

The Influence of Information Technology and Systems on Managerial Performance: An Empirical Study at a Regional Bank in North Sulawesi Province

by Riane Johnly Pio 3

Submission date: 07-Aug-2020 12:03PM (UTC+0700)

Submission ID: 1366835364

File name: wesi_Province_Pada_Journal_of_Advanced_Sience_and_Technology.pdf (633.07K)

Word count: 6720

Character count: 38546

The Influence of Information Technology and Systems on Managerial Performance: An Empirical Study at a Regional Bank in North Sulawesi Province

Riane Johnly Pio
Universitas Sam Ratulangi
rianejpio@unsrat.ac.id

Abstract

This study aims to determine the influence of information technology and systems on managerial performance in a regional bank in Indonesia. The data of this study were collected using a questionnaire to 242 Bank Sulutg employees as the respondents, operating in 10 cities and districts in North Sulawesi province. Structural equation model (SEM) was used to analyse the data. The results showed that information technology significantly influenced information systems, and it has a significant effect on managerial performance, while the information technology in the banking industry has been very massive, the management is expected to maintain and improve the information technology infrastructure in accordance with the latest developments, and to conduct intensive and massive socialization for customers to create competitiveness with competitors. The novelty of this study lies in the relationship between information technology and managerial performance, and the research object of this study which was a regional bank which generally operating in the districts resulting from the expansion after the era of regional autonomy in Indonesia.

Keywords: Information Technology, Information Systems, Managerial Performance, Regional Bank, SEM

1. Introduction

Information technology (IT) has dramatically changed various aspects of human life including the aspects of business. Since the O'Reilly Team proclaimed the birth of Web 2.0 in 2004, we have been living in such a different world (Kertajaya, 2009). This new generation of internet allows us to communicate, participate, interact, share, socialize, or collaborate with each other. Long before this happened, IT could increase its user advantage and change the business landscape beyond a country's territory (Doll, 1981). The sustainability of competitive advantage is influenced by the use of IT to support the marketing function (Colgate, 1998) It provides statistical evidence to show that the use of IT is the higher the firm's performance (Smith, 1999). IT utilization has an impact on the effectiveness of personal knowledge management because of the increasing skills of technology devices utilization (Agnihotri and Trout, 2009).

IT is able to increase the speed of delivering information to consumers and facilitate the information collection about the consumer and market data (Boynton, Zmud and Jacobs, 1994); (Karimi, Somers and Gupta, 2001); Byrd and Turner (2001). Specific information systems such as managerial accounting systems explains that information technology can influence the information presented by the management accounting systems, by using information technology applications to provide information in accordance with the management needs (Davis and Albright, 2000).

The capability of an information system influences the quality of IT strategy implementation and the quality of e-business performance processes (Yeh, Lee, and Pai, 2012). Companies using information systems show that the users' commitment has a positive influence on the inputs of information systems. Further, the users' commitment also has an influence on

task technology fit, technology self-efficacy, and task autonomy (Hasan, Linger, Kim, Chan, and Gupta, 2016). Changes in IT implementation with complex interactions of various factors support situational models of IT adoption (Power and Gruner, 2015). Management information systems have an influence on better services characterized by a well-functioned, more efficient, more accurate, easier to use and portable service (Moturi, and Mbiwa, 2015).

Information systems can basically be adapted to enterprise systems. There are four main functions of enterprise systems such as manufacturing and production, financial and accounting, human resource and sales and marketing (Laudon and Laudon, 2013). The implementation of information systems on financial and accounting functions can be realized in the form of accounting management systems. Management of the accounting system has a direct relationship with managerial performance. However, with the existence of competition, the management accounting systems become such a mediator to the managerial performance (Ghasemi et al. 2016). In a different context, managerial competencies have an influence on the managerial performance evaluation process (Abraham et al, 2001). On the other hand, the management of accounting information systems has an influence on the relevant information from work for decision making so as to improve the managerial performance (Chong, 2004).

Several previous studies have examined information technology, information system, managerial performance is Laudon and Laudon (2013), McLeod and Schell (2007), Christiansen and Mouritsen (1995), Hakim and Fernandes (2017), Solimun and Fernandes (2017), Limba et al. (2019), Hutagaol and Yufra (2019), Fernandes and Fresly (2017), Fernandes and Solimun (2017), Gibson et al. (2003), Guimaraes et al. (2003), Martin et al. (1994), Agnihotri and Troutt (2009), Smith (1999), Smith, and Rupp (2004), Christiansen and Mouritsen (1995), Haag and Cummings (2012), Hammad et al. (2013).

Research Objectives

This study aims to understand:

- The influence of information technology on information systems;
- The influence of information technology on managerial performance;
- The influence of information system on managerial performance;

2. Theoretical Background and Hypotheses Development

Information Technology

Until the XX century, almost all data processing activities were still done manually (Scott, 2002). The embryo of the use of computer as a data processor to be such a useful information for decision makers in organizations began with the use of the first-generation computers limited to accounting applications. In 1964, a new generation of calculators was introduced which influenced the use of computers (McLeod and Schell, 2007). These tools changed the concept of computer use from only being a calculation tool to expanded accounting applications to management information systems used to assist the management in processing data into information for management decision-making purposes.

Computer as a technology is one of information technologies that has a lot of influences on the organizational information systems, as computer-based information systems provides information presented on time and accurately. Further, a large amount of useful information can be collected and reported to the manager immediately and any moments happened in various parts can be recognized instantly. Thus, the management can make decisions more quickly (Mowen and Hansen, 2005). IT can also be used for work integration, both vertical and horizontal integration (Martin et al. 1994) and help companies in obtaining competitive information (McLeod and Schell, 2007). IT can present information in a useful form, be used to send information to other people or to other locations, integrate data from various parts, reduce

clerical work, and accelerate the presentation of data needed for decision making (Dawkins and Cummings, 2000).

