterprises. With the help of MIS, collection and processing of information is more efficient and more flexible. Especially for small and medium-sized enterprises (SME), MIS aids the enterprise manager's decision making with helpful information. This article gives a literature review of studies from the country and worldwide to synthesize

factors that influence enterprises' MIS. The focus of this study is small and medium-sized enterprises that are registered in Hanoi, with a sample size of 200. We would like to suggest a model to study factors affecting small and medium-sized enterprises' MIS in the scope of Hanoi city, and propose some solutions to develop efficient MIS of enterprises in Hanoi, based on our research results.

Keywords: Factors, Management Information System (MIS), Small and Medium-Sized Enterprises (SME), Hanoi City

JEL classification: E64, P46, J48

1. Introduction

According to the General Statistic Office (2021) ^[5], Vietnam has about 870,000 enterprises, 98% of which are small and medium-sized enterprises. With regard to Hanoi, small and medium-sized enterprises account for 97% of the total number of registered enterprises. These enterprises play an important role in generating jobs (accounting for 50% of jobs in enterprises) and contribute a significant amount to the state's budget.

In the context of enterprises, the goal of employing MIS is to increase values and profits, as well as satisfy enterprises' needs for development. MIS in enterprises provides managers with timely and accurate information, allowing them to make effective decisions in a short period of time.

In the context of economic development and integration, it is necessary to study the influence of factors on MIS in enterprises in general, and small and medium-sized enterprises in particular.

The purpose of the research is to clarify the effects of factors on MIS in enterprises in Vietnam, and the extent of those influences. As a result, we hope to raise awareness among enterprise managers about the importance of factors affecting MIS. To perfect MIS in enterprises in Vietnam, managers need to pay attention to these factors, and have an appropriate approach, so that the system provides useful information for its employer.

2. Research overview and theoretical

Information system comprises many components that operate towards a common goal of processing and storing information. This complex is important to the management of organizations, companies, etc. MIS can facilitate communication, portfolio storage, data analysis, and decision making. Nowadays, many enterprises employ state-of-the-art information systems as a useful tool to improve business performance in order to make strategic decisions to increase competitive advantages.

Past studies on factors affecting MIS

A study by Ferguson & Seow (2011) ^[4] gathers related research on MIS and its future prospects in a decade (from 1999 to 2009). The result shows that in the period from 1999 to 2009, research on models of factors affecting the MIS is a popular topic. With these models of factors that affect MIS and management information quality, enterprises would be more aware of the effect and level of influence of these factors on MIS, from which solutions could be proposed to organize these systems efficiently.

Among studies related to factors affecting MIS, there are 3 main research directions: (i) Factors affecting the usefulness of MIS; (ii) factors affecting the quality of MIS; (iii) factors affecting the organization and operation of MIS. Studies emphasize on the significance of good organization, the significance of good organization of MIS in general and economic information system when it comes to the provision of useful information for its users and facilitation of good and efficient decision making.

(i) Managers' visions and commitment

Managers' vision and commitment is one of the factors that researchers consider the most influential factors that affect the organization and performance of MIS. The commitment of managers is commonly associated with the investment and upgrade of MIS (in terms of both hardwares and softwares) so that the system performance is perfected. Besides managers' commitment to MIS, managers' commitment in general is a motivation for employees to optimize working procedures, so that information quality is better. Studies by Choe (1996) ^[15], Beydokhti *et al.* (2011) ^[3], Prihatni *et al.* (2012) ^[13], Rahayu (2012) ^[14] show that when managers' commitment level is increased, the efficiency of MIS in enterprises will be improved as more suitable information is provided according to managers' demand. On the other hand, commitment of high-level managers is an important factor to the innovation of procedures for collecting, processing information of the organization, which also ensures perfection of information quality. In Vietnam, Lien (2012) ^[11] also points out that capacity, commitment and visions of a high-level board of managers have the most significant effect on the quality of management information in the environment of ERP systems in Vietnam's enterprises. Therefore, managers' visions and commitment are one of the factors affecting MIS in organizations, and they can improve the efficiency of these systems.

