

NEXUS BETWEEN PERFORMANCE MEASUREMENT SYSTEMS AND PSYCHOLOGICAL EMPOWERMENT IN THE PHARMACEUTICAL INDUSTRY

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Abstract

Purpose of the study: The purpose of this study is to examine the impact of interactive performance measurement systems on the employees' psychological empowerment in the pharmaceutical industry in Pakistan.

Methodology: This research used a survey and the respondents were medical representative/detailer employees in the pharmaceutical firms in Pakistan. Data was collected from 390 responding out of 650 distributed questionnaires and analyzed by using Smart PLS.

Main Findings: The outcomes of this study showed that the interactive performance measurement system has a positive and significant impact on the employees' psychology in the pharmaceutical industry in Pakistan.

Applications of the study: 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 Pakistan.

Novelty/Originality of the study: 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 Pakistan.

Keywords: *Interactive Performance Measuring System, Psychological Empowerment, SEM-PLS.*

INTRODUCTION

The purpose of this research was to investigate how far the impact of the interactive performance measuring system (Interactive PMS) on the employees' psychological empowerment in a pharmaceutical company in Pakistan. This PMS research, especially on lower-middle-level employees has not been widely studied especially those related to employees' psychological empowerment, it is only the upper-middle manager level in an organization or company which has been widely investigated ([Grafton et al., 2010](#); [Khan, et. al., 2020](#)).

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 ([Ullah, 2020](#)). The interactive PMS research has not been found in the previous research and has not been widely discussed in management accounting studies, especially the impact on employees' psychological empowerment ([Adler and Chen, 2011](#); [Dahlan et al., 2019](#); [Ullah et al., 2021](#)).

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](#)). 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 studied. This research was carried out in a pharmaceutical company in Pakistan. Several studies say that very little research has been done in the management accounting field especially in the pharmaceutical company in Pakistan.

Based on research conducted by [Scapens and Bromwich \(2001\)](#) who examine the development of management accounting research from 1990 to 1999 in "Editorial Report—Management Accounting Research: the first decade" it turns out that from 178 published papers, 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. 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 (Adler and Chen, 2011). According to the development of management accounting studies from 1990-to 2014, it is only 17% (Scapens and Bromwich, 2001). Therefore, the contribution of this research is 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; Ullah & Hamdard, 2019). 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. Shaikh et al., (2021) most of the previous research focused on individuals who are members of different levels of hierarchy. 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.

Research Objective

The fundamental objective of the present research is to;

- Analyze the impact of interactive performance measurement systems on the employees' psychological empowerment in the pharmaceutical industry in Pakistan.
- Suggest a measure that helps in improving organizational performance.

LITERATURE REVIEW

Psychological empowerment is defined as a psychological situation that is manifested into 4 cognition: meaning, competency, self-determination, and impact (Seibert et al., 2011; Appuhami, 2017). Specifically, the meaning addresses the state of the feeling that one's work is personally important. Next, competence is related to self-efficacy which beliefs 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.

Spreitzer (1995) presents evidence that the four dimensions (meaning, competence, self-determination, and the impact) although it is distinct, reflect all the psychological empowerment. So, psychological empowerment can be seen as the process of enabling that encourages employee task initiations (Aydogmus et al., 2018; Nazim et al., 2019).

Many researchers have recognized the importance of information on psychological empowerment (Chan et al., 2015; Harbridge, 2018; Spreitzer, 1995). It is because, without any pieces of information, an individual is not willing to take responsibility and expand themselves in using their creative energy. 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, and 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 to the organization (Chan et al., 2015; Spreitzer, 1995).

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 the middle level provides a conducive setting for extensive interaction and involvement across different hierarchical levels in decision making (Seibert et al., 2011). 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 are 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. Psychological empowerment is an important individual cognitive mechanism that can help to explain the relationship between the use of interactive performance measurement systems (Moulang, 2015). In summary, the interactive performance measurement systems are expected to give a positive influence on psychological empowerment which will form the following hypothesis:

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

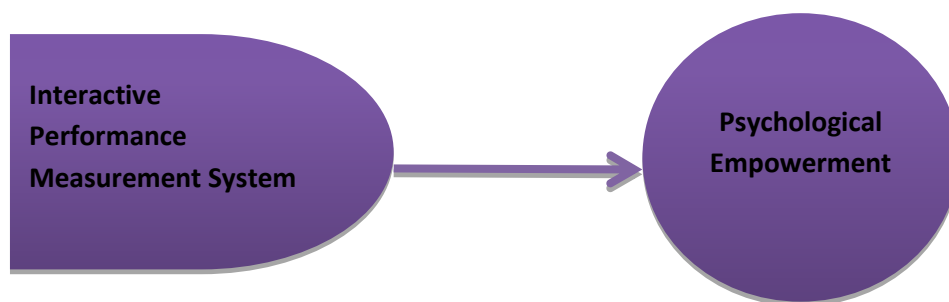


Figure 1: Conceptual Framework

RESEARCH METHODOLOGY

Sample

The populations in this research are pharmaceutical companies which are categorized top ten list based on the earned profit from 2015-2019. Companies are ranked in the top 10 are large companies that have excellent management and proven strategies and performance measurements (Alaaraj et al., 2018; Shaikh et al., 2021; Shahid & Nazim, 2020; Khan, et. al., 2020). The method used in obtaining data is by distributing the questionnaire to respondents. In designing the questionnaire, the researcher refers to Ullah et al., (2021) 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:

- Medical representative/detailer who works for pharmaceutical companies on the Stock Exchange Pakistan.
- Medical representative/detailer who works for pharmaceutical companies that are ranked in the top 10 earnings are obtained each period.
- Financial report data that has been published from 2015-to 2019.