IT is beneficial to (1) mechanize the duties of the accounting department, such as reporting and data collection; (2) provide a more complex database, resulting in available non-financial information, such as related product, consumer, production process information; (3) make plans tailored to the situation (Christiansen and Mouritsen, 1995).

Information System

Primarily, information systems are highly dependent on the availability of data. The data is a compilation of facts and figures that are not being used in the decision process, and are usually in the form of recorded and archived historical records which are not meant to be taken back for decision making purpose. While information consists of data that has been retrieved, processed or otherwise and used for informative purposes or conclusions, arguments or as a basis for forecasting or decision making (Murdick, Ross., and Claggett, 2009). Basically, an information system receives and processes data, then converts it into information (Scott, 2002). This information processing is what so called a system, consisting of three components, namely input, process, and output (Setyani, 1998).

Management information systems provide a collection of information or a design of a series of alternative actions, and they decide to choose the best actions from available alternatives, implement choices and monitor the results of activities (Kristanto, 2003). Continuous efforts need to be made to maintain and improve the quality of developed systems for the information systems development is a very expensive investment. However, expensive systems do not necessarily show the expected quality systems (Guimaraes et al., 2003). A quality system will drive the success of the system implementation which results in an increase in overall performance, concerning employees, leaders, owners, and the organization itself.

A system is considered to be running effectively, because it can meet the needs and desires of various constituents in the organization, both individually and in groups (Gibson et al. 2003); (Guimaraes et al., 2003). The development of information systems is a very strategic decision. In addition to this such a huge investment, there are many other factors that must be considered. Information systems must be developed to meet the needs and desires of the users (Guimaraes et al., 2003). Thus, active participation from users is needed so that it will develop and run effectively.

The understanding of system users in system development has a positive relationship with the success of a system (Ives and Olson, 1984); (Guimaraes et al., 2003). A success of a system has three benchmarking components, namely system quality, system benefits and user satisfaction (Guimaraes et al., 2003). This statement shows that a success in developing information systems is related to the users determined by the extent to which their understanding can lead to satisfaction in the success of the system. In a system developer community, understanding is the factor that must be considered to ensure user satisfaction to support the success of the system (McKeen and Guimaraes, 1997).

One factor that needs to be observed in the development of information systems is human resources (HR). The development of information systems that ignore the readiness of HR can result in ineffective and counterproductive systems (McKeen and Guimaraes 1997). The users may feel disappointed and show dysfunctional behavior during the system implementation and development due to their opinions and expectations ignored by the developers (Gibson et al., 2003). If the developer ignores the inherent success factors, namely the needs and other requirements proposed by the user, it can cause a low priority of the system, resulting it to have a high chance of failure (Robey et al., 1989) and (Ambler, 2002). Expensive systems designed and assembled without involving users will rarely be implemented or if so, the system will not run effectively (Dodd and Carr, 1994). An expensive system failure is mostly caused by organizational factors and users' behavior during the system development. The users' involvement is very useful to improve the technical performance of the information system and to increase the user acceptance and the benefits of the system itself.

Information system users will be faced with various programmed decisions compared to the unprogrammed ones (Gibson et al. 2003). A holistic understanding regarding users is needed such as readiness of knowledge, skills and expertise possessed and the needs of users. Based on the mechanism, according to Barki and Hartwick (1994), participation can be done in the following ways: (1) directly (personal activities) or indirectly (representatives); (2) formally (groups, meetings and formal mechanisms) and informally (relationships, discussions and informal assignments); (3) individually (activities carried out alone) or by sharing (done together). Understanding both directly and individually will be easier to implement in organizations designed with a flat structure, but not in the case with organizations with high hierarchical structures (Jones, 2003). Besides having motivational benefits, it is also beneficial for organizational control. Organizational control is intended to confirm whether the realization of performance is in accordance with the target. The users' involvement in system development will provide an overview of the target or development goals and mechanisms to make it happen. Understanding will encourage the achievement of individual effectiveness, then it will encourage the effectiveness of the group and in turn, it will lead to organizational effectiveness (Gibson et al. 2003).

Managerial Performance

The role of managers, according to Henry Mintzberg in Robbins and Judge (2013), is to do ten roles in the organization which can also be grouped into three major roles, namely: (1) interpersonal; (2) informational; (3) decision maker. In this context, managerial performance can be seen and measured. Therefore, it may have to be distinguished from the economic performance of the unit for which the manager is responsible for (Hammad, Jusoh, and Ghozali, 2013). Laitinen (2009) argued that the nature of managerial work (eg. negotiating, recruiting, training, innovating, and contacting individual managers) strongly influences the importance of information as each managerial work has specific information needs and there is no ordered or systematic way to perform these works.

In a system approach, the various functions that exist within the organization will be interconnected and interdependent. In this area, the information will flow, causing higher interdependence, and the more complex information needed. Organizational units not only need information relating to their own units, but also information relating to other units. In such situations and conditions, the role of the leader represented by functional managers is highly needed to coordinate and regulate the flow of information needed by each unit and individual within the organization.

Management information systems can be used to reduce the influence of interdependence. Broad-scope-information provided by management can help managers with various alternative solutions to be used as a source of decision making (Bouwens and Abernethy, 2000). This will provide opportunities for managers to understand the problems better (Abernethy and Guthrie, 1994). Besides, performance evaluations in organizational units with a high level of interdependence will be assisted with the information that has abroad scope.

