

## The Leverage of Financing Performance Through Knowledge Sharing Using a System of Interactive Measurement of Performance

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**Abstract:** We investigate the extent to which interactive use of Performance Measurement Systems (PMS) enables us to leverage financial performance through knowledge sharing. We study both conventional and syari'a banks. We analyse 107 data sets using SmartPLS 2.0 to seek direct and indirect effects of the hypothesised variables. We find that interactive PMSs do not enhance financial performance through knowledge sharing as distinct from their direct effect on financial performance. On further investigation, we find that syari'a banks and non-manager staff, share more and better knowledge than conventional banks and managers, do about improving financial performance. Many authors claim that there is a dearth of study of management accounting in the service sector. This study adds to the literature.

**Key words:** Financing performance, interactive use of PMS, knowledge sharing, conventional and syari'a banking, service sector

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### INTRODUCTION

Many researchers seek to introduce Strategic Performance Measurement Systems (SPMSs) responding to shortcomings in Accounting Performance Measurement (APM) (Kaplan and Norton, 1996a). Most suggest that APM should be complemented with non-financial or qualitative indicators. They believe that non-financial measures can overcome the disadvantages of financial measures as indicators of short-term progress (Banker *et al.*, 2005; Kaplan and Norton, 1996b). Simons (1995) and Henri (2006) say that SPMSs give feedback on business strategy as it evolves and sends signals for timely manager intervention through dialogue and discussion.

We look at how SPMSs enhance organisational strategy in banking. Previous studies show conflict and disagreement. Some argue that successful learning in an organisation depends on how the organisation shares new knowledge. Knowledge sharing 'involves transfer at the individual level. The problem of knowledge transfer in organizations transcends the individual level to include transfer at higher levels of analysis such as the group, the product line, the department and the division' (Argote and Ingram, 2000).

In the banking sector, financial performance is a crucial aspect of banking performance. Any bank faces a problem when a debtor cannot pay. The more debtors, the

higher risk of bad debts. Management control systems must help individual managers to make wise decisions on whether to lend the money or not. There are two aspects to making such a decision: the accuracy of the information given by the customer in their proposal (Deakins and Hussain, 1994; Hartvigsen, 1992) and capable control of the finance provided (Wei-Shong and Kuo-Chung, 2006). Debate, communication and dialogue help a bank always to follow wise principles. SPMS facilitates knowledge sharing among the bank's employees (Simons, 1995).

Previous studies show that SPMSs have a significant role in improving organizational performance in the banking sector (Cobb *et al.*, 1995; Davis and Albright, 2004; Lau and Tan, 1998) including the financing management process (Danos *et al.*, 1989). However, the role of Interactive Performance Measurement Systems (IPMSs) on knowledge sharing is under explored. We believe that IPMSs foster communication and discussion, automatically creating knowledge transfer. Knowledge sharing enhances new ideas and improves an organization's strategy. Additionally, knowledge sharing is likely to improve individual decisions.

The Resource-Based View (RBV) says that knowledge is required by managers to support the organization's capabilities to gain competitive advantages (Wiklund and Shepherd, 2003). Furthermore, knowledge itself will provide advantage to others when shared (Argote and Ingram, 2000). RBVs say that knowledge

changes employees' understanding and makes future financing more effective and efficient, reducing Non-Performance Loans (NPLs) (Hartvigsen, 1992). This study proposes a research question:

Does the extent to which IPMSs enhance knowledge sharing make a difference to financing performance?

**Review of literature and proposed hypotheses**

**Interactive use of performance measurement systems:** IPMSs provide more benefit in uncertain conditions by enhancing learning and innovation (Simons, 2000). They enable managers to stimulate learning through dialogue and discussion among their staff, improving the development of organizational strategy (Kaplan and Norton, 1996a, 2006; Simons, 1990, 1991, 2000; Tessier and Otley, 2012). People get involved in discussion and debate about actions already done and goals to be achieved. IPMSs push new ideas and objectives, leading to learning and innovation (Bisbe and Malagueno, 2009; Burchell *et al.*, 1980; Chenhall *et al.*, 2011).

**Knowledge sharing:** Knowledge is a shared collection of principles, facts, skills and rules (Pemberton and Stonehouse, 2000). McAdam *et al.* (2012) formulize from previous studies such as Lu about knowledge sharing as an activity through which knowledge in various forms can be transferred or exchanged between different actors in an organization.

