Performance Measurement System and Lecturers' Performance: Testing the Mediation Role of Competency in Malaysian Research University

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Abstract

Since performance of lecturers is the key contributor of academic excellence, universities need to empower its human capital to be competitive and subsequently achieve world-class status. Unfortunately, effort to conduct research on measuring the performance of higher education institutions has a major setback compared to other industries due to its complex nature and difficulty in measuring its outputs. Furthermore, review of literature indicate that research conducted in education environment mainly focus on organizational performance rather than work performance. This study fills the gap by providing a research framework focusing on Theory of Work Performance. The interaction between performance measurement system and competency on lecturers works' performance at the individual level was investigated through analysis on data gathered from 368 academics staff from five Malaysian research university. Finding shows 1) performance measurement system (PMS) has significant relationship with lecturers performance; 2) competency has significant relationship with lecturers performance; 3) competency is partially mediates the relationship between performance measurement system and lecturers performance.

Keywords Performance measurement system, competency, Institute of Higher Learning

INTRODUCTION

The transformation introduced by the universities in recent times due to various factors such as the increasing number of students, budget constraints, globalization, and the desire to introduce more rational management style. As a result, the public sector management style was introduced in the early 1980s and modifications in management control systems were initiated. For example, special attention has been given to the provision of financial budgets, management, model of workloads allocation and performance measurement quality. Even though research with respect to allocation of resources and the accounting system at the university level is growing, a study of performance measurement and management at department and staff level in university is still lacking (Bogt & Scapens, 2009). In addition, there is difficulty of measuring university performance because it is base on service activity and difficult to trace processes involve (Zangoueinezhad & Moshabaki, 2011).

Pressure from outside and within the organization force the university to improve governance system, organizational structure and management style. Evidence can be seen through the adaptation of management tools practice by profit entities especially performance measurement system into university's management activities. For example, University of Siena, Italy has been actively using dynamic performance measurement system when carrying out teaching, research activities and management (Barnabè & Riccaboni, 2007). University corporatization and changes into an autonomy university forces the management to find the best way to get financial resources. A new style of public management has been adapted to the very essence of corporate management styles in university. The most significant effect is the basis of defining the university management style, mission, shared values and a role to play by lecturer (Parker, 2011).

In this paper, present PMS of university was evaluated base on comprehensive PMS model. Prior research in the area of PMS has focused on its relationship with organizational performance rather than work performance. In addition, there are limited studies that examine the behavioural consequences and motivational mechanisms of performance measurement system on individual work performance especially in education environment. Therefore, this framework will examine the relationship between PMS and work performance at public research universities in Malaysia.

The influence of competency will also be considered. Competency refers to individuals feeling proud and happy with their achievement because the working environment manage to fulfils their expectation (Na, Amzat, & Abolhaija, 2011). Several studies found competency has influence on work performance of individuals, including in education setting. The interest to study competency among academics is motivated by the operational nature of university which is labour-intensive and the fact that budget spending of university is dominated by academics development expenses (Toker, 2011). Competency is expected to influence work and subsequently organization performance.

Effects of PMS in the organization have always been the focus of many researchers, but studies on its effects at the individual level is still lacking despite the fact that measurement of university excellence in teaching, research, publications and community service are merely at the individual academics. This study also fills the gap by focusing on work performance of lecturers. The framework to analyze the interaction was established between PMS and competency based on Theory of Work Performance which emphasizes on interaction between willingness and opportunity to achieve high work performance. This paper is attempting to answer the following questions:

1. Does the performance measurement system influence the lecturers' work performance?
2. Does the competency influence the lecturers' work performance?
3. Does the competency mediate the relationship between performance measurement system and lecturers' work performance?

Higher Education in Malaysia

In essence, Malaysia has been successful in democratizing higher education and in producing sufficient graduates to meet its manpower requirements over the last three decades. As an example, the higher education capacity in Malaysia has grown from the formation of the country's first university, Universiti Malaya in 1961, to 20 public universities, 24 private universities, 22 university colleges, four branches campuses of international universities, 21 polytechnics, 37 public community colleges and 390 private colleges as end of 2011 (Ministry of Higher Education Malaysia, 2012).