Measures of performance on with a degree of interdependence will be very useful if they include the measures to assess the reliability, cooperation, and flexibility of division managers (Hayes, 1977). The use of inappropriate information in measuring performance often results in bad behavior, and negative consequences (Mulyadi and Setyawan, 2001). The managerial advantage of technological advancements is information technology and the development of software for obtaining, storing, and analyzing information that makes decision making easier experiences a progress at an exponential pace. It is important for managers to take advantage of the information technology and keep updated with the latest innovations (Sekaran and Bougie, 2016).

Interdependence has the potential to create distance or information gaps for decision makers. This gap may occur because there is a less available information needed for decision

making (Bouwens and Abernethy, 2000). If this happens, decision makers are faced with uncertainties. However, if there is an availability of management information systems to reduce these uncertainties. The existed integrated information in the management information systems will help managers to make effective decisions which will have an impact on organizational performance.

Hypothesis

IT can provide information in accordance with the management needs (Davis and Albright, 2000). IT also has an effect on organizational information systems because with computer-based information systems, information can be presented on time and accurately (Mowen and Hansen, 2005). Further, IT can also be used for work integration, both vertical and horizontal integration (Martin et al. 1994). It can also help companies obtaining competitive information (McLeod and Schell, 2007). The use of IT increases the effectiveness of personal knowledge management (Agnihotri and Troutt, 2009). In addition, the use of IT also improves the company general performance each year as it implements information systems as a tool of management (Smith, 1999). For these reasons, the hypothesis that can be proposed is as follows:

H 1. Information technology has a positive influence on information systems.

The use of information technology contributes to the measurement of management system performance (Smith, and Rupp, 2004). One of the IT benefits is making plans tailored to the situation (Christiansen and Mouritsen, 1995). The scope of IT benefits related to plan maker is primarily to provide support for managerial performance. IT plays a role in the integration of work, both vertically and horizontally (Martin et al. 1994). IT enables useful needed information to present for decision making (Haag and Cummings, 2012). Further, decision making is one of the managerial roles. Therefore, directly and indirectly, the above explanation implicitly recognizes the influence of IT on managerial performance. Thus, the hypothesis that can be proposed is as follows:

H 2. Information technology has a positive influence on managerial performance.

Information systems as part of enterprise systems indirectly contribute to the management success (Laudon and Laudon, 2013). However, as a part of financial and accounting, management accounting systems as a part of information systems have a direct relationship with managerial performance (Ghasemi et al., 2016). The management of accounting information systems has an influence on relevant information from work for decision making so as to improve the managerial performance (Chong, 2004). It is also inline with the results of a research by Hammad, Jusoh and Ghazaly (2013) which showed that accounting management systems had an effect on managerial performance. Job-relevant information system for decision-making leads to improved managerial performance (Chong, 2004). Based on these reasons, the following is the hypothesis that can be proposed:

H 3. Information systems have a positive influence on managerial performance.

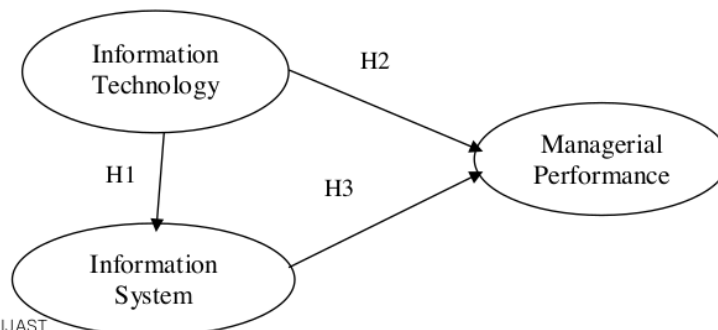


Figure 1. Conceptual Research Model

Information systems as part of enterprise systems indirectly contribute to the management success (Laudon and Laudon, 2013). However, as a part of financial and accounting, management accounting systems as a part of information systems have a direct relationship with managerial performance (Ghasemi et al., 2016). The management of accounting information systems has an influence on relevant information from work for decision making so as to improve the managerial performance (Chong, 2004). It is also inline with the results of a research by Hammad, Jusoh and Ghazaly (2013) which showed that accounting management systems had an effect on managerial performance. Job-relevant information system for decision-making leads to improved managerial performance (Chong, 2004). Based on these reasons, the following is the hypothesis that can be proposed:

H 3. Information systems have a positive influence on managerial performance.

3. Research Method

This research was conducted at PT Bank Sulutgo which was based in Manado as the head office. Bank Sulutgo has branch and sub-branch offices in all cities and districts of North Sulawesi and Gorontalo provinces as well as several cities in Indonesia. However, in this study, the location of the research object was only in the province of North Sulawesi. The population of this study was all employees of Bank Sulutgo which reached 1.865 people. The Slovin formula in Sekaran and Bougie (2016) was used to determine the sample size and it was obtained a total sample of 242 respondents. Likert scale was used to measure the category and rank and distance of constructs. The data was analyzed using SEM based on these following reasons: (1) the study used a structural model with tiered causality relationships; (2) the variables in this study were unobservable where as they were measured based on several indicators; (3) it was a method that was directly related to multiple relationships simultaneously while also provided efficiency in statistical analysis.

The characteristics of respondents included: age, gender, education, marital status, number of family members, and length of work. An overview of the characteristics of respondents is shown in Table 1. where there are 55% male and 45% female employees. Most of them are 21 years to 40 years which equals to 90%. The respondents generally have an undergraduate degree (71%), where their marital status is married (68%) and single (21%). The highest number of family members is 3 people (28%). Most of their length of work is in the range of 5 to 10 years (48%).