Knowledge sharing is a fundamental element in knowledge management for an organization to achieve a sustainable competitive advantage; it is crucial because individuals, in transferring knowledge, create new and better ideas, processes, products and services (Gold *et al.*, 2001; Liao, 2006; Liao and Hu, 2007; McAdam *et al.*, 2012). Birasnav (2014) said that the sharing of knowledge in employees' brains develops various strategies benefitting the organization another way that knowledge sharing is useful is as an instrument to generate new information and upgrade old information to be used for now and future actions for better performance (Fong *et al.*, 2011).

**Hypotheses development:** Before, we explicate each hypothesis, Fig. 1 shows the research framework of the study:

According to Fig. 1, IPMSs first enhance the knowledge of individuals through active discussion and communication of organisational objectives and then they improve organisational knowledge overall, especially financing knowledge that will affect financing performance.

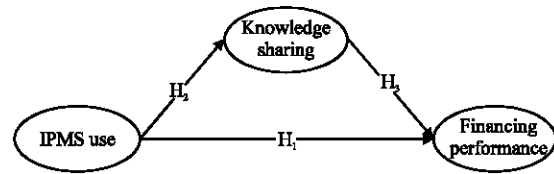


Fig. 1: Research framework of the study

**Interactive performance measurement systems use and knowledge sharing:** Simons (1995, 2000) notes that IPMSs enhance learning because IPMSs concentrate on discussion between upper and lower level managers about activities achieved by lower-level employees or managers (Hudayati and Auzair, 2009). This process will enhance learning (Henri, 2006; Tessier and Otley, 2012) by sharing knowledge of learning that stimulates innovation (Bisbe and Otley, 2004; Chang *et al.*, 2014). Knowledge sharing involves interaction among individuals or groups to adjust or transfer knowledge or beliefs, among them.

Since, traditional control is no longer effective for transferring information, bottom-up information sharing is needed to receive actual or real information for decision making (Poskela and Martinsuo, 2009). In addition, Poskela and Martinsuo (2009) note that bottom-up channels enable top management to understand progress in generating expected strategies and opportunities for emergent strategies. Compared to Simons' framework, IPMSs are closely linked to the channel. As Simons (1990, 1995) says, IPM is appropriately used by middle managers and then used to send information from them to upper managers. In addition, based on the RBV theory, Henri (2006) finds that there is a positive relationship between IPMSs and a firm's resources. Some scholars note that knowledge sharing is part of a firm's resources. If IPM has a positive link with resources and if one example of resources is knowledge sharing, then IPMSs have a positive link with knowledge sharing. Hence, we propose the following hypothesis:

- H<sub>1</sub>: there is a positive relationship between IPMSs and knowledge sharing

**Knowledge sharing and financing performance:** We argue that knowledge sharing has a positive effect on financing performance. Whether or not to give finance to a borrower should be decided carefully, otherwise the bank may face problems of nonperformance. Thus, credit evaluation should be conducted not only by the employee themselves but also by other involved parties (Yurdakul and Ic, 2004). When a bank employee

wants to approve a creditor proposal, they must assess the borrower's history to avoid risk of default in the future (Qian and Strahan, 2007). In addition, Qian and Strahan (2007) note that it is important to gather asymmetric information not just from the borrower but also from other organizations and other referees. This process automatically enhances the process of knowledge sharing.

According to these criteria, employees should discuss among themselves whether or not to provide credit to a customer (Yurdakul and Ic, 2004). The target in financing is to lend as much as customers will borrow. However, banks will face problems if customers cannot pay. Therefore, employees should discuss with their supervisor or with a mentor the quality of the credit itself. According to the literature on organizational learning, knowledge sharing enables us to share and distribute information, from various sources that can leverage the quality of information for decision making by individuals and groups throughout the organization (Chang *et al.*, 2014). Similarly, employee performance in financing can improve as a result of developing strategies gained from knowledge sharing (Birasnav, 2014). Performance throughout an organization in various divisions can be improved when there are synergies between them and they share and communicate useful information in both common and uncommon ways (Liao *et al.*, 2004; Liao and Hu, 2007).