As a platform to move forward, The National Higher Education Action Plan 2007-2010 was formalized and acts as stepping stone towards promoting long-term objectives of human capital development contained in the National Higher Education Strategic Plan. The ultimate aim is to empower Malaysian higher education in order to meet the nation's developmental needs and to build its stature both at home and internationally. Seven strategic thrusts have been outlined (Ministry of Higher Education of Malaysia, 2007):

1. Widening access and enhancing equity
2. Improving the quality of teaching and learning
3. Enhancing research and innovation
4. Strengthening Institution of higher education
5. Intensifying Internalization
6. Enculturation of lifelong learning
7. Reinforcing the Higher Education Ministry's delivery system

As a continuity of the plan, Ministry of Higher Education has launched the National Higher Education Strategic Plan Phase 2 (PSPTN2) with the theme Malaysia's Global Reach: A New Dimension. The main focus of this strategic plan is to strengthen the national higher education in global arena (Ministry of Higher Education Malaysia, 2011).

University Performance

Due to the globalization of higher education, world-university rankings have grown its influence in recent years through few classification such as academic ranking world of universities, world university rankings, global university rankings using bibliometrics and global university rankings using web metrics (Liu & Cheng, 2011).Each ranking system has specific dimensions to measure university performance. For example Time Higher Education System (THES) in 2012 used five dimensions (table 1) while QS World Indicator 2011 used six dimensions (table 2). The dimensions used by these rankings show that performance of lecturers contributes merely 60percent of the overall performance of the university. Therefore, universities need to empower its human capital to be competitive and subsequently achieve world-class status.

The demand for higher education in Malaysia is expected to grow as population increases and in tandem with the government emphasis on human capital development. Ranking classification among universities has significant influence towards the management process in universities in this country. The World Bank Report entitled Malaysian Economic Monitor: Smart Cities 2011 highlighted Malaysia spends slightly more than most countries on its tertiary educations. Unfortunately, leading Malaysian universities perform relatively poorly in global ranking. As an immediate action, further measures to improve university performance should be adopted (The World Bank, 2011).

Table 1 THES 2011 Indicator

Dimensions	Weighted (%)
Teaching – the learning environment	30%
Research – volume, income and reputation	30%
Citation – research influence	30%
Industry Income – innovation	2.5%
International outlook – staff, students and research	7.5%

Table 2 QS World Indicator 2012

Dimensions	Weighted (%)
Academic reputation	40%
Employer reputation	10%
Faculty – students ratio	20%
Citations per faculty	20%
Proportion of international students	5%
Proportion of international faculty	5%

Ministry of Higher Education of Malaysia has carried out various efforts to improve Malaysian higher education institutions status as a centre of excellence in education internationally. For example, public universities are categorized into either research, focused, or comprehensive universities. In another development, government grants autonomy status to public universities that meet the requirements. Financial allocation to these universities is given based on the performance of those institutions and code of governance and governance index has been developed to enhance accountability. Autonomy is also expected to expedite the transformation process of the university. *Accelerated Programme for Excellence* (APEX) was introduced in 2008 with the underlying purpose to increase innovation, performance and encourage excellence among public universities. As an economic environment change, universities have to be proactive in planning and controlling their activities as they have to responsible and accountable to the stakeholders. Performance measurement system is workable as a mean to implement strategy, align behaviours and support decision making.

LITERATURE REVIEW

Performance Measurement System

PMS is a mechanism use by the management to supervise and control the direction of the organization and plays an important role in developing corporate strategy and performance evaluation for organization to be more competitive in the global economy (Ukko, Tenhunen, & Rantanen, 2007). It identifies individual effectiveness at all hierarchical levels within an organization (Ubeda & Santos, 2007). Performance measurement also prepares useful information in decision making process (Ukko *et al*., 2007) and assists managers in planning and controlling (Chenhall & Langfield-Smith, 2007) in order to achieve good results.

Comprehensive PMS relates to its multiple measurements, focus on strategic planning, integrative and incentive (Buhovac & Groff, 2012). Hall (2011) defines comprehensive PMS as the ability of the system to supply enhanced performance information that links performance and individual role through providing a broad set of measures related to the importance of the organization, the integration of measures with strategy and valued organizational outcomes, and the integration of measures across functional boundaries and the value chain. Multidimensionality refers to a combination of financial and non-financial measures, objectives and performance measures. Management scenarios that showing a measure of financial accounting perspective alone is not sufficient and the propose solution is to use a qualitative measure of performance measurement. Financial measure that refers to past data will be used by managers to evaluate performance, while non-financial indicators provide information for designing future performance and control the achievement of strategic direction.