Table 1. Sample Characteristics

No.	Type of Characteristic	Sub- Characteristic	Frequency	Presentage	
				Sub Total	Total
1.	Age	< 20			
		21 – 30	114	47	100
		31 – 40	104	43	
		41 – 50	18	8	
		51 – 60	6	2	
2.	Gender	Male	133	55	100
		Female	109	45	

3. Educatio	Senior High School	46	19	100
	Associate Degree Diploma	8	3	
	Bachelor Degree	171	71	
	Master Degree	3	1	
	Not Specified	14	6	
4. Marital Status	Married	165	68	100
	Single	52	21	
	Divorced	2	1	
	Not Specified	23	10	
5. Number of Family Member	One	14	6	100
	Two	51	21	
	Three	69	28	
	Four	39	16	
	Five	14	8	
	Six	3	1	
6. Length of work	Not Specified	52	20	100
	< 5 years	66	27	
	5 -10 years	115	48	
	11 – 15 years	29	12	
	16 - 20 years	4	2	
	> 20 years	7	3	
	Not Specified	21	8	

Source: Processed Primary Data, 2018

4. Result and Analysis

4.1. Testing of Assumption and Goodness of Fit Indices in SEM

Testing the linearity assumption was done by the Curve Fit method, and calculated by using SPSS software. The reference used was the parsimony principle where (1) shows that the linear model is significant and (2) shows that the linear model is non-significant. However, all possible models are also non-significant. The model specifications used as the basis for testing were linear, quadratic, cubic, inverse, logarithmic, power, compound, growth, and potential models.

Table 2. Testing of Linearity Assumptions

Relationship	Test Result	Conclusion
X1 → Y1	Significant Linear Model (Linear Sig 0.000 <0.05)	Linier
X1 → Y2	Significant Linear Model (Linear Sig 0.000 <0.05)	Linier
Y1 → Y2	Significant Linear Model (Linear Sig 0.000 <0.05)	Linier

Source: Processed Primary Data, 2018

From the table above, there are three relationships between variables (three hypotheses), all models are linear significant, because the sig (p-value) of the linear model is smaller than 0.05, therefore, the linearity assumption is fulfilled. Thus, the three relationships between variables in this study are in linear form, then SEM could be used.

4.2. Goodness of Fit Indices in SEM

The feasibility of the research model can be indicated by looking at the analysis of the coefficient of determination of multivariate expressed by Q-Square (Q²). Q-Square is a measure of how well the observations made contribute to the research model. Q² > 0 indicates that the model has a predictive relevance. The criteria for the model fitness are measured based on predictive relevance Q-square values, ranging from 0 (zero) to 1 (one) (Ghozali and Latan, 2012). The closer it gets to 0 (zero), the Q-Square predictive relevance value provides a clue that the research model is getting weaker. On the contrary, the further it gets from 0 (zero) and the closer it gets to 1 (one), it means that the research model is getting better. Based on R² value, the Q² or Stone Geiser Q-Square test can be calculated as follows:

$$Q^2 = 1 - (1 - R_1^2)(1 - R_2^2)(1 - R_3^2)$$

$$Q^2 = 1 - (1 - 0.780)(1 - 0.685)(1 - 0.077)$$

$$Q^2 = 0.9360 = 93.6\%$$

The calculation results show a predictive-relevance value of 0.8664 or 93.6%. The predictive value of relevance of 93.6% also indicates that the diversity of data that can be explained by the model is 93.6%. In other words, only 93.6% of information in the data can be explained by the model and the rest 6.4% is explained by other variables (which have not been contained in the model) and errors. Thus, the structural model is in accordance with what has been formed.

4.3. Inner Model

The second part of SEM analysis was the interpretation of structural models. The structural model presents the relationship between the research variables. The structural model coefficient shows how big the relationship between variables one to the other variables is. There is a significant influence between variables one on the other variables if the P-value is < 0.05. In SEM, there are two effects named direct and indirect effect. The results of the direct effect of the analysis are summarized in Table 3, below.

Table 3. Structural Model of SEM: Direct Effect

No.	Relationship	Coefficient	P-value	Conclusion
1.	Information Technology on Information System	0.883	<0.001	Signifikan
2.	Information Technology on Managerial Performance	0.479	<0.001	Signifikan
3.	Information System on Managerial Performance	0.364	<0.001	Signifikan

Source: Processed Primary Data, 2018

5. Discussion

The results showed that there is a significant influence of information technology on information systems. Thus, the hypothesis stating that information technology has a significant influence on information systems is accepted. This means that the success of the information system at Bank Sulutgo would be influenced by information technology. The fast and massive development of information technology, including computers, which were an important part of office equipment in the digital era, had a very positive impact on the information system of an organization. The latest information system was in separable from the support of good information technology for information would be presented and accessed quickly and easily if it was supported by information technology infrastructure with a high capacity and speed. This is in line with PT Bank Sulutgo's service needs which was the research object, where their work characteristics were fast and accurate as they involved financial services.

Each year, the data processing needs of each business organization experience a development in accordance with the changes in the business environment. It is also influenced by the development of information technology as what was argued by Laudon and Laudon (2013) that there had been an evolution of information technology infrastructure since 1952, and in the era of 2000 to this day, the growth of 'bandwidth power' and the internet had been faster, including the 'cloud computing'. Therefore, it was true that there was a saying stating that "until the XX century, almost all data processing activities are still done manually" (Scott, 2002). Since entering the 21st century, changes in information technology infrastructure had been driven by the developments in computer processing, memory chips, storage devices, telecommunications and networking hardware and software (Laudon and Laudon, 2013).