In regards to financing performance, knowledge sharing can succeed through credit evaluation by gathering information about the financial aspect, market share and management of the firm and about its current and past economic status (Yurdakul and Ic, 2004). Thus, as a bank improves its ability to share information internally there are improvements of financing in both quantity that is, the amount of money lent and in quality that is, the appropriate return, a figure based on wise judgment of the risk of default. When the bank is confident to provide financing through lending a higher amount of money, knowledge sharing improves financial performance. We hypothesize that:

- H<sub>2</sub>: there is a positive relationship between knowledge sharing and financing performance

**IPMSs and financing performance:** I postulate that IPMS has a positive effect on financing performance, based on the consideration that active discussion of future and expected action will itself help to achieve organizational goals (Simons, 2000). In addition, because bad debt is more likely in times of environmental uncertainty and because interactive PMS is appropriate in times of

uncertainty, IPMS is best used before deciding on the conditions of the loan. In respect of future risk, managers should validate information about the applicants, in particular a feasibility analysis of the proposal and a check of the the customer's four Cs: character, capacity, capital and condition (Cetorelli and Peretto, 2012; Hidayati and Auzair, 2011). This process needs to be discussed with involved members. Hence, discussion with applicants for loans is closely linked to IPMS and we make the following hypothesis:

- H<sub>3</sub>: there is a positive relationship between IPMSs and financing performance

## MATERIALS AND METHODS

**Sample study:** In order to achieve the aim of the study, we surveyed strategic business unit managers in the banking sector in Lampung, one of the big cities of Indonesia. We chose the banking sector as an example of good organization. In addition, most Indonesian banking sectors use multi performance measurement system such as the Balanced Scorecard in Indonesia.

Before the main survey, we did several pilot studies in order to reduce problems including accuracy of translation from the original language to Bahasa Indonesia (Holbrook *et al.*, 2006; Morgan, 1990; Urbach and Ahlemann, 2010; Yuen, 2004). In addition, our particular questionnaire about financing performance was adapted from previous studies (Hidayati and Auzair, 2009) and it needed revision according to the objective of the study. This first pilot study involved seven academics and practitioners.

After the first pilot study was conducted, we did the second, to find the extent to which the questionnaire was understood by the respondents. In addition, the second pilot study tested the reliability and validity of the questions. This second study involved 18 respondents who were subsequently excluded from the main study; we also asked them to provide suggestions.

The main study, incorporating suggestions and improvements and distributed directly by researchers and indirectly through other parties, received 113 responses. We acquired 107 useful data sets (Table 1).

### Variable measurement

**Interactive performance measurement systems:** The interactive use of performance measurement systems was developed by Abernethy and Brownell (1999). A 5-item question asked each respondent to indicate the extent to which specified indicators rank from "important" to "not

Table 1: Respondents information

Respondent informations	n	Cumulative	%	Cumulative (%)
<b>Gender</b>				
Men	58	58	54.2	54.2
Women	49	107	45.8	100.0
<b>Age</b>				
<40	95	95	88.8	88.8
41-45	10	105	9.3	98.1
>46	2	107	1.9	100.0
<b>Education</b>				
SMA/Diploma	17	17	15.9	15.9
S1	88	105	82.2	98.1
S2/S3	2	107	1.9	100.0
<b>Position</b>				
Manager	32	32	29.9	29.9
Non-manager	75	107	70.1	100.0
<b>Type of bank</b>				
Konvensional	62	62	57.9	57.9
Syari'a	45	107	42.1	100.0

important” using a 7-level Likert item for each indicator, anchored by 1 = strongly not important and 7 = strongly important.

**Knowledge sharing:** Knowledge Sharing (KS) refers to the process of knowledge transfer among members of an organization (Choi *et al.*, 2010). Choi *et al.* (2010) developed a 3-items scale of KS according to Bock *et al.* (2005). These 3-items consist of our team members share their work reports and official documents with other team members, our team members provide their manuals and methodologies for other team members and our team members share their experience or know-how from work with other team members. Respondents were asked to indicate the extent to which they agree or disagree with each item using a 7-items likert scale anchored 1 = very much disagree to 7 = very much agree.

