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THE INTERACTIVE PERFORMANCE MEASUREMENT SYSTEM AND PSYCHOLOGICAL EMPOWERMENT

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Article Info	Abstract
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Received: August 15, 2021	Purpose: The purpose of this research is to investigate how far is the impact of the interactive performance measurement systems on the employees' empowerment in a pharmaceutical company in Indonesia
Accepted: November 07, 2021 <i>Keywords :</i> Interactive	Research Methodology: This research used a survey and the respondents were medical representative/detailer employees in the pharmaceutical company in
Performance Measuring System, Psychological	Indonesia. From 650 distributed questionnaires, the collected data was only about 390 and analyzed by using Smart PLS.
Empowerment, SEM-PLS.	Results: The result of this research showed that the interactive performance
DOI: 10.5283/zenodo.5644258	measurement system has an impact on the employees' psychology in the pharmaceutical company in Indonesia. Limitations: This research showed that the interactive performance measurement system is a tool that can open the communication network between the managers and the employees which must be supported by maximum employees' psychological empowerment so that can reach the company's vision and mission,
	especially for the medical representative/detailer in the pharmaceutical company in Indonesia.
	Contribution: This research showed how important psychological empowerment is for lower-middle level employees especially for the medical representative/detailer in order to improve the company's performance by using the interactive performance measurement system in a pharmaceutical company in Indonesia.

1. INTRODUCTION

The purpose of this research was to investigate how far the impact of the interactive performance measuring system (Interactive PMS) to the employees' psychological empowerment in a pharmaceutical company in Indonesia. This PMS research, especially on lower-middle-level employees has not been widely studied especially those related to employees' psychological empowerment, it is only upper-middle manager level in an organization or company which has been widely investigated (bisbe Lau Chong, 2015; Grossi et al., 2015; Chenhall, 2005; Tuomela, 2005; Henri, 2006b; Grafton et al., 2010; Aranda and Arellano, 2010; Abernethy et al., 2013; Yuliansyah et al., 2016; Yuliansyah and Khan, 2015).

In fact, one of the company's performance is affected by lower-middle-level employees' performances because they are the ones who directly provide services to the consumers, in other words, the success of low-level employees will directly affect the overall company's performance (YYuliansyahandAAKhan,2015). The interactive PMS research has not been found in the previous research and has not been widely discussed in management accounting study especially the impact of employees' psychological empowerment (Adler and Chen, 2011; Bisbeand Otley, 2004; Chenhall, 2005; Dahlan et al.,2019; Henri, 2006b; Y Yuliansyah and A AKhan, 2015; CWebster, 2006).

The main characteristic of the interactive PMS research is the intensive and continuous involvement of senior managers in processing the information for decision-making and control purposes. When the control systems are used interactively, the managers of all levels engage in ongoing debate and dialogue to analyze the new information before responding to it(Shen and Perera, 2012; Simons, 1994b). This interactive PMS will further affect an employee's psychological empowerment (Moulang, 2015).

Researchers thought that the interactive performance measurement system is closely related to the psychological empowerment of an employee because continuous communication between senior manager and operational manager will improve the psychological empowerment of that employee. This research has several contributions. First, it is based on the location and the field of the specific industries study. This research was carried out in a pharmaceutical company in Indonesia. Several studies say that very little research has been done in the management accounting field especially in the pharmaceutical company in Indonesia (Chenhall and Langfield-Smith,2003; Yuliansyah,2016a; Yuliansyah Yuliansyah and Ashfaq Khan, 2015).

Based on research which conducted by Scapens and Bromwich(2001) who examine the development of management accounting research from 1990-1999in "EditorialReport—Management Accounting Research: the first decade" it turns out that from 178 published paper, the research setting on the field of specific industries was only 7% although the implementation of interactive performance measurement system has been widely applied in the manufacturing industry (Chenhall,2005; Hall,2008). But, it is different from the implementation in the pharmaceutical industry due to the differences in characteristics between the two companies. Thus, the result of this study contributes to how to implement interactive performance measurement systems in the pharmaceutical industry.

