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by Noorlailie Soewarno

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Does PMS influence the strategy pillars: OPP relationship? Evidence from HEIs in Indonesia

Noorlailie Soewarno, Bambang Tjahjadi and Farah Anmariska
Accounting, Faculty of Economics and Business, Universitas Airlangga, Surabaya, Indonesia

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Abstract

Purpose – This study aims to investigate whether strategy pillars have a positive direct effect on organizational productivity performance (OPP) in the Indonesian HEI (Higher Education Institutions) research setting and, if so, whether the effect is mediated by a performance management system (PMS).

Design/methodology/approach – This study used quantitative research employing partial least square structural equation modeling (PLS-SEM) to test the hypotheses. A mediation model of the research framework was developed to investigate the mediating role of PMS.

Findings – Using a sample of 182 Indonesian HEI managers, the results indicate that strategy pillars have a positive effect on OPP. Further analysis shows that PMS partially mediates the strategy pillar–OPP relationship.

Research limitations/implications – This study has limitations. Firstly, the sample size used was relatively small and this may raise the issue of generalization. Secondly, it used a Likert scale and therefore may raise the issue of judgment bias. Lastly, this study is context-specific for Indonesia and caution should be used when generalizing it to other countries.

Practical implications – To enhance the HEIs productivity performance, the HEI managers should develop strong strategy pillars for the purpose of effective strategy formulation and execution.

Social implications – This study provides a model showing how to improve the HEIs productivity performance by employing strategy pillars and a PMS. The better the performance of the HEIs, the better the quality of life of society in the era of the knowledge economy.

Originality/value – Strategy pillars have rarely been researched. This study is therefore one of the few studies on strategy pillars. This study also provides new elements related to measuring strategy pillars, PMS and OPP in the context of HEIs in Indonesia as an emerging economy.

Keywords Strategy pillars, Performance management system, Organizational productivity performance, Higher education institutions

Paper type Research paper

1. Introduction

The competition within global higher education and the rapid development of knowledge has triggered HEIs all over the world to improve the productivity and quality of their teaching, research and service to both society and the state (Angiola *et al.*, 2018; Moortel and Crispeels, 2018). Having a world-class title has become one of the main goals of almost all HEIs and it has triggered the HEIs to change their strategies and other important decisions (Musselin, 2018; Kaplan, 2018), especially when producing research and establishing relationships with other institutions (Elkin *et al.*, 2008; Mohrman *et al.*, 2008). This makes strategy increasingly play an important role in improving productivity, performance and achieving the desired goals.

Due to the importance of organizational performance, scholars have explored the factors affecting organizational performance both personally and organizationally. Among those factors, strategy is considered to be the most important factor in organizational success. A well-implemented strategy will create a competitive advantage that will help to increase performance (Wogwu and Hamilton, 2018; Friis *et al.*, 2016). Unfortunately, most organizations still struggle to relate their strategies to their organizational performance and that is the reason why the CEOs fail (Charan and Colvin, 1999).

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Good strategies fail to achieve the targeted performance because the conditions for success are never put in place (Wery and Waco, 2004). Strategy pillars are critical factors and they are the basic elements of a successful strategy that must be built during its formulation so then the strategy can be effectively executed. Serra and Ferreira (2010) stated that understanding the major strategic pillars contributes to the debate on the source of competitive advantage. Using a resource-based view (RBV), they conducted five case studies of major multinational corporations concerning strategy pillars and proposed four factors that help to explain the firms' successes, namely: (1) a leader and a top management team, (2) strategic focus, (3) trust in the future and (4) resource support. They stated that the limitation of their study lies in the case study methodology which is difficult to generalize. However, the results of their study help to clarify how to look at the resources and how the strategy pillars may embody the four characteristics of valuable, rare, inimitable and non-substitutable (VRIN). Another study on strategy pillars was conducted by Carroll and McAuley (2017) regarding establishing the key pillars of innovation required to execute a successful BIM strategy within a construction SME in Ireland. Another study by Petrov *et al.* (2020) examined the relationship between the three pillars of knowledge management in Serbian SMEs, namely strategy, marketing and human resource management.

The four pillars by Serra and Ferreira (2010), the key pillars of innovation by Carroll and McAuley (2017) and the three pillars of knowledge management by Petrov *et al.* (2020) are important for performance achievement. However, we argue that these pillars are still inadequate when it comes to the mechanism of how strategy and its associated pillars are able to improve organizational productivity and performance. In our opinion, the strategy pillars should refer to the collection of basic elements in strategy formulation that can facilitate an effective strategy execution. Thus, a single strategy pillar must relate to the other pillars, from vision and mission statements to strategic rewards. By proposing strategic pillars that are connected to one another, this study can provide a more comprehensive understanding of the mechanisms of how a strategy can enhance performance.