(ii) Human Resources

Another factor that affects MIS is human resource, specifically employees' competency and experience. Employees competency is often affected by their qualifications and training environment. On the other hand, employees competency directly affects the collection of essential information, which is required by managers or specific tasks during the processing of information in the system. Studies by Ismail & King (2007) ^[9], and Alshbiel & Al-Awaqleh (2011) ^[2] shows that human resource is an important part in the organization and operation of enterprises' MIS. In an environment with the application of information technology, including management software and ERP, accounting employees' role in the operation of the system is even more important. Lien (2012) ^[9], Nga (2014) ^[12] confirmed MIS that human resource policy in general and accounting human resource in particular directly affects the quality of management information provided by the accounting information system in enterprises in Vietnam. Enterprises need to pay attention to the training of knowledge and skills for their employees, so that the efficiency of accounting information system and MIS is improved. Therefore, it can be concluded that human resource has an influence on enterprises' MIS.

(iii) Means of support

Means of support, including hardwares, softwares, computers, accounting softwares, management softwares, ERP softwares, has particular influence on MIS. Studies by Choe (1996) ^[15], Al-Eqab & Ismail (2011) ^[1], Beydokhti *et al.* (2011) ^[3] proved that by applying accounting softwares and management softwares to aid MIS, not only can the company's performance be improved, but they could also make better use of accounting information in their relationship with customers and suppliers. Lien (2012) ^[9] shows that the quality of ERP software has significant influences on the collection, processing, and control of input information, as well as the quality of management information provided. Thus, enterprises in general and services enterprises in particular need to pay attention to and invest in means of support to better aid MIS and to meet the requirements of its users.

(iv) Quality of system's input information

To ensure that the output information of MIS could meet the requirement of managers, input information is a factor that is positively correlated with MIS. Studies by Wang & Zhu (1995) ^[18], Lee (2003) ^[10], Xu (2009) ^[19] show that inaccurate and inadequate input information will greatly affect the credibility of output information, as well as managers' decision making and enterprises' competitiveness. The quality of MIS's input information is affected by the timeliness, accuracy, and supervision of the input of information to avoid repetition and errors. Besides, information collecting units in enterprises need to understand the quality of management information. Therefore, input information quality can also be one of the factors that affect enterprises' MIS.

To conclude the literature review, it is clear that factors affecting enterprises' MIS were mentioned by many authors, however it is rare to find a systematic study. Secondly, most of these studies are conducted in the environment of foreign enterprises, and those that are conducted in Vietnam mostly focus on specific fields, such as accounting, banking, etc. Thirdly, these studies are not universally applied for all enterprises. Thus, there is a research gap that deserves to be investigated.

3. Methodology

3.1 Sample size

This research focuses primarily on small and medium-sized enterprises that are registered in Hanoi, including 12 districts, 1 town, and 17 suburban districts (Hanoi Statistical Office, 2021) ^[6].

Based on research methods, minimum sample size was determined. Sample was determined according to Tho (2013) ^[16] (cited by Hair, Black, Babin, Anderson, and Tatham, 2006 ^[7]). The minimum sample size for the exploratory factor analysis (EFA) is 50, with the advisable amount is 100, and the ratio of observations/items is minimally 5/1. With 15 observed variables, the research expected to collect and clean 200 survey questionnaires.

3.2 Research method

Principal components analysis (PCA) is a statistical method applied to data collected according to a number of initial criteria (variables) that through the analysis process form

components. main (factors) have no correlation with each other. In principal component analysis, a set of variables that are pairwise correlated but are completely independent of subsets of other variables is factored. Therefore, the factors are formed through the processes of correlation analysis with respect to the initial set of variables. Principal component analysis is significant in reducing a large number of primary research variables to a smaller number of factors for analysis without losing essential information. In essence, principal component analysis produces a linear combination of the observed variables, each of which is called a factor.

Correlation regression method

Regression analysis is a statistical method that studies the relationship of one variable called (dependent variable or explained variable) with one or more other variables (called independent or explanatory variable)

Regression Function

$$HT = \beta_0 + \beta_1.TNCK + \beta_2.NNL + \beta_3.PTHT + \beta_4.CLDL + \epsilon$$

In which: HT: Dependent variable (MIS)

TNCK, NNL, PTHT, CLDL are respectively variables for (i) Managers’ visions and commitment, (ii) Human

Resources, (iii) Quality of system’s input information, & (iv) Means of support

β_0 : Intercept (free factors)

$\beta_1, \beta_2, \beta_3$ and β_4 : Are the respective regression weights corresponding to the explanatory variables of the model.