**Financing performance:** This instrument applied 10-item questions from Wei-Shong and Kuo-Chung as used by Hidayati and Auzair (2011) and inspired by Lewin and Minton (1986) using a goal and internal process model. A previous study (Hidayati and Auzair, 2009, 2011) used the construct for a measure of profit sharing financing performance. Following them, we concentrate on two indicators: quantity and quality of financing performance (Hidayati and Auzair, 2011, 2009). As they do, we use a single item of quantity of financing performance. For quality of financing performance, we use a 10-item question similar to one used by Hidayati, a 7-item Likert scale 1 = very much disagree to 7 = very much agree.

**RESULTS**

Before the main assessment of the study, we first did an Exploratory Factor Analysis (EFA) to seek dimension

Table 2: Factor loadings, Cronbach alpha, composite reliability and AVE

Indicators	Indicators	Factor loadings
Interactive use of Performance Measurement System (IPMS) (Cronbach alpha = 0.921, Composite reliability = 0.941; AVE = 0.760)	IPMS 1	0.807
	IPMS 2	0.864
	IPMS 3	0.903
	IPMS 4	0.907
	IPMS 5	0.875
Knowledge Sharing (KS) (Cronbach alpha = 0.903, Composite reliability = 0.939; AVE = 0.837)	KS 1	0.925
	KS 2	0.935
	KS 3	0.883
Financing performance before (Cronbach alpha = 0.955, Composite reliability = 0.963; AVE = 0.787)	BEF 1	0.848
	BEF 2	0.871
	BEF 3	0.895
	BEF 4	0.894
	BEF 5	0.913
	BEF 6	0.901
	BEF 7	0.888
Financing performance after (Cronbach alpha = 0.931, Composite reliability = 0.946; AVE = 0.853)	AFTER 1	0.891
	AFTER 2	0.937
	AFTER 3	0.941

variables. We found that financing performance is divided into three sectors: quantitative financing, qualitative financing before financing and qualitative financing after financing. We agree with Hidayati and Auzair (2009) that quantitative financing performance is only 1-item. However, when we run SmartPLS, the score of quantitative financing performance items is very low, 0.495. The score is similarly low when we run EFA using SPSS. Because of this, we excluded the quantitative financing performance from the analysis.

Next, analysis of EFA using SPSS for qualitative financing is divided into two constructs: administration quality before financing (BEFORE) and administration quality after financing (AFTER). Examination of other variables takes only one dimension of each.

**Partial least square:** In order to achieve the main of objective of the study, this study applies Partial Least Square (in this study researchers use SmartPLS 2.0). The advantages of using Partial Least Square is that it focuses on prediction (Ringle *et al.*, 2012) and uses small data (Henseler *et al.*, 2012; Ringle *et al.*, 2012). Some researchers recommend a two-stage analytical procedure, that is, measurement model and measurement structural model, when applying Partial Least Square.

**Measurement model:** One measurement model we assess is a reliability test. The reliability test is conducted by seeing reliability and Cronbach alpha. According to the rule of thumb, reliability is better if the score is higher than 0.7. However, other researchers, for example Birkinshaw *et al.* (1995) retain items above a threshold of 0.60. According to Table 2, cronbach alpha and composite reliability is higher than 0.7 which indicates that reliability is adequate.

Another test of measurement models is the validity test. We apply two types of validity assessment: convergent validity and discriminant validity. The Convergent validity test is adequate when the score of Average Variance Extracted (AVE) is higher than 0.5. According to Table 2, the score of AVE for all constructs exceeds 0.5. Therefore, convergent validity of all constructs is good.

Another test of validity is discriminant validity. It is measured by using Fornell and Larcker's Criterion and Cross Loading. Discriminant validity using Fornell and Larcker's Criterion is adequate if the square root of AVE is higher than the vertical and horizontal values of variables. Table 3 indicates that the square root of AVE (bold) is higher than all variable scores. Thus, discriminant validity using the Fornell and Larcker criterion is adequate.

A discriminant validity test using cross loading can be accepted, as we said above, if the value of items is higher than 0.6. Table 2 indicates that the factor loading of all items is higher than 0.6. Thus, test validity using cross loading is good.

Overall, measurement model of reliability and validity is satisfactory. The next step is to test the measurement structural model.

**Measurement structural model:** The structural model assessment was done by evaluating the Coefficient of determination ( $R^2$ ) and Path Coefficient ( $\beta$ ). Camison and Lopez (2010) note that an acceptable  $R^2$ -value has a value higher than 0.1. Table 4 shows an acceptable  $R^2$  (Fig. 2).