When formulating an organizational strategy, strategy pillars should be clearly identified and formulated to build a good strategic plan. In this study, we propose that there are ten pillars that need to be prepared by the strategic planners so that the strategy can be effectively executed. The importance of each pillar has been previously stated by scholars. The pillars consist of (1) a clear vision and mission statements (Kirkpatrick, 2017), (2) strategic themes (Kaplan and Norton, 2004a, b), (3) strategic positioning (Marginson, 2014), (4) functional strategies (Connor 2001), (5) a competitive culture (Rashid *et al.*, 2003), (6) strategic alignment (Sabherwal *et al.* 2019), (7) strategic control (Nurmaganbetova, 2016), (8) strategic feedback (Tarakci *et al.*, 2018), (9) strategic communication (Zerfass *et al.*, 2018) and (10) strategic reward (Momanyi *et al.*, 2016). Because it is part of the conditions of success, the incomplete elements of the strategy pillars will become obstacles when the strategy tries to improve performance as stated by Wery and Waco (2004).

Studies have been conducted on the effect of strategy on organizational performance, but they are inconsistent. The studies by Kustiningsih and Tjahjadi (2020), González-Rodríguez *et al.* (2018), Chen *et al.*, (2017) and Banker *et al.* (2014) revealed that strategies have a positive impact on performance. However, other studies (Castillo-Apraiz and Matey, 2020; Gorondutse and Hilman, 2019) have revealed that strategy has no effect on performance. This gap justifies further study. Therefore we propose PMS as a mediating variable in this study to fill in the gap.

Although strategy formulation is important, strategy execution is more critical when achieving good performance. Scholars (Kaplan and Norton, 2008; Bhimavarapu *et al.*, 2019) have stated that the capability to implement a strategy is more important than the quality of the strategy itself. The lack of PMS has been identified as the main reason why a good

strategy does not always produce a good result. A PMS facilitates effective strategy implementation and enhances performance (Van der Stede *et al.*, 2006; Chenhall, 2005; Ittner *et al.*, 2003; Said *et al.*, 2003). The fact that a PMS relates to organizational strategy is often overlooked even though both features have the aim of improving performance (Asad and Mahfod, 2015). The organizational members also consider that PMS is a waste of hard work (Arnaboldi *et al.*, 2015).

The relationship between strategy and PMS has been examined by previous scholars. The PMS must be in line with the strategy used (Sutheewasinnon *et al.*, 2016). This relationship model is found in the Balanced Scorecard (BSC) system as a strategic PMS (Hladchenko, 2015). The BSC system is used to provide assurance that the organizational activities remain in line with the involved strategies. The PMS consists of target planning preparation, performance evaluation and performance improvement (Vieira *et al.*, 2016; Pavlov *et al.*, 2017). Duréndez *et al.* (2016) also stated that some studies indicate that PMS affects performance. The more important the role of strategy and its pillars within an organization, the more crucial the existence of a good PMS as a tool for strategy execution. Furthermore, the better the PMS, the higher the achievement of the OPP.

We continue the work of previous scholars on strategy pillars (Petrov *et al.*, 2020; Carroll and McAuley, 2017; Serra and Ferreira, 2010) with the following differences. First, we have applied a different definition of strategy pillars as a collection of the basic elements of strategy formulation that can facilitate an effective strategy execution. Our approach is more relevant for the purpose of this study because the mechanism of how strategy affects performance is crucial. The cycle or system approach starting from the vision and mission statements as the beginning of a good strategy formulation through to strategic rewards as the end of a good strategy execution will provide a more comprehensive understanding for the management. Second, instead of using a qualitative approach, we have used a quantitative approach by employing partial least square structural equation modeling (PLS SEM) to test our hypotheses. This approach will provide a better picture of the causal relationship. Finally, we conducted this study on the HEIs in Indonesia as an emerging economy, so it has a different research setting and context as compared to the previous studies.

HEIs around the world have been experiencing dynamic changes. At present, global university ranking is a tool used to assess the performance of HEIs around the world through certain standards, processes, indicators and algorithms (Pucciarelli and Kaplan, 2016; Kaplan, 2018). The ranking system has a role in improving university quality indirectly through increasing the level of global competition (Musselin, 2018). Some of the ranking schemes used by the HEIs to assess their performance include the QS World University Ranking (QS WUR) and the Times Higher Education (THE) World University Rankings. Both of them assess the performance of HEIs in relation to the aspects of research productivity, teaching quality, professional assessment and their level of internationalization.