Generally, comprehensive performance measurement system refers to the use of various performance measures that combine financial and non-financial measures, emphasizes the role of information in the organization and connects all the activities carried out within the organization. All measurements have relationships with each other will interact and integrate to form a consensus. As a result, performance measurement systems used by an organization that enables information sharing among employees.

Competency

Competency in employment affects work productivity as well as the survival of an organization. Competencies can be divided into two types: specific and general. Specific competency refers to the cognitive requirements needed by employees to enable them to work. Examples are the skills possessed by a carpenter to design furniture that is required by the customer. However, technological change and transition requirements of the labour market has made competency is vulnerable to depreciation (Allen, Ramaekers, & Velden, 2005). General competency refers to the knowledge, skills, codes of conduct, and personal characteristics' possessed by every member in organization. Examples of general competency are discipline, integrity, transparency, self leadership qualities, team collaboration, initiative, creativity and analytical skills.

Competency is also defines as the ability and talent which translates the ability, behaviour and manifestation of intention own by individuals (Boyatzis, 2008). Talent is measure through values, vision and personal philosophy; knowledge, competency, career development, interests and style. According to Boyatzis (2008b), there are three clusters of competencies: expertise and experience, knowledge and cognitive efficiency. This competency would not be static because it can be developed in the performance measurement system. According to Slocum, Jackson and Hellriegel (2008), competency is a combination of knowledge, skills, behaviour and attitude that contributes to the efficiency of the individual. For example, a manager should posses six core competencies: communication, planning and administration, teamwork, strategic action, cultural diversity and self-management. In the literature, competency theory can be divided into three perspectives: competencies at the individual level, organizational competencies and competency as a tool of communication between education and the labour market (Garavan & McGuire, 2001; Kalargyrou & Woods, 2001). In higher education sector, lecturers should have high competency in teaching (Ullah, Khan, Murtaza, & Din, 2011), research (Clarke, Flanagan, & O'Neill, 2012), supervision (Paglis, Green, & Bauer, 2006) and publication (Mayrath, 2008).

Lecturers' Work Performance

Performance measurement process of an organization is an important and challenging task for the management due to the difficulty in determining the appropriate constructs during the process. The task become more significant when it involves many employees in large size of organization particularly if the process of reviewing will be carried out at individual level. Murphy (2008) stated academic debates about relationship between performance measurement and performance is interesting and useful, but it cannot help the practitioners to improve performance measurement. Hence, the basic question to be answered is whether the constructs that can be related to job performance?

The main objective of university is to develop knowledge through teaching, research and social service. University requires lecturers with high competency to ensure teaching and learning activities work effectively. At the individual level, lecturers were affected by participation in decision making process (Sukirno & Siengthai, 2011), emotional intelligent (Mustafa & Amjad, 2011), teaching and research efficiency (Sellers-Rubio, Mas-Ruiz, & Casado-Díaz, 2010), goal orientation (Jackson, Hobman, Jimmieson, & Martin, 2009), goal orientation (Jackson *et al*., 2009), job stress (Kalyani R., Panchanatham N., & Parimala R., 2009), organizational commitment (Smeenk, Teelken, Eisinga, & Doorewaard, 2009) and psychological ownership (Samsinar Md-Sidin, Sambasivan, & Muniandy, 2009).

In measuring lecturers' work performance, researchers used few dimension. For example, Abdulsalam and Mawoli (2012) identified positive and moderate relationship between motivation and teaching performance while the relationship between motivation and research was negative. In Indonesia, Sukirno and Siengthai (2011) found lecturers participation in decision making process has significant effect towards lectures' work performance in teaching, research activities, publication, social works and consultation. Universities in South Africa, United States of America, United Kingdom, Australia and Nigeria pay more attention on teaching and research performance among their lecturers (Molefe, 2010).