The second contribution is related to the performance measurement variable. As said before that the research on the interactive performance measurement system has not been widely discussed in management accounting studies (BisbeandOtley,2004; Adlerand Chen, 2011; Henri, 2006a;b). According to the development of management accounting studies from 1990-2014, it is only 17% (Scapens and Bromwich, 2001). Therefore, the contribution of this research is as additional knowledge about the development of management accounting, especially in the interactive performance measurement system.

The third contribution is related to the research framework. The previous research has researched a lot about how is the impact of interactive performance measurement on individual performance especially the manager and organization (Moulang,2015; Yuliansyah and Khan,2015). However, to the best of the authors' knowledge, the study that examines how employee behavior impacts the interactive performance measurement system particularly related to the psychological empowerment of an employee has not been widely examined. Therefore, the contribution of this research related to how the interactive performance measurement system could increase the psychological empowerment of an employee issue.

The fourth contribution has relation to the research sample of the interactive performance measurement systems on the employee level. Researchers chose the employees at the lower hierarchy than the members of senior management because so far the application of interactive performance measurement systems on the lower level employees is still low and has attracted the attention of research in management accounting. Yuliansyah and Khan (2015)most of the previous research focused on individuals who are members of different levels of hierarchy (BurneyandWidener,2007; Hall, 2008).In the previous research, the interactive performance measurement systems on individual performance are emphasized at the manager level. Limited research on interactive performance measurement systems has given a contribution to the development of management accounting science, especially at the lower level.

The rest of this paper is arranged as follows: part 2 talks about related literature to develop the hypothesis. Next, part 3 explains the sample, research design, and how to measure the variable in this research. Part 4 shows the result of statistic analytics. The last, part 5 discusses the main findings, limitations, and the contribution for the future research in this field.

2. LITERATURE REVIEW ANDHYPOTHESIS DEVELOPMENT

2.1 Interactive Performance Measurement System and Psychological Empowerment

Psychological empowerment is defined as a psychological situation that is manifested into 4 cognition: meaning, competency, self-determination, and impact (Fuller et al., 1999; S. Seibert et al., 2011; Spreitzer et al., 1999; Zhang, 2010; Appuhami, 2017). Specifically, the meaning addresses the state of the feeling that one's work is personally important. The next, competence is related to self-efficacy who believes in someone's capability to do something well. After that, self-determination indicates the perception of freedom to choose how to start and complete work. Then, the impact represents the degree to which someone perceives others' behavior in producing a job that will affect that person's job.

G.Spreitzer (1995) presents evidence that the four dimensions (meaning, competence, self-determination, and the impact) although it is distinct but, reflect all the psychological empowerment. So, psychological empowerment can be seen as the process of enabling that encourages employee task initiations (Aydogmusetal., 2018; Conger, 1988).

Many researchers have recognized the importance of information on psychological empowerment (Chan et al., 2015; Spreitzer et al., 1999; Harbridge, 2018; Spreitzer, 1995; 1996; Hall, 2008). It is because, without any pieces of information, an individual is not willing to take responsibility and expand themselves in using their creative energy (Posner et al., 1987). When the interactive performance measurement systems are used interactively, an individual is exposed to a variety of information, including information about individual and organization performance, job roles, and expectations. They are also able to be given information about organization goals, organizations strategy, strategic and mission uncertainty. The higher level of interaction and engagement in decision making is effectively associated with increased perceived psychological empowerment and this makes individuals believe that they are important and different for the organization (Chan et al., 2015; G. Spreitzer, 1995; Spreitzer, 1995; S. Seibertetal., 2011).

The interactive measurement systems provide some opportunities for employees to communicate with senior managers and to be involved in decision making such as assisting in establishing performance goals. The interactive climate between subordinates, senior management, and middle level provides a conducive setting for extensive interaction and involvement across different hierarchical levels in decision making (Randolph, 1995; S. Seibert et al., 2011; Simons, 1994a). In short, using an interactive performance measurement system as an interactive control provides an environment in which employees are given access to a wide variety of relevant information and being involved in decision making within the organization through the spread of face-to-face dialogue and debate that can improve the overall perception of psychological empowerment is an important individual cognitive mechanism that can help to explain the relationship between the use of interactive performance measurement systems are expected to gave a positive influence on psychological empowerment which will form the following hypothesis:

Hypothesis: Interactive performance measurement systems have a positive effect on psychological empowerment.