The results of this study showing that there is an influence of information technology on information systems are in accordance with what had been stated by Mowen and Hansen (2005); McLeod and Schell, (2007) and Haag and Cummings (2012). In general, Christiansen and Mouritsen (1995) explained that information technology was useful to provide more complex databases, resulting in non-financial information to be available, such as the information related to products, consumers, production processes. Based on the above explanation, the information technology indeed made a vital contribution to the company's information system because it was the center of the organization's database.

This study found that information technology has a significant and positive influence on managerial performance. This revealed that the success of managerial performance could be influenced by the use of information technology devices. Managers basically did various tasks required by the organization to achieve the predetermined goals. The activities carried out and handled by managers were a problem-solving type in business. In the context of organizational activities, in the digital era, according to Laudon and Laudon (2013), organizations and information technology had a relationship called 'the two-way relationship between organizations and information technology'. This process facilitated various factors within the organization including the management decision making.

The decision-making process must be supported by appropriate and accurate information. In a modern organization condition, information technology support was such a necessity, so that the decision-making process was on target. In the late 1960s Mintzberg in Robbins and Judge (2013) stated that there were three major roles in the organization, namely: (1) interpersonal; (2) informational; and (3) decision maker. Based on the explanation above, the role of decision making and informational role would be carried out effectively if they were supported by an accurate and fast information. The speed and accuracy of information for the latest business landscape had become such a necessity and needs to be supported by the latest information technology. In a broader context such as the more complex quality organizational performance, the role of technology was very important. As revealed by Perez-Arostegui, Benitez-Amado and Tamayo-Torres (2012), information technology had an impact on the managerial knowledge, corporate strategy and overall complements leadership needs. Therefore, according to Sekaran and Bougie, (2016), it was very important for the managers to understand the information technology and the development of the latest innovations in order to provide benefits to the organization.

This study also found that information systems have a significant and positive influence on the managerial performance. Thus, the hypothesis stating that the information system has a positive effect on managerial performance is accepted. Therefore, this study supports what had been stated by Laudon and Laudon (2013) that information systems had an impact on the organization. The results of the study by Cui et al. (2016) found that management information systems were able to improve organizational performance, especially in several hospitals in China. A research conducted by Hammad, Yusoh and Ghazali (2013) also found that accounting information systems had an influence on managerial performance in hospitals operating in Egypt. Pobaroyen and Poorundersing (2008) revealed that the accounting information systems also had a significant and positive effect on managerial performance. In line with other researchers, the results of the research by Ghasemi et al. (2016) found that the

accounting information system had an effect on managerial performance. Thus, the results of this study provide such a reinforcement to the theory and results of previous studies.

6. Conclusions and Implications

Based on the results of the analysis described earlier, it could be concluded that: first, there is a significant and positive influence of information technology on the information system. Thus, the level of the information system would be greatly influenced by the use of information technology. Second, there is a significant and positive influence of information technology on managerial performance. This showed that the high utilization of information technology would affect the managerial performance. This also indicated that the lower the utilization of information technology, the lower the managerial performance. Third, there is a significant and positive influence of information systems on managerial performance. This explained that managerial performance obtained a positive contribution from the information systems. There are several recommendations that can be proposed. First, the use of information technology in the work process needs to be improved to be in accordance with the development of information technology itself to provide benefits to information system services and also to have a positive impact on managerial performance. Second, an intensive and massive socialization is needed for internal and external consumers, so that the use of information technology-based services can be utilized as optimally as possible. Third, as the development of information technology is getting faster and more massive, then to maintain the corporate sustainability requires a policy to prioritize the improvement of information technology infrastructure, so that the internal information system services are more efficient and the services for external parties become more effective.

Acknowledgments

We would like to thank Universitas Sam Ratulangi for each support for this research.

References

- [1] Abernethy, M. A., and Guthrie, C. H. An Empirical Assessment of the “Fit” Between Strategy and Management Information System Design. *Accounting and Finance*, Vol. 34, No. 2, (1994), pp. 49-66.
- [2] Abraham, S. E., Karns, L. A., Shaw, K. and Mena, M. A. Managerial Competencies and the Managerial Performance Appraisal Process. *Journal of Management Development*, Vol. 20, Issue.10, (2001), pp.842-851.
- [3] Agnihotri, R. and Troutt, M. D. The Effective Use of Technology in Personal Knowledge Management: A Framework of Skills, Tools and User Context. *Online Information Review*, Vol. 33, Issue. 2, (2009), pp. 329-342.
- [4] Ambler, S. W. Know The User Before Implementing A System. *Computing Canada*, Vol. No. 3, (2002), pp. 13.
- [5] Barki, H., and Hartwick, J. Measuring User Participation, User Involvement, and User Attitude. *MIS Quarterly*, Vol. 18, No. 1, (1994), pp. 59-82.
- [6] Bouwens, J. and Abernethy, M. A. The Consequences of Customization on Management Accounting System Design. *Accounting Organization and Society*, Vol. 25, No. 3, (2000), pp. 221-241.
- [7] Boynton, A. C. Zmud, R. W. and Jacobs, G. C. The Influence of IT Management Practice on IT Use in Large Organizations. *MIS Quarterly*, Vol.29, (1994), pp. 299-324.
- [8] Byrd, T. A., and Turner, D. E. An Exploratory Examination of the Relationship Between Flexible IT Infrastructure and Competitive Advantage. *Information & Management*, Vol. 39, (2001), pp. 41-52.