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

Table 1: Processed Questionnaire D

No	Description	Total
1	Distributed questionnaire	650
2	Return questionnaire	416
3	Unreturn questionnaire	234
4	Rate of return (%)	64
5	Invalid questionnaire	26
6	Proper questionnaire	390

Source: Processed data, 2021

Table 2: Respondents Characteristics

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

Source: Processed data, 2021

Collecting Data

The data used in this research are primary and secondary. Primary data are gained by using questionnaires which are sent to pharmacy headquarters. Next, to get additional information, the researcher interviewed a 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 Pakistan which are gained from the internet.

Measuring Variable

Interactive Performance Measurement System

According to [Simons \(2000\)](#), interactive performance measurement systems are used by managers to communicate, debate, and make decisions in the organization horizontally and vertically. So that, by using this system of performance measurement, the company can 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 ([Grafton et al., 2010](#); [Moulang, 2015](#)).

This research adopts the questionnaire which is used by [Abernethy and Brownell \(1999\)](#) that has been used by many different researchers ([Dahlan et al., 2019](#)), and has implemented the [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 ([Spreitzer, 1995](#); [Seibert et al., 2011](#)). This research used the questionnaire for the psychological empowerment variable which is developed by [Spreitzer \(1995\)](#) with five points Likert scale starting from 1 (strongly disagree) to 5 (strongly agreed).

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 in 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 wherewith provisions of more than 0.7 which is categorized as good ([Hair, 2016](#); [Ringle et al., 2012](#)). Table 3 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 3 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 the 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.

Table 3: Factor loading, Composite Reliability, Cronbachs Alpha, and AVE

Variables	Indicator	Factor Loading	Composite Reliability	Cronbachs Alpha	AVE
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	0.26	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 Performance Measurement System, PE= Psychological Empowerment

Table 4: Fornell-Larcker Criterion

Construct	IPMS	PE	R ²
IPMS	0.787	0.674	
PE		0.715	0.454

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

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.

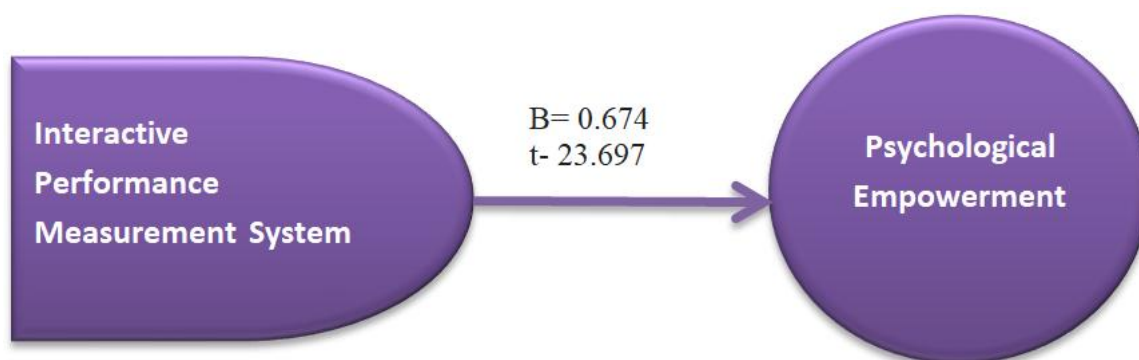


Figure 2: The result of the PLS structural model: path coefficient, t-statistic

FINDINGS AND DISCUSSION

The hypothesis of the interactive performance measurement systems has a positive effect on employee psychological empowerment which means it has a significant value ($\beta=0.674$, $t=23.607$, $p < 0.01$) with the result of the hypothesis being 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 can provide a medium to communicate for lower and higher levels employees which 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 targets or individual and solving the problem when 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, organisational learning, or individual performance, and also this research gives a different point of view on 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 [Moulang \(2015\)](#); [Appuhami \(2017\)](#). The researcher found that an employee who has higher psychological empowerment tends to actively involve her or themselves in the organization or company activity process which will increase their creativity so they can complete their work according to the planned target.

CONCLUSION AND RECOMMENDATIONS

The researchers found a positive and significant 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 studies especially its impact on employee psychological empowerment in the pharmaceutical company in Pakistan. 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 Pakistan.

This research has several limitations where the research is only conducted on pharmaceutical companies in Pakistan and in well-managed companies. Next, more research is needed to generalize the findings to other populations. Even more, the data 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 Pakistan where employee psychological empowerment is one of the most important elements in improving the company's performance.

LIMITATIONS OF THE STUDY

This study documents one of the significant issues prevailing in the pharmaceutical industry in Pakistan, however, it could be extended to entire manufacturing sectors to generalise its outcomes.

CONFLICT OF INTEREST AND ETHICAL STANDARDS

It is clarified that there exists no conflict of interest with any organization and it is assured that no unethical practices have been followed during the study.

AUTHOR'S CONTRIBUTION

Umer Ishfaq and Saima Batool were entrusted with the task of collecting secondary data on the subject. Sultan Salahuddin was responsible for collating the primary data and then discussions and evaluations were held in presence of Muhammad Mehboob Alam and Seemab Abid to bring out the findings and discussions

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