Table 3: Fornell and Larcker criterion (correlation between constructs)

Correlation	IPMS	KS	BEF	AFTER
IPMS	<b>0.872</b>	-	-	-
Knowledge Sharing (KS)	0.644	<b>0.915</b>	-	-
Quality of financing administration (BEF)	0.726	0.535	<b>0.887</b>	-
Quality after financing (AFTER)	0.756	0.609	0.711	<b>0.923</b>

Another test of the structural model assessment seeks a strong relationship between constructs by assessing Path coefficients ( $\beta$ ). This assessment is performed using a 500 bootstrapping replacement procedure. Strong, significant and weak relationships between constructs can be explained in the hypothesis tests.

**Hypothesis tests**

**IPMSs and financing performance:** Hypothesis 1 says that there are positive relationships between interactive performance measurement systems and financing performance. According to Table 4, IPMSs enable firms to improve the quality of administrative performance before financing ( $\beta = 0.652$ ,  $t = 8,169$ ,  $p < 0.01$ ) as well as after financing ( $\beta = 0.621$ ,  $t = 7,835$ ,  $p < 0.01$ ). These findings support  $H_1$ . This finding confirms a previous study, Hidayati and Auzair (2011) notes that IPMS is useful as a basis of credit approval as lower-level employees need to involve their supervisors in providing loans.

**IPMSs and knowledge sharing:** Hypothesis 2 says that there are positive relationships between IPMS and knowledge sharing. Our results show a positive relationship between them ( $\beta = 0.644$ ,  $t = 11.317$ ,  $p < 0.01$ ), supporting  $H_2$ . This means that IPMSs can improve employees learning capability through knowledge sharing. IPMSs encourage lower-level employees to

Table 4: Standard coefficient and t-value (Full Model n = 107)

Hypotheses relationship	Standard coefficient	t-values	$R^2$
IPMS->knowledge sharing	0.644***	11.317	0.415
<b>Knowledge sharing and financing performance</b>			
Knowledge sharing->BEF	0.115**	2.129	0.534
Knowledge sharing->AFTER	0.208*	0.899	
<b>IPMS and financing performance</b>			
IPMS->BEF	0.652***	8.169	0.596
IPMS->AFTER	0.621***	7.835	

\*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$

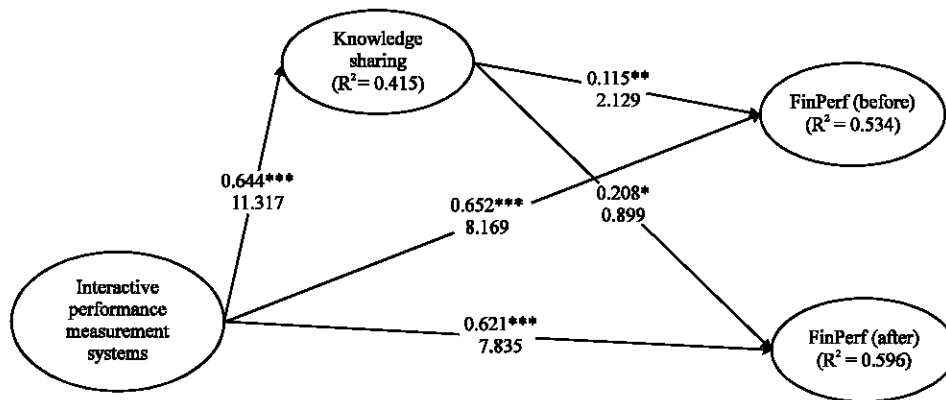


Fig. 2: Structural partial least square; \*\*\* $p < 0.01$ ; \*\* $p < 0.05$ ; \* $p < 0.10$

Table 5: Standard coefficient and t-value (sub-model type of banks)

Hypotheses relationship	Conventional bank (n = 62)		Syari'a bank (n = 45)	
	Standard coefficient	t-values	Standard coefficient	t-values
IPMS->Knowledge sharing	0.743***	12.468	0.258	2.264
<b>Knowledge sharing and financing performance</b>				
Knowledge sharing->BEF	-0.206*	1.057	0.474***	2.439
Knowledge Sharing->AFTER	0.026*	0.187	0.444***	3.663
<b>IPMS and financing performance</b>				
IPMS->BEF	0.962***	9.137	0.377	2.179
IPMS->AFTER	0.784***	7.857	0.473	4.819