HYPOTHESIS DEVELOPMENT

Performance Measurement System and Work Performance

PMS is an important and effective mechanism to control and ensure managers' performance is in line with the objectives of organization. According to Hoque (2004), the adaptation of multiple performance measurement is able to provide signal and motivation. Hall (2008) shows that comprehensive PMS prepares operational and strategic information for managers to better understand their role and responsibilities to achieve better performance. Similarly, comprehensive PMS has impact on performance improvement of individuals (Webb, 2004; Hall 2008). In addition, PMS is argued to be strategic (Burney

& Widener, 2007) and dynamic (Gimbert, Bisbe, & Mendoza, 2010) in order to be effective. Rahman and Shah (2012) examine the relationship between PMS and performance of academics from 16 public Universities in Khyber Pakhtunkhwa, Pakistan. The study found that there is a positive relationship between PMS and performance of academics. In Australia, non-financial items in performance measurement system influence managers' performance rather than financial items (Hall, 2011). Therefore, the following effects can be hypothesized:

H_1: PMS has a significant effect on the lecturers' work performance

Competencies and Work Performance

Individuals with high competency are expected to achieve high work performance because competency is a trait found in one individual which allow them to carry out a task given effectively (Dubois, Rothwell, Stern, & Kemp, 2004). Chreptaviciene and Starkute (2012) acknowledge work performance increases when individuals believe they have the power to decide on how the work should be performed. Competency in carrying out responsibilities as defined in the specification of work (Boyatzis, 2008). Analysis made on 53 660 evaluation by manager, head of private companies and cooperatives in Italy found that emotional competence, social competence and cognitive competence influence management and leadership (Boyatzis & Ratti, 2009). In addition, study conducted among executives in Spain shows emotional competence and personality are important predictors of work performance (Ramo, Saris, & Boyatzis, 2009). Furthermore emotional and social intelligence competencies found is practical, have a level of trust and high validity for assessing and developing individual workers in different cultures (Emmerling & Boyatzis, 2012). In general, positive relationship exists between competency and work performance. Therefore, the following effects can be hypothesized:

H_2: Competencies has a significant effect on the lecturers' work performance

PMS, Competency and Work Performance

Nature of working as lecturer requires teaching competency, competency inquiry, social competency and personal competency (Shavaran, Rajaeepour, Kazemi, & Zamani, 2012). The issue of imbalance competency is expected to be reduced through comprehensive PMS. Marin (2012) identified performance measurement system has positive influence towards work performance and competency of middle managers in Canada. Changes in performance measurement system will encourage employees react to the level of competency needed in performing their job (Medlin & Jr, 2009). Furthermore, feedback in management accounting need to be analyse critically to avoid

misunderstanding among employees (Pitkanen & Lukka, 2011). Basically, high competency would result to continuously increase of effort which would eventually improve the performance. Therefore, the following effects can be hypothesized:

H_3: Competency mediates the relationship between contemporary PMS and lecturers' work performance

Proposed Research Framework in University Setting

The variables to be used in this study are PMS, and competency which represents the two dimensions of Theory of Work Performance (opportunity and capacity). PMS refers to the process perform by managers in planning, controlling and measuring expected performance. Management of organization needs to ensure staffs have high competency to perform effectively. In order to excel at work, individuals need to have the capacity to perform. Competency refers to a combination of knowledge, skills and abilities of individual employees and it relates directly to the work of the individual. The third variable in this study is work performance. Work performance is used to measure the contribution of academics through in-role performance. Research framework of this study is shown in Figure 1 below:

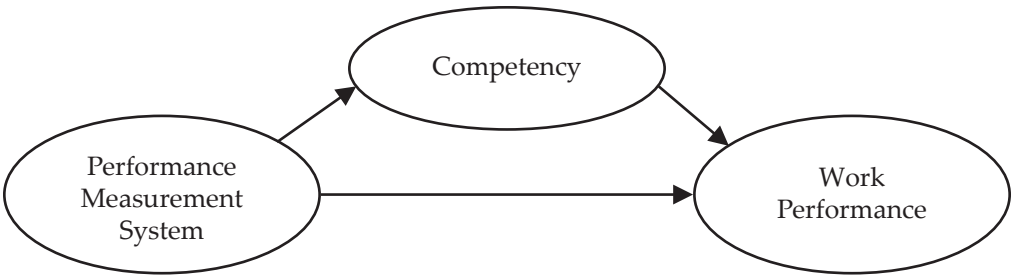

Figure 1 Research framework

RESEARCH METHODS

Data Collection

The study was conducted using a survey method. Sampling consist of 1500 people lecturer from Malaysian Public Research universities were selected based on stratified random sampling method. The questionnaire is divided into four parts namely: Part A (items) to obtain background information on the respondents, Section B (5 items) aims at measuring the performance measurement system. The questionnaire on performance measurement system was adapted from the Hall (2008) and Chenhall (2005). Instrument developed by Jeya and Mohamad Sahari (2011) used in part C to measure competency

level among lecturers. Lecturers' work performance was measured base on instrument developed by Smeenk *et al*. (2009).