Figure 1. Research Framework

3. Research Methodology

3.1 Sample

The populations in this research are pharmaceutical companies which are categorized in BEI top ten list based on the earned profit from 2015-2019 (can be seen in Table 1). Companies are ranked in the top 10 are large companies that have excellent management and proven strategies and performance measurements (Alaaraj et al., 2018; Lauand Sholihin, 2005; Sholihin and Pike, 2009; Yuliansyah, 2016a; Yuliansyah et al., 2017). Based on table 1, it can be concluded that the profit earned from each pharmaceutical company from 2015-2019 fluctuates, this illustrates that the high competitiveness between companies in achieving high profits from year.

The method used in obtaining data is by distributing the questionnaire to respondents. In designing the questionnaire, the researcher refers to Dillman (2007) and Yuliansyah(2016b) with the aim of increasing the response rate of respondents. For sampling in this study, researchers used the purposive sampling methods, the respondents were medical representatives/detailers with some criteria as follows:

a) Medical representative/detailer who works for pharmaceutical companies on the Stock Exchange Indonesia.

- 59
- b) Medical representative/detailer who works for pharmaceutical companies that are ranked in the top 10 earnings are obtained each period.
- c) Financial report data that has been published from 2015-2019.

The original numbers of questionnaires were 650, only 390 (60persen) questionnaires were suitable for us.

No	Code	2015	Code	2016	Code	2017	Code	2018	Code	2019
_	Stock									
	KLB	Rp	KLB	Rp	KLB	Rp	KLB	Rp	KAE	Rp
1	F	2.083.402.901	F	2.353.923.941	F	2.442.945.312	F	2.552.706.946	F	4.780.373.522
		Rp		Rp		Rp	MER	Rp	KLB	Rp
2	TSPC	581.461.170	TSPC	526.651.719	SIDO	522.719.000	К	1.168.442.960	F	2.513.242.403
		Rp		Rp		Rp	KAE	Rp		Rp
3	SIDO	437.898.000	SIDO	471.722.000	TSPC	461.697.432	F	775.702.104	SIDO	802.121.000
	KAE	Rp	KAE	Rp	KAE	Rp		Rp	DVL	Rp
4	F	200.520.355	F	246.893.143	F	323.866.693	SIDO	660.668.000	А	219.199.794
	MER	Rp	PEH	Rp	MER	Rp		Rp	PEH	Rp
5	K	148.818.963	А	203.178.122	K	155.964.972	TSPC	553.039.102	А	124.527.864
		Rp	MER	Rp	DVL	Rp	DVL	Rp		Rp
6	SCPI	144.728.883	К	153.929.187	А	148.312.987	А	203.324.139	SCPI	114.594.952
	DVL	Rp	DVL	Rp	PEH	Rp	PEH	Rp	MER	Rp
7	А	104.177.380	А	145.119.664	А	122.406.753	А	155.846.275	K	75.731.257
	PEH	Rp		Rp		Rp		Rp		Rp
8	А	64.474.297	SCPI	133.396.714	SCPI	121.528.611	SCPI	135.437.872	TSPC	56.849.907
		Rp	PYF	Rp	PYF	Rp	PYF	Rp		Rp
9	INAF	5.006.864	А	4.286.731	А	4.898.942	А	10.071.560	INAF	8.288.467
	PYF	Rp		Rp		Rp		Rp	PYF	Rp
10	А	4.125.448	INAF	(22.971.513)	INAF	72.181.428	INAF	(29.763.038)	А	7.938.753

Table 1. Net Profit after Tax of Pharmaceutical Companies Listed on IDX 2015-2019 (Units of Thousands)