Referring to the two ranking institutions above, the HEIs in America and Europe still dominate the highest 10 to 20 ranks. The Asian HEIs listed are mostly from Singapore, China and Japan. Indonesia is left behind by its neighboring countries of Singapore and Malaysia because there are only three Indonesian universities on the list of the 500 QS World University Rankings (QS WUR) in 2019. Thus the competitive advantage and performance of the Indonesian HEIs are important issues when facing global competitors. Strategy and its associated pillars as well as PMS will be critical factors in the Indonesian HEIs' performance success. So far as our knowledge is concerned, there is no single study on the mediating effect of PMS on the strategy pillars–productivity performance relationship using HEIs as the research setting in Indonesia or other developing countries.

This study contributes to the development of RBV by providing empirical evidence of the mediating role of PMS in translating, measuring, implementing and monitoring the strategy

pillars in order to improve the productivity performance of the Indonesian HEIs. This study provides a better understanding for the HEI management of the mechanism and how PMS mediates the effect of the strategy pillars on productivity performance. Finally, it explains the importance of the strategy pillars in improving strategy execution in order to achieve increased productivity performance in the Indonesian HEIs in the era of the knowledge economy and global competition.

The remainder of this paper is organized as follows: Section 2 describes the literature review and hypotheses development, Section 3 presents the research methodology and measurements, Section 4 elaborates on the analysis, results and discussion and the last section describes the conclusions, contributions, limitations and suggestions for future research.

2. Literature review and hypotheses development

Resource-based view (RBV) states that in order to create a competitive advantage, an organization should manage its internal resources so then they become valuable, rare, inimitable and non-substitutable (VRIN) (Jogaratnam, 2017; Peteraf, 1993; Barney, 1991; Wernerfelt, 1984). A unique and inimitable strategy that cannot be duplicated by competitors gives firms a sustainable competitive advantage. A strategy influences the performance of an organization in various ways. A strategy is used as a guideline for the activities undertaken to achieve the organization's goals. Therefore, if performance is one of the goals, then a strategy that directly and positively influences performance is needed (Strang, 2018). Strategy also influences performance through its role in assisting decision-making related to goal setting, priority scaling, resource allocation and business actions. Scholars have proven the positive influence of the various types, aspects and processes involved, both partially and simultaneously on the performance of profit-oriented as well as non-profit organizations (Gabrielsson *et al.*, 2016; Martello *et al.*, 2016).

The contribution of a strategy in improving the organizational performance includes strengthening the company capabilities (Song *et al.*, 2007), focusing on the business orientation (Hernández-Perlines *et al.*, 2016) and managing the human resources involved (Arunprasad, 2017). Various types of strategy have also been proven to improve performance in both business organizations and non-business organizations. Studies by Friis *et al.* (2016) on various types of industry in Denmark and by Alzoubi and Emeagwali (2016) in eight universities in Cyprus showed the presence of a positive influence from different types of strategy on performance.

A good strategic plan is the result of a good formulation that clearly identifies strategy pillars as the basic elements of the strategy used. The basic elements that have been stated by scholars have been used in this study. First, the vision is a statement of the long-term goals while the mission is the formulation of the actions that must be taken to achieve the vision. A clear vision and mission are used as indicators for measuring strategy because of their vital role in strategy formulation, mobilizing the organizational members and determining the success of strategy implementation in improving performance (Kirkpatrick, 2017; Holland, 2016; Reeves and Boreham, 2006). Second, after the vision and mission, an organization needs to develop its strategic themes. Strategic themes form the basis of an organization's business model. Strategic themes play an important role in controlling strategy implementation, for example, in the use of the Balanced Scorecard (Kaplan and Norton, 2004a, b; Hambrick and Lovelace, 2017). Third, strategic positioning is the placement of an organization in certain conditions or in an environment in accordance with a predetermined strategy. Strategic positioning affects the type of competition that is to be faced, the use of resources and the relationships that may be formed between organizations. This therefore indirectly affects the organization's ability to compete globally (Xie *et al.*,