ϵ : Random errors

In addition, in the context of small to medium sized enterprises in Hanoi, MIS needs to meet managers’ needs for information, and suits the business characteristics of the enterprise. Therefore, to determine factors affecting MIS in small and medium sized enterprises in Hanoi, besides 4 aforementioned factors, interviews need to be taken with departments and employees that are directly relevant to the organization and operation of the system, such as accountants, general accountant, chief accountant, sales staff, board of directors, head of department, etc. This allows the model to be suitably modified to accurately and appropriately assess individual factors that affect Hanoi small and medium sized enterprises’ MIS.

By means of direct interviews, focus groups, along with previous studies of the following authors: Rahayu (2012) [14], Xu (2009) [19]. We have made a Likerts questionnaire with 5 levels: For dependent variable: From 1 - Completely disagree to 5 - Completely agree; for independent variables: From 1 - Completely insignificant to 5 - Very significant.

Research Model

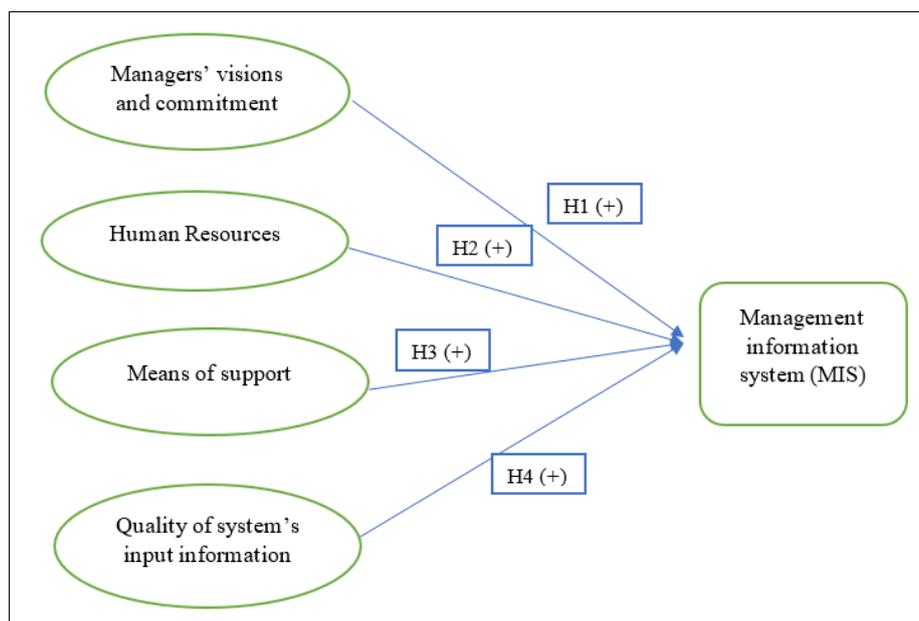


Fig 1: Research Model

Hypothesis

Hypothesis H1: Managers’ visions and commitment has an influence on management information system (MIS) in SMEs

Hypothesis H2: Human resources has an influence on management information system (MIS) in SMEs

Hypothesis H3: Means of support has an influence on management information system (MIS) in SMEs

Hypothesis H4: Quality of system’s input information has an influence on management information system (MIS) in SMEs

4. Result

Cronbach’s Alpha

Results of testing Cronbach’s alpha of Observed variables are presented in Table 1 below. The results also show that the independent variables and the dependent variables have Cronbach's Alpha coefficients that are greater than 0.6; and the correlation coefficients of all attributes are greater than 0.3. So, all the independent variables and dependent variables are statistically significant (Hair *et al*, 2010; Trong & Ngoc, 2008) [8, 17].

Table 1: Results of Cronbach’s Alpha Testing

	Number ariables	Cronbach's Alpha if Item Deleted	Corrected Item-Total Correlation	Conclusion
TNCK	3	0.754	0.469	Meet requirements
NNL	3	0.749	0.496	Meet requirements
PTHT	3	0.726	0.457	Meet requirements
CLDL	3	0.775	0.602	Meet requirements
MIS	3	0.665	0.318	Meet requirements

Regression analysis of the research model

The results of the analysis show that the correlation coefficient of this model is 0.503, which explains 50.3% of the variation of the dependent variable as a result of the 4 the independent variables. The obtained Durbin Watson

value is 1.929 which satisfies the criterion between 1 and 3, hence no first-order sequence autocorrelation. Thus, the multiple regression model meets the criteria of the evaluation and suitability test for the drawing of research results.