Table 2. Processed Questionnaire Detail

No	Description	Total
1	Distributed questionnaire (eksp)	650
2	Return questionnaire (eksp)	416
3	Unreturn questionnaire (eksp)	234
4	Rate of return (%)	64

5	Invalid questionnaire	26
6	Proper questionnaire	390

Proper questionnaire	

Source: processed data, 2021

CATEGORY	TOTAL	%
GENDER		
1. MALE	246	63,1
2. FEMALE	144	36,9
AGE (YEAR)		
<30	35	9
31-40	203	52
41-50	152	39
EDUCATION		
1. D3 (DIPLOMA)	105	26,9
2. S1 (BACHELOR)	285	73,1
YEAR OF SERVICE (YEAR)		
<5	28	7,2
6-10	265	67,9
>11	97	24,9

Table 3. Respondents Characteristics

Source: processed data, 2021

3.1.1 Collecting Data

The data used in this research are primary and secondary data. Primary data are gained by using questionnaires which are sent to pharmacy headquarter in Jakarta by post. Next, to get additional information, the researcher interviewed the medical representative from a pharmaceutical company that has a branch in Bandar Lampung. The secondary data is in the form of the top ten list of pharmaceutical companies in Indonesia which are gained from the internet (Mubarok, 2017).

3.2 Measuring Variable

3.2.1 Interactive Performance Measurement System

According to Simons (2000), interactive performance measurement systems are used by managers to communicate, debate, and make the decision in the organization horizontally and vertically. So that, by using this system of performance measurement, the company is able to see and find out the opportunity by making dialogue, debate and monitoring the risk of the competition to catch a new strategy in determining the company's position in the market (Bisbeand Otley, 2004; Grafton et al., 2010; Widener, 2007; Martínez Ramos and Gutiérrez Hidalgo, 2003; Moulang, 2015).

This research adopts the questionnaire which is used by Abernethy and Brownell (1999) that has been used by many different researchers (BisbeandOtley, 2004; Bisbeand Malagueño, 2009; Naranjo-Giland Hartmann, 2007; Dahlan et al., 2019), and has implemented the R.Simons theory (1994) about interactive control with five points Likert scale starting from 1 (strongly disagreed) to 5 (strongly agreed).

3.2.2 Psychological Empowerment

Psychological empowerment is defined as a psychological situation that is manifested into 4 cognitions: meaning, competency, self-determination, and impact (G.Spreitzer, 1995; Fuller et al., 1999; S.E. Seibert et al., 2011; Zhang, 2010). This research used the questionnaire for the psychological empowerment variable which is developed by G. Spreitzer (1995) that also examined by Zhang (2010) with five points Likert scale starting from 1(strongly disagreed to 5 (strongly agreed).

4. Partial Least Squares Structural Equation Model

The equation model used by the researcher is the least squares structural equation model (PLS-SEM), specifically using Smart PLS. The use of Smart PLS has been widely used by researchers because it has several advantages such as the presence of non-normal data, small sample size, predictive relevance, and theory testing (Dahlan et al., 2019; Al-Saedi et al., 2018; do Valle and Assaker, 2016). The steps used in analyzing PLS-SEM are carried out into two sequential steps, namely the measurement model and the structural equation model which are detailed below.

4.1 Measuring Model (Outer Model)

The measurement model can be used to control the suitability of reliability and validity. The reliability of Cronbach and composite shows the reliability of a measurement model where with provisions of more than 0.7 which is categorized as good (Chin, 1998; Hair, 2016; Ringle et al., 2012). Table 4 shows that all the used variables have good reliability and can be concluded that the research reliability of the measurement model is good.

The next measurement model is the validity test. Convergent and discriminant validity are the tools that are used to analyze validity tests. Hair (2016) explained that convergent validity can be seen from the rule of thumb of the extracted mean-variance (AVE) which is not less than 0.5. Table 4 shows that all the used variables have a good AVE because those variables are more than 0.5.