2018; Mahat and Coates, 2016; Mahat and Goedegebuure, 2016; Marginson, 2014). Fourth, functional strategy refers to a strategy that is specifically formulated for the functional areas of an organization such as marketing, finance, production and others. The functional strategies must be aligned with the corporate and SBU strategies in order to support the achievement of the organizational goals (Schneider *et al.*, 2014; Connor 2001; Luftman *et al.*, 1993). Fifth, organizational culture shows the values and norms that apply in an organization. Therefore the culture is closely related to the views and behavior of members who implement strategy (Wan *et al.* 2020; Naranjo-Valencia *et al.*, 2016; Pinho *et al.*, 2014; Rashid *et al.*, 2003). Sixth, strategic alignment is carried out to ensure the synergy of internal organizational aspects in operations (Sabherwal *et al.* 2019). Strategic alignment can be either vertical or horizontal. Prieto and de Carvalho (2018) stated that vertical alignment is "the configuration of strategies, objectives, action plans and decisions through various levels of the organization" while "horizontal alignment occurs between various areas, functions and operations of the organization". Seventh, strategic control is needed to ensure that there is compliance with any plans and to detect potential obstacles that may arise during the plan's execution (Arce, 2018; Nurmaganbetova, 2016). Eighth, strategic feedback is crucial for informing managers who are responsible for a certain strategic objective so then it can be followed up and become an input for the next strategy formulation (Tarakci *et al.*, 2018). Ninth, strategic communication refers to the use of communication that aims to fulfill the mission. Strategic communication involves all staff members at various levels in order to provide an understanding of the vision, mission and goals of the organization, to accelerate problem handling and to assist in decision-making (Ajayi and Mmutle, 2020; Zerfass *et al.*, 2018; Coombs, 2015). Tenth, strategic rewards are needed to support the achievement of the organizational goals and to meet the expectations of the stakeholders. Rewards are given for success in terms of achieving the goals, enhancing motivation and loyalty (Momanyi *et al.*, 2016; Atieno and Orwa, 2015).

Strategy pillars play an important role in the success or failure of a strategy when seeking to achieve targeted organizational productivity performance. Scholars have also identified the elements of HEI productivity performance as the following. First, the teaching productivity that reflects the quality of the knowledge transfer from the lecturers to the students is an important factor in HEIs. Transformative innovation is needed to enhance productivity (Dwivedi and Joshi, 2020). Second, research productivity that is reflected by the number and the quality of scientific articles produced by the lecturers of a higher education institution demonstrates the quality of the human capital. Research funding plays a crucial role in enhancing research productivity (Lee, 2020; Bordons *et al.*, 2015; Gilmore *et al.*, 2015). Third, there is the enhancement of community service that demands the contribution of students, graduates, lecturers and institutions as a whole to improve the welfare of society. Integrating community service in the curriculum is considered to be a good innovation that humanizes education (Sengupta *et al.* 2020; Antonio *et al.*, 2000; Goldring and Sims, 2005). Fourth, there are the financial results from the government, students, companies and other donors that are extremely important as they finance HEI activities. Funding has undergone significant changes in many countries (Tilak, 2020). Fifth, human capital productivity plays a crucial role in enabling the institutions to increase the students' intellectual capital and to produce high-quality graduates (Donald *et al.*, 2019; Masui *et al.*, 2014). Sixth, information system productivity enables the managers to disseminate information and it enables the academic, administrative, supervisory and controlling activities within the institutions (Gallagher and Sixsmith, 2014; Ainin *et al.*, 2015). Seventh, cooperation with other institutions will facilitate knowledge and technology transfer, exchange and the empowerment of resources, research collaborations and so on (Tseng *et al.*, 2018; Moon *et al.*, 2017). Eighth is the facilities and infrastructure productivity used by the HEIs to carry out their respective functions (Sheikh, 2017). It can be concluded that the better the strategy pillars in place, the

better the achievement of organizational productivity performance. For this reason, the first hypothesis can be proposed:

H1. Strategy pillars have a positive effect on organizational productivity performance.

The literature review conducted by Chenhall and Langfield-Smith (2007) provides a sound basis for understanding the relationship between strategy and PMSs (Ferreira and Otley, 2009). The performance management system connects strategy and its pillars in term of enhancing strategic dialogue, strategy formulation and implementation. The performance management system can be used by an organization to deploy strategies and policies, provide information to management, facilitate strategic learning, influence organizational behaviors and hold organizations accountable for results (Srimai *et al.*, 2013; Srimai, 2015).

Scholars have identified the common elements of a performance management system. At minimum, a performance management system consists of the following elements. First, a reliable system is needed to control the managers' behavior so that they work in line with the organizational strategy (Duréndez *et al.*, 2016). Second, strategic measures must be developed to enable the managers to assess the performance achievements and the fulfillment of any set goals (Rafiq *et al.*, 2020). Third, a special unit such as the office of strategy management is needed to monitor and provide a regular feedback on the strategy as a whole and the associated performance (Kaplan and Norton, 2008). Fourth, a monitoring system that enables managers to analyze any data is crucial as part of a sound decision-making process. Dashboards play an important role in an organization's strategic performance management system (Ferretti *et al.*, 2017). Fifth, a reliable strategic communication system is needed that enables the managers to screen and disseminate information to the right people more effectively and systematically (Fredriksson and Pallas, 2016; Coombs, 2015). Sixth, a reward system is necessary that motivates individuals, units and departments to build a strong corporate culture (Ngwa *et al.*, 2019; Taylor, 2014). Seventh are the applications or software that enable the managers to discuss their performance via performance dashboards to amplify cognition and to capitalize on the human perceptual capabilities (Reinking *et al.*, 2020). Eighth, a routine discussion system that enables the managers to coach their subordinates on the problems that they face and the solutions they must engage in. This is crucial in terms of the success of their performance-based achievement (Jones *et al.*, 2016); (9) a specific performance management approach is crucial, such as the Balanced Scorecard (Kaplan and Norton, 2008) and (10) strategic skills are needed for an effective strategy execution that explains why the performance of an organization differs from others (Radomska and Kozyra, 2020).

Performance measurement and management can be a vital tool for strategy execution by signaling what is really important, by providing ways to measure what is important, by fixing the accountability of both behavior and the results, and helping to improve performance (Schneier *et al.*, 1991). As stated by Adler (2011), a PMS is meant to depend on and be a function of the firms' strategies. To improve performance, the PMS used must be designed according to the strategy (Asad and Mahfod, 2015; Vieira *et al.*, 2016). The PMS communicates the strategy to the organizational members so then the organizational goals can be better understood (Arjaliès and Mundy, 2013). The Balanced Scorecard as a strategic performance management system has proven to be very useful for strategy execution and performance improvement (Ledin and Machin, 2016). Previous studies on the relationship between strategy and PMS have been conducted by Arjaliès and Mundy (2013) on companies in France. The results of these studies indicate that there is a positive relationship between strategy and PMS. It can be concluded that the more important the strategy and its pillars, the greater the need for a PMS in an organization. Based on the previous justification, the second hypothesis is proposed:

H2. Strategy pillars have a positive effect on the performance management system.

The end result of a performance management process is the gaining of information that helps the management to make better decisions and improve performance (Beitsch *et al.*, 2015; Kroll, 2015). Excellent performance is not only related to a profit increase but also to the improvement of the business processes' effectiveness and efficiency. HEIs are organizations where the community and the government are the biggest stakeholders; thus the organization must have public accountability and transparency in place in its performance measures (Willems *et al.*, 2015). A study conducted by Gerrish (2015) proved that performance management has a positive effective influence in terms of improving the performance of public organizations. It can be concluded that the better the PMS, the better the performance of an organization. Therefore, the third hypothesis is proposed:

H3. The performance management system used has a positive effect on organizational productivity performance.

Strategy is the organization's unique way of achieving its performance targets (Vieira *et al.*, 2016). A performance management system is used to ensure that the strategy execution is in line with the strategy as a whole so that it can produce the desired performance (West and Blackman, 2015). In the end, strategy and the performance management system have the same goal, namely organizational performance improvement (Angiola *et al.*, 2018). A study by Micheli and Mura (2017) focused on 68 large European companies showed that the comprehensive performance measurement system involved mediates the effect of the differentiation strategies on performance. Another study by Wijethilake *et al.* (2018) in Sri Lanka showed the mediating effect of the management control system on the environmental innovation strategies - performance relationship. In contrast to a profit-oriented company, an increase in public and stakeholder trust, image and a ranking improvement in relation to the global competition are examples of the productivity performance improvement of the HEIs examined previously (Dvořáková and Faltejskováb, 2016; Campbell and Park, 2017). Therefore, the fourth hypothesis is proposed:

H4. The performance management system used mediates the strategy pillar - organizational productivity performance relationship.

The research model employed in our study has been depicted in Figure 1. This simple mediation model explains the mechanism of the relationship between the variables, namely: (1) strategy pillars (SP), (2) the performance management system (PMS) and (3) organizational productivity performance (OPP). It describes the mediating role of the performance management system on the strategy pillar–organizational productivity performance relationship.