- [9] Chong, V. K. Job-Relevant Information and its Role With Task Uncertainty and Management Accounting Systems On Managerial Performance. *Pacific Accounting Review*, Vol. 16, Issue, 2, (2004), pp.1-22.
- [10] Christiansen, J., and Mouritsen, J. Management Information Systems, Computer Technology and Management Accounting. In D. Ashton, T. Hopper & R. W. Scapens (eds.), *Issues in Management Accounting*, (1995), pp. 215-235). London: Prentice Hall.
- [11] Colgate, M. Creating Sustainable Competitive Advantage Through Marketing Information System Technology: A Triangulation Methodology With in the Banking Industry. *International Journal of Bank Marketing*, Vol. 16, Issue.2, (1998), pp.80-89.
- [12] Cui, Y., Wu, Z., Lu, Y., Jin, W., Dai, X., and Bai, J. Effect of the Performance Management Information System in Improving Performance: An Emperical Study in Shanghai Ninth People's Hospital. Springer Plus, 5:1785, (2016), pp. 1-8.
- [13] Davis, S., dan Albright, T. The Changing Organizational Structure and Individual Responsibilities of Managerial Accountants: A Case Study. *Journal of Managerial Issues*, 12, No.4, (2000), pp. 446-467.
- [14] de Leeuw, S., Van Donk, D. P., de Koster, R., Power, D., & Gruner, R. L. Exploring reduced global standards-based inter-organisational information technology option. *International Journal of Operations & Production Management*, (2015).
- [15] Robey, D., Forrow, D. L., dan Frans, C. R. Group Process and Conflict in System Development. *Management Science*, Vol. 35, No. 10, (1989), pp. 1172-1191.
- [16] Dodd, J. L., and Carr, H. H. System Development Led by End-User. *Journal of System Management*. Vol. 45, No. 8, (1994), pp. 34-40.
- [17] Doll, R. Information Technology and Its Socio Economic and Academic Impact. *Online Review*, Vol. 5, Issue. 1, (1981), pp.37-46.
- [18] Hoseini, R., Mohamad, N. A., Karami, M., Bajuri, N. H., and Asgharizade, H. The Mediating Effect of Management Accounting System on The Relationship Between Competition and Managerial Performance. *International Journal of Accounting and Information Management*. Vol. 24 No. 3, (2016), pp. 272-295.
- [19] Ghozali, I .dan Latan, H. Partial Least Square: Concept, Techniques and Smart PLS 2.0 Applications. Badan Penerbit Universitas Diponegoro, Semarang. (2012).
- [20] Gibson, L. J., Ivancevich, J. M., and Donnelly, J. H. Organization: Behavior, Structure and Process. 10th Edition. Irwin. Chicago. (2003).
- [21] Guimaraes, T., Staples, D. S., and Mckeen, J. D. (2003). Empirically Testing Some Main User-Related Factors for System Development Quality. *Quality Management Journal*. Vol. 45, issue 4,. Pp. 39-50.
- [22] Cummings, M., & Dawkins, J. *Management information systems for the information age*. Irwin/McGraw-Hill (2000).
- [23] A Hammad, S., Jusoh, R., and Ghozali, I. Decentralization, Perceived Environmental Uncertainty, Managerial Performance and Management Accounting System Information in Egyptian Hospitals. *International Journal of Accounting and Information Management*, 21 No. 4, (2013), pp. 314-330.
- [24] Hayes, D. C. The Contingency Theory of Managerial Accounting. *The Accounting Review*, 27(77), pp.22.
- [25] Ives, B., and Olson, M. H. User Involment and MIS Success: A Review Research. *Management Science*, Vol. 30, No. 5, (1984), pp:586-603.
- [26] Jones, G. R. Organization Theory. 3rd Edition. Prentice Hall. New York. (2003).
- [27] Karimi, J., Somers, T. M., and Gupta, Y. P. Impact of Information Technology Management Practices on Customer Service. *Journal of Management Information System*, Vol.17, No.4, (2001), pp. 125-158.
- [28] Kertajaya, H. Mark Plus Basic. (2009).
- [29] Hasan, H., Linger, H., Kim, H. W., Chan, H. C., & Gupta, S. Examining information systems infusion from a user commitment perspective. *Information Technology & People*. (2016).