Table 2: Model Summary^b

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.716 ^a	.513	.503	.486	1.929

a. Predictors: (Constant): TNCK, NNL, PTHT, CSDL
 b. Dependent Variable: MIS

Table 3: Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics		
	B	Std. Error	Beta			Tolerance	VIF	
1	(Constant)	.312	.300		1.040	.300		
	F1_CLDL	.430	.053	.477	8.160	.000	.731	1.369
	F2_NNL	.212	.060	.197	3.550	.000	.815	1.227
	F3_TNCK	.204	.054	.215	3.781	.000	.770	1.300
	F4_PTHT	.096	.050	.097	1.931	.055	.995	1.005

a. Dependent Variable: MIS

Thus, the regression model reflecting the determinants influence of the management information system in small and medium-sized enterprises in Hanoi according to the unstandardized regression coefficient B is: $MIS = 0.312 + 0.430CLDL + 0.212NNL + 0.204TNCK + 0.096PTHT$.

Written according to the standardized Beta coefficient: $MIS = + 0.477CLDL + 0.197NNL + 0.215TNCK + 0.097PTHT$

In the model, the independent variables are all positively correlated, which is, the effect is positive. The variable “CLDL” has the strongest impact on the MIS, because it has the highest standardized regression coefficient that is 0.477. Next, “TNCK” has the second strongest impact with a standardized regression coefficient of 0.215. Next, “NNL” has the third strongest impact with a standardized regression coefficient of 0.197. The lowest in the model is “PTHT” which has an impact with a standardized regression coefficient of 0.097.

Generally, the effect of Managers’ visions and commitment, human resources, quality of system’s input information, & means of support on MIS is positive because Beta coefficients of the independent variables are greater than 0. All four of the theories H1, H2, H3, H4 are accepted.

Quality of system’s input information is most significantly influential with MIS. If the input data is accurate and credible, the processing and analysis of information would be more efficient, and could meet the requirements of quality as well as managers’ needs. Thus, it is necessary that SME enterprises need to organize the input of information properly and methodically. Besides, other factors including human resource, manager's vision & commitment are all positively influential to MIS in SME enterprises in Hanoi. If the quality of enterprises’ human resources is not ensured, the quality of input data could be impaired, which considerably affects management information on the output.

Managers’ vision and commitment also directly affects MIS by means of commitment of investment and upgrade of softwares, training for system operating employees, and fosters connections among departments that are directly involved in the process of providing information.

To improve IMS’s efficiency in SME enterprises, managers need to assess the effect of 4 mentioned factors, and make suitable adjustments for the enterprise’s MIS so that output information would be more useful.

5. Recommendations

5.1 Establish governance regulations for enterprise management system

Regulations on corporate governance are documents issued by enterprises and circulated internally, which stipulate ways to operate and manage enterprises. In addition, the Governance Regulation also stipulates the operation and financial management of general and financial activities and assets of the enterprise.

5.2 Improve organizational structure – functions and tasks

In this step, there are several points that managers may follow:

Outline an organization structure that aids the enterprise to achieve its goals.

Establish a common set of documents, which describe functions and tasks of the enterprise's departments.

Design job descriptions for essential positions

Design task matrix to define departments’ tasks and responsibility.

5.3 Establish finance management system

This is a vital task for any enterprise, which needs to be done as soon as the organizational structure and functions of

departments have been established. In this step, managers, along with the enterprise's professional advisors, should design procedures, regulations, instructions of management for advance payment, settlement, debt monitoring and collection.

5.4 Establish production and business management system

Production is the main source of profit for enterprises, and is the primary reason for the presence and development of enterprises. Board of managers should design structures and instructions for management of purchase, production, sales, monitor of defective products, management of inventory, processing of customers information.

5.5 Establish human resource management system

The primary input resources for organizations and enterprises are capitals and employees. Capital, in this context, is not restricted to cash, but also fixed assets that facilitate business and productions.

Enterprises should design strict and effective system to manage these 2 inputs, by means of:

Procedures, regulations and instructions of management of recruitment, training, and monitoring of employees.

Procedures, regulations and instructions of management of machinery, equipment and maintenance.

5.6 Establish Administrative system

To complete MIS, the administrative system is an important step. The board of management should design procedures, regulations, instructions of management for the enterprise's documents.

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