A total of 1500 questionnaires were distributed and 384 questionnaires were returned. After deleting 16 questionnaires with incomplete responses, only 368 included in the final analysis. Table 3 shows the demographic profile of the respondents.

Table 3 Demographics of respondent

	Frequency	**Percentage (%)**
Gender		
Male	183	49.7
Female	185	50.3
Age (years)		
25 – 30	6	1.6
31 – 35	29	7.9
36 - 40	60	16.3
41 – 45	103	28
46 - 50	62	16.8
Above 50	108	29.3
Academic Qualification		
Bachelors	1	0.3
Masters	33	9.0
Doctor of Philosophy	305	82.9
Profesional / Specialize	29	7.9
Job Position		
Lecturer	33	9.0
Senior Lecturer	141	38.3
Associate Professor	118	32.1
Professor	76	20.7
Working Experience in current university (years)		
1 – 5	46	12.5
6 – 10	69	18.8
11 – 15	83	22.6
16 – 20	68	18.5
Above 20	102	27.7

ANALYSIS AND RESULTS

Research framework in which the relationship between CPMS and work performance is mediated by competency is presented in figure 2. A structural equation model (SEM) used to test for the mediation in H_3 in one stage, rather than using the two-stage approach of Baron and Kenny (1986). The SEM was estimated using a full information maximum likelihood procedure. A bootstrapping method is used to construct a sampling distribution in order to

develop test statistics and assess the uncertainty. Since this method makes fewer assumptions and has more power (while maintaining reasonable type-1 error), and is therefore the currently recommended analysis approach (MacKinnon, Fairchild, & Fritz, 2007). One thousand resample (with replacement) were drawn from the original sample and bias corrected bootstrap confidence intervals were computed for the indirect effects. Descriptive statistic and inferential statistics were used to analyse the data. The confidence interval level for statistical significance was set at a value of 95% ($p \leq 0.05$) for confirmatory factor analysis and a value of 99% ($p \leq 0.01$) for correlations.

Table 2 shows the result of data reliability (Cronbach's α), factor items and mean, factor loading (β), critical ratio (CR), standard errors (SE) and significance level (P). Result of reliability shows each factor has cronbach's alpha more than 0.70 its represent each factor has high reliability (Hair, Black, & Anderson, 2010). Factor loadings for each items also above 0.50 and Hair *et al*. (2010) recommend for sample more than 350 respondents, the minimum factor loading is 0.30.

Table 4 Results of Confirmatory Factor Analysis (CFA)

Factors	Cronbach's α	Items	Mean	β	CR	SE	P
ComprehPerformance Measurement System (CPMS)	0.937	cp1	5.2310	0.832			
		cp2	5.2554	0.870	20.919	.051	***
		cp3	5.0408	0.882	21.382	.056	***
		cp4	5.0815	0.885	21.496	.055	***
		cp5	5.0082	0.859	20.461	.057	***
Teaching Competency (TEA)	0.930	t1	5.8207	0.742			
		t2	5.7799	0.770	15.001	.075	***
		t4	5.6875	0.728	14.095	.077	***
		t5	5.8234	0.785	15.306	.072	***
		t6	5.4647	0.709	13.703	.082	***
		t7	5.9592	0.815	15.972	.072	***
		t8	5.6495	0.827	16.225	.074	***
		t9	5.6875	0.746	14.477	.073	***
		t11	5.7799	0.730	14.140	.079	***
		t12	5.7120	0.727	14.078	.077	***
Work Performance (WORKPERF)	0.892	wi1	4.0897	0.584			
		wi2	3.8777	0.698	14.717	.093	***
		wi3	3.6060	0.863	12.155	.167	***
		wi4	3.4538	0.882	12.297	.180	***
		wi5	3.1495	0.517	8.511	.160	***
		wi6	3.5027	0.736	11.023	.145	***
		wi7	3.7418	0.894	12.386	.139	***