- [30] Kristanto, A. Information System Design and Its Application. Penerbit Gava Media, Yogyakarta. (2003).
- [31] Laitinen, E. K. Importance of Performance Information in Managerial Work. *Industrial Management & Data Systems*, Vol. 109, No. 4, (2009), pp. 550-569.
- [32] Laudon, K. C., and Laudon, J. P. *Management Information System*. Twelfth Edition, Pearson Education Limited, London. (2013).
- [33] Limba, R.S., Hutahayan, B., Solimun, & Fernandes, A.A.R. (2019), "Sustaining innovation and change in government sector organizations: Examining the nature and significance of politics of organizational learning", *Journal of Strategy and Management*, Vol 12 No 1, pp 103-115.
- [34] Hutahayan, B., Yufra, S. (2019), Innovation speed and competitiveness of food small and medium-sized enterprises (SME) in Malang, Indonesia: Creative destruction as the mediation, *Journal of Science and Technology Policy Management*, Vol. 10 No. 5, pp. 1152-1173.
- [35] Martin, E. W., Brown, C. V., Hoffer, J. A., Perkins, W. C., & DeHayes, D. W. *Managing information technology: What managers need to know*. Prentice Hall PTR. (1998).
- [36] McKeen, J. D., and Guimares, T. Successful Strategies for User Participation in Systems Development. *Journal of Management Information System*, No. 14, Vol. 2, (1997), pp. 133-150.
- [37] McLeod, R., & Schell, G. P. *Management information systems*. USA: Pearson/Prentice Hall. (2007).
- [38] Mowen, M. M., & Hansen, D. R. *Management accounting: the cornerstone for business decisions*. Thomson South-Western. (2005).
- [39] Mulyadi, and Setyawan. J. Management Planning and Control System. Universitas Gadjah Mada, Yogyakarta. (2001).
- [40] Murdick, R. G., Ross, J. R., and Claggett, J. R. *Information Systems for Modern Management*. Third edition. PHI Learning, New Delhi. (2009).
- [41] Muturi, D., Ho, S., Douglas, A., Moturi, C., & Mbiwa, P. An evaluation of the quality of management information systems used by SACCOS in Kenya. *The TQM Journal*. (2015).
- [42] Perez-Arostegui, M. N., Benitez-Amado, J., and Tamayo-Torres, J. Information Technology-Enabled Quality Performance: An Exploratory Study. *Industrial Management & Data Systems*. Vol. 112 No. 3, (2012), pp. 502-518.
- [43] Robbins, S. P., and Judge, T. A. *Organizational Behavior*. 15th ed, Pearson Education, Inc., Prentice Hall, Saddle River, New Jersey. (2013).
- [44] Scott, G. M. Principles of Management Information Systems. McGraw-Hill. Singapore. (2002).
- [45] Sekaran, U. and Bougie, R. *Research Methods for Business*. Seventh Edition. John Wiley & Sons Ltd, Chichester, West Sussex, United Kingdom. (2016).
- [46] Setyani, N. S. Application of Operational Management Information System (SIMOP) Kantor Pegadaian Office as an Effort to Increase Customer Satisfaction. Thesis, Universitas Unibraw, Malang. (1998).
- [47] Smith, J. Information Technology in the Small Business: Establishing the Basis for a Management Information System. *Journal of Small Business and Enterprise Development*, Vol. 6, Issue. 4, (1999), pp. 326-340.
- [48] Smith, A. D., and Rupp, W. T. Managerial Challenges of e-Recruiting: Extending the Life Cycle of New Economy Employees. *Online Information Review*, Vol. 28 Issue.1, (2004), pp.61-74.
- [49] Soobaroyen, T., and Poorundersing, B. The Effectiveness of Management Accounting Systems: Evidence From Functional Managers in A Developing Country. *Managerial Auditing Journal*, Vol. 23 No. 2, (2008), pp. 187-219.

- [50] Solimun, Fernandes, A.A.R. (2017). "Investigate the Instrument Validity Consistency Between Criterion Validity and Unidimensional Validity (Case Study in Management Research)", *International Journal of Law and Management*, Vol 59 No 6, pp 1-10.
- [51] Fernandes, A.A.R., Solimun. (2017). "Moderating effects orientation and innovation strategy on the effect of uncertainty on the performance of business environment", *International Journal of Law and Management*, Vol 59 No 6, pp 81-95.
- [52] Hakim, W., Fernandes, A.A.R. (2017), "Moderating effect of organizational citizenship behavior on the performance of lecturers", *Journal of Organizational Change Management*, Vol 30 No 7, pp 1136-1148.
- [53] Fernandes, A.A.R., Fresly, J. (2017), "Modeling of role of public order, open government information and public service performance in Indonesia", *Journal of Management Development*, Vol 36 No 9, pp 1160-1169.
- [54] Yeh, C. H., Lee, G. G., and Pai, J. C. How Information System Capability Affects E-Business Information Technology Strategy Implementation: an Empirical Study in Taiwan. *Business Process Management Journal*, Vol. 18, Issue. 2, (2012), pp.197-218.

The Influence of Information Technology and Systems on Managerial Performance: An Empirical Study at a Regional Bank in North Sulawesi Province

ORIGINALITY REPORT

20%

SIMILARITY INDEX

16%

INTERNET SOURCES

14%

PUBLICATIONS

%

STUDENT PAPERS

PRIMARY SOURCES

1

www.scribd.com

Internet Source

1%

2

www.ieru.org

Internet Source

1%

3

Rekson S. Limba, Benny Hutahayan, Adji Fernandes. "Sustaining innovation and change in government sector organizations", Journal of Strategy and Management, 2019

Publication

1%

4

www.ijafb.com

Internet Source

1%

5

Shim, . "Management Information Systems and Decision-Making Models", Information Systems and Technology for the Noninformation Systems Executive An Integrated Resource Management Guide for the 21st Century, 2000.

Publication

1%

Widi Hariyanti, Pupung Purnamasari, Magnaz

6

Lestira O. "Pluriform Motivation as Antecedent and its Relationships to Budgeting Participation and Managerial Performance (Empirical Study on Manufacturing Companies Listed on Indonesian Stock Exchange)", *Procedia - Social and Behavioral Sciences*, 2015

Publication

<1%

7

repo.unsrat.ac.id

Internet Source

<1%

8

iosrjournals.org

Internet Source

<1%

9

Laura Lucia-Palacios, Victoria Bordonaba-Juste, Yolanda Polo-Redondo, Marko Grünhagen. "E-business implementation and performance: analysis of mediating factors", *Internet Research*, 2014

Publication

<1%

10

Bindu Gupta. "A comparative study of organizational strategy and culture across industry", *Benchmarking: An International Journal*, 2011

Publication

<1%

11

jurnal.ugm.ac.id

Internet Source

<1%

12

cpaaustralia.com.au

Internet Source

<1%

13	dspace.zcu.cz Internet Source	<1%
14	www.emeraldinsight.com Internet Source	<1%
15	www.locusassignments.com Internet Source	<1%
16	www.scilit.net Internet Source	<1%
17	www.icaew.com Internet Source	<1%
18	km-tools-and-vmware.fandom.com Internet Source	<1%
19	www.essex.ac.uk Internet Source	<1%
20	www.springerprofessional.de Internet Source	<1%
21	www.mdpi.com Internet Source	<1%
22	www.pomsmeetings.org Internet Source	<1%
23	Internet Research, Volume 23, Issue 3 (2013-05-27) Publication	<1%