Table 6: Standard coefficient and t-value (employees' position)

Hypotheses relationship	Manager (n = 32)		Non-manager (n = 75)	
	Standard coefficient	t-values	Standard coefficient	t-values
IPMS->Knowledge Sharing	0.755***	6.515	0.572***	8.014
<b>Knowledge sharing and financing performance</b>				
Knowledge Sharing->BEF	-0.124*	0.334	0.235	2.439
Knowledge Sharing->AFTER	0.317*	1.723	0.115**	3.663
<b>IPMS and financing performance</b>				
IPMS->BEF	0.733***	3.093	0.622***	7.292
IPMS->AFTER	0.595***	3.946	0.640***	7.928

\*\*\*p<0.01; \*\*p<0.05; \*p<0.10

discuss with their colleagues and upper-level employees things done and things left undone. They actively stimulate each other's learning.

**Knowledge sharing and financing performance:** For hypothesis 3, there are two tests. First, the relationship between knowledge sharing and quality of administrative performance before financing. Second, the similar relationship after financing. Table 4 shows our results. Knowledge sharing has no relationship with quality of administrative performance before financing ( $\beta = 0.115$ ,  $t = 0.889$ ,  $p < 0.1$ ). In contrast, the relationship after financing is significant:  $\beta = 0.208$ ,  $t = 2.129$ ,  $p < 0.05$ . These results partly support  $H_3$ .

**Further analysis:** In this study, we see data based on manager and non-manager and on conventional and syari'a banks. The following discussion covers both data sets.

**Result from analysis sub-sample (conventional and syari'a bank):** According to Table 5, IPMSs enhance knowledge sharing but knowledge sharing cannot enhance financing performance both before and after financing. However, this result is different in syari'a banks where IPMSs lead to knowledge sharing and then knowledge sharing improves quality of financing both before and after financing.

According to the contractive results from both types of bank, we assume that according principle of profit sharing in bank syari'a, before the organization give approval on financing.

**Result from analysis sub-sample (manager and non-manager):** According to our analysis using SmartPLS to run two subgroup models to test the effect of IPMSs on financing performance through knowledge sharing at both the manager and the non-manager level, there are two different benefits of knowledge sharing in financing. Table 6 indicates that knowledge sharing improves managers' performance after financing rather than before financing. However, for people in non-manager positions, knowledge sharing improves their performance before financing rather than after financing.

This study indicates that before providing financing, non-managers rely on information from customers to avoid Non-Performance Loans (NPLs). In order to get further information about customers before they decide to give approval, employees actively communicate with other staff to share their knowledge and experience. On the other hand, managers discuss how to get low NPL and they share knowledge with each other only after financing is provided.

## CONCLUSION

The aim of this study is to investigate the extent to which IPMSs enhance financing performance through knowledge sharing. We were inspired by a previous study indicating that performance can be achieved through an IPMS by increasing organisational learning (Henri, 2006; Bisbe and Otley, 2004; Simons, 1995), we believe that different settings for example Western countries and Eastern countries or manufacturing and service industries, may provide different results.

Surveying only the banking sector, in only one province in Indonesia, we analysed 107 usable data sets using SmartPLS. The results of the study indicate that IPMSs leverage financing performance both directly and indirectly through knowledge sharing. Also, a direct relationship provides potential benefit for financing performance rather than through knowledge sharing. Further analysis also compares managers and non-managers as well as conventional and syari'a banks. Statistical analysis shows that syari'a banks apply better knowledge sharing to improve financing performance than conventional banks do. In addition, knowledge sharing benefits non-managers financing performance, both before financing and after financing, more than it benefits managers.

As we noted above, this study adds to the existing literature on IPMSs; mainly Western vs. Asian and manufacturing vs. non-manufacturing industry. In addition, comparisons between conventional and syari'a banks as well as between managers and non-managers provide fruitful contributions to the management accounting literature.

#### LIMITATIONS

Our study has several limitations. The research field of this study is branch offices of the banking sector in one province in Indonesia. Before generalizing, the whole banking sector in Indonesia needs to be carefully examined. Further study should sample other provinces in Indonesia and headquarter bank offices. In addition, it can be seen from Table 6 that there are more non-managers than managers in this study and the results may not be same if generalized to managers without further study.

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