Note :*** indicate the level of significance at 0.01

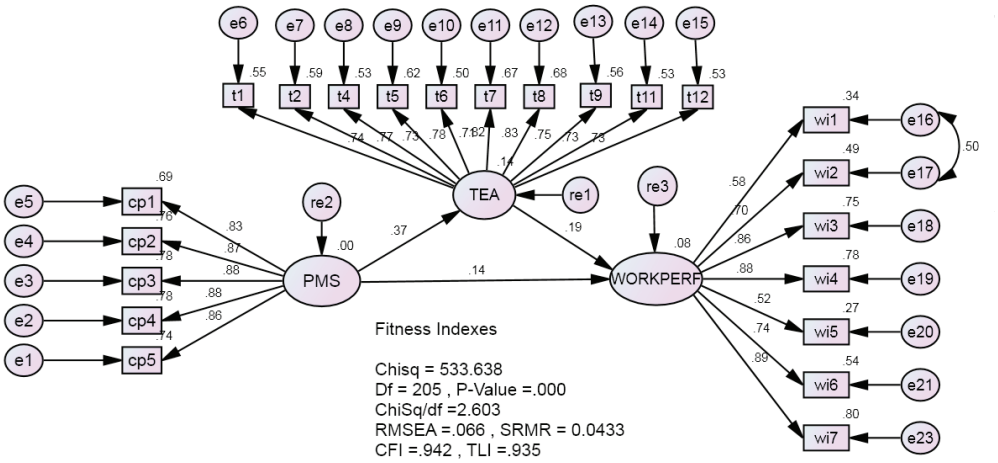

Figure 2 Structural model of relationship between performance measurement system, competency and work performance

Three hypotheses have been developed and tested for this research. Table 5 shows the result of direct relationship between performance measurement system, competency and work performance. Both hypotheses is supported and significant at $p \leq 0.01$. Bootstrapping was used to test the mediation effect and the result shows competency is partially mediates the relationship between performance measurement system and work performance (table 6). According to Zainudin (2014), if the result of indirect and direct relationship are significant, the nature of mediation is partial mediation.

Table 5 Result of direct relationship

Hypotheses	Path			Estimate	S.E.	C.R.	P	Result
H_1	WORKPERF	<---	PMS	0.099	0.027	3.682	***	Significant
H_2	WORKPERF	<---	TEA	0.147	0.035	4.149	***	Significant

Note: *** indicate the level of significance at 0.01
PMS = Performance Measurement System
TEA = Teaching Competency

Table 6 Result of mediation testing (PMS à TEA à WORKPERF)

	Indirect effect	**Direct effect**
Bootstrapping P-Value	0.007	0.025
Result	Significant	Significant
Type of mediation	Partial mediation since both direct and indirect effects are significant	

Note: *** indicate the level of significance at 0.05

CONCLUSIONS AND RECOMMENDATION FOR FUTURE RESEARCH DIRECTIONS

This study utilizes SEM to explore the positive effect of performance measurement system on work performance via the mediator; competency. Although many previous studies explored the issue of performance measurement system and performance, few researches explored the relationship of performance measurement system and work performance at the individual level. Interestingly, research model developed in this study is based on theory of work performance (Blumberg & Pringle, 1982) which highlights the interaction of opportunity and capacity to increase level of work performance.

Results shows the relationship between performance measurement system applied by university management and lecturers' work performance is significant. In Malaysia, the internalization and autonomy received by the university becomes a push factor in achieving world class university status. Any action and goals taken by the management is comprehensive by considering stakeholder needs. Since a lecturers contribute significantly in fulfilling key performance indicator of the university, this study has shown university performance measurement system has significant effect on lecturers' work performance. Testing on relationship between competency and work performance also show it is also significant. The mediation test indicates competency was partially mediates relationship between performance measurement system and lecturers' work performance. This is an evidence for any organization while doing strategic planning process to consider the capacity of their employee especially capacity. The effect of performance measurement system can be more effective if goal of the organization is designed base on human capacity in the organization.

This study contributes to the theory and practice by providing Malaysian evidence on PMS design for education sector. The study also provides empirical evidence if interaction between the two dimensions (opportunity and capacity) in theory of work performance which leads to high performance. For regulators and administrators, the results can be meaningfully use as a guide to design and implement effective PMS, training, and work setting for the academics.

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