24

www.studypool.com

Internet Source

<1%

25

Riane Johnly Pio, Florence Daisy Jetty Lengkong. "The relationship between spiritual leadership to quality of work life and ethical behavior and its implication to increasing the organizational citizenship behavior", Journal of Management Development, 2020

Publication

<1%

26

www.lunwenxue.com

Internet Source

<1%

27

etd.lib.nsysu.edu.tw

Internet Source

<1%

28

Barbara Hewitt, Diane B. Walz, Alexander McLeod. "The Effect of Conflict and Knowledge Sharing on the Information Technology Project Team Performance", International Journal of Knowledge Management, 2020

Publication

<1%

29

fedetd.mis.nsysu.edu.tw

Internet Source

<1%

30

www.flexmba.dk

Internet Source

<1%

31

www.ijmas.org

Internet Source

<1%

32	nihss.ac.za Internet Source	<1%
33	myassignmenthelp.com Internet Source	<1%
34	Fadli. "The Success Model of TQM on Managerial Performance", IOP Conference Series: Materials Science and Engineering, 2019 Publication	<1%
35	D. Fakun. "How to mitigate the significant negative influence of computer anxiety on ease of use perceptions", Behaviour & Information Technology, 2009 Publication	<1%
36	ajbasweb.com Internet Source	<1%
37	lrd.yahooapis.com Internet Source	<1%
38	www.gujaratuniversity.org.in Internet Source	<1%
39	www.garsonline.de Internet Source	<1%
40	www.jiem.org Internet Source	<1%

41	www.pucsp.br Internet Source	<1%
42	unionopac.cusat.ac.in Internet Source	<1%
43	aisel.aisnet.org Internet Source	<1%
44	Jacob G. Birnberg, Lawrence Turopolec, S.Mark Young. "The organizational context of accounting", Accounting, Organizations and Society, 1983 Publication	<1%
45	tojde.anadolu.edu.tr Internet Source	<1%
46	www.idrc.ca Internet Source	<1%
47	res.mdpi.com Internet Source	<1%
48	ir.lib.uwo.ca Internet Source	<1%
49	www.rug.nl Internet Source	<1%
50	Fahmi Junizar, Sudiyono Sudiyono. "THE EFFECTIVENESS BETWEEN DISCOVERY LEARNING AND WORD WALL METHODS IN	<1%

IMPROVING VOCABULARY AT SEVENTH GRADE STUDENTS", PROJECT (Professional Journal of English Education), 2020

Publication

51

onlinelibrary.wiley.com

Internet Source

<1%

52

researchleap.com

Internet Source

<1%

53

ar.scribd.com

Internet Source

<1%

54

hdl.handle.net

Internet Source

<1%

55

that.christianlovedating.com

Internet Source

<1%

56

library.mpifg.de

Internet Source

<1%

57

ijcrar.com

Internet Source

<1%

58

María Isabel Roldán Bravo, Francisco Javier Lloréns Montes, Antonia Ruiz Moreno. "Open innovation and quality management: the moderating role of interorganisational IT infrastructure and complementary learning styles", Production Planning & Control, 2017

Publication

<1%

59

"Handbook of Strategic e-Business Management", Springer Science and Business Media LLC, 2014

Publication

<1%

60

oro.open.ac.uk

Internet Source

<1%

61

Hussein, Safaa A.(Taylor, Andrew and Taylor, Margaret). "An empirical investigation of information systems success. An analysis of the factors affecting banking information systems success in Egypt.", University of Bradford, 2010.

Publication

<1%

62

Chi-Hung Yeh, Gwo-Guang Lee, Jung-Chi Pai. "How information system capability affects e-business information technology strategy implementation", Business Process Management Journal, 2012

Publication

<1%

63

id.scribd.com

Internet Source

<1%

64

M. E. Booth, G. Philip. "Information systems management: role of planning, alignment and leadership", Behaviour & Information Technology, 2005

Publication

<1%

65

docshare.tips

<1%

66

wiredspace.wits.ac.za

Internet Source

<1%

67

Stacie Petter, William DeLone, Ephraim McLean. "Measuring information systems success: models, dimensions, measures, and interrelationships", *European Journal of Information Systems*, 2017

Publication

<1%

68

Khawaja A. Saeed, Varun Grover, William J. Kettinger, Subo Guha. "The successful implementation of customer relationship management (CRM) system projects", *ACM SIGMIS Database*, 2011

Publication

<1%

69

"Social Knowledge Management in Action", Springer Science and Business Media LLC, 2017

Publication

<1%

70

Uyar, Ali, and Cemil Kuzey. "Does management accounting mediate the relationship between cost system design and performance?", *Advances in Accounting*, 2016.

Publication

<1%

71

Sofiah Md. Auzair. "A configuration approach to

<1%

management control systems design in service organizations", Journal of Accounting & Organizational Change, 2015

Publication

72

"On the Move to Meaningful Internet Systems: OTM 2009 Workshops", Springer Science and Business Media LLC, 2009

Publication

<1%

73

Sousa, Rui and Voss, Christopher A.. "Contingency research in operations management practices", Elsevier, 2011.

Publication

<1%

74

Ahmed O. Kholeif, Magdy G. Abdel-Kader, Michael J. Sherer. "Enterprise Resource Planning", Springer Science and Business Media LLC, 2008

Publication

<1%

75

Yi-Feng Yang. "Service capabilities and customer relationship management: an investigation of the banks in Taiwan", The Service Industries Journal, 2012

Publication

<1%

Exclude quotes Off

Exclude matches Off

Exclude bibliography Off