Discriminant validity can be seen by using Fornell-Larcker Criteria. Richter et al. (2016) determined that AVE square "must be higher than its squared correlation with the other construct." Table 5 below shows that the Fornell-Larcker criterion of discriminant validity is met.

Variabel	Indikator	Indikator Factor Composi Loading Reliabili		Factor Composite Cronbac oading Reliability Alpha		
IPMS	IPMS1	0,785	0,890	0,847	0,619	
	IPMS2	0,730	,	,	,	
	IPMS3	0,824				
	IPMS4	0,823				
	IPMS5	0,768				
PE	PE1	0,801	0,926	0,913	0,512	
	PE2	0,786	,	,	,	
	PE3	0,806				
	PE4	0,697				
	PE5	0,782				
	PE6	0,727				
	PE7	0,591				
	PE8	0,663				
	PE9	0,623				
	PE10	0,692				
	PE11	0,692				
	PE12	0,687				
	Ket: IPMS=	Interactive Per	rformance Measu	rement Sys	tem,	
	1	PE= Psycholo	gical Empowerm	ent		

Table 4. Factor loading, Composite Reliability, Cronbachs Alpha, and AVE

Table 5. Fornell-Larcker Criterion

Construct	IPMS	PE	\mathbb{R}^2
IPMS	0,787	0,674	
PE		0,715	0,454

Ket: IPMS= Interactive Performance Measurement System, PE= Psychological Empowerment

4.2 Structural Model Assessment (Inner Model)

Structural model assessment is used to test the hypothesis. Researchers used R2, path coefficient (beta), and t-statistic

analysis with a bootstrap of 500 calculations, the supported result can be seen in the tested hypothesis, as in Figure 2.



Figure 2. The result of PLS structural model: path coefficient, t-statistic

4.3 Hypothesis tested

The hypothesis of the interactive performance measurement systems has a positive effect on employee psychological empowerment which means it has a significant value (β =0,674,t=23,607,p <0,01)with the result of the hypothesis is supported. Based on the result of the research, researchers confirm that interactive performance measurement systems have a positive impact on employee psychological empowerment. It means that a company that applied the measurement of performance system interactively is able to provide a medium to communicate for lower and higher levels employees that will affect the increase of employees psychological empowerment. Besides that, the high-level manager can encourage the low-level employees to communicate actively and directly participate in the process of achieving business target or individual and solving the problem when one individual faces it so that can increase the psychological empowerment of employees themselves.

The previous research noted that interactive performance measurement systems can increase innovation, organization learning, or individual performance, and also this research gives a different point of view of the advantage of the interactive performance measurement systems. Based on this research, interactive performance measurement systems can directly increase the psychological empowerment of employees. This result supports the research by Carly Webster (2006); Moulang (2015); Appuhami (2017). The researcher found that an employee who has higher psychological empowerment tends to actively involve her or himself in the organization or company activity process which will increase their creativity so they can complete their work according to the planned target.

5. Conclusion and recommendation

The researchers found a relationship between the interactive performance measurement systems and employees' psychological empowerment. This research arises from the fact that the research on interactive performance measurement systems has not been found in the previous research and has not been widely discussed in management accounting study especially its impact on employee psychological empowerment in the pharmaceutical company in Indonesia. The researchers conclude that the use of an interactive performance measurement system is very influential on employee psychology empowerment in the process of an organization and business activity.

This research shows that the interactive performance measurement system is a tool that can open a communication network between the managers and their employees, which must be supported with maximum psychological empowerment so as to improve the company's performance, especially medical representative/detailer employee in the pharmaceutical company in Indonesia.

This research has several limitations where the research is only conducted on pharmaceutical companies in Indonesia and in well-managed companies. Next, more research is more needed to generalize the findings to other populations. Even more, the data which used in this research only came from a single written survey. Experimental methods and in-depth personal interviews in the future will contribute to the wider data. In summary, this research first provides evidence that the interactive performance measurement system improves medical representative/detailer employee psychological empowerment in a pharmaceutical company in Indonesia where employee psychological empowerment is one of the most important elements in improving the company's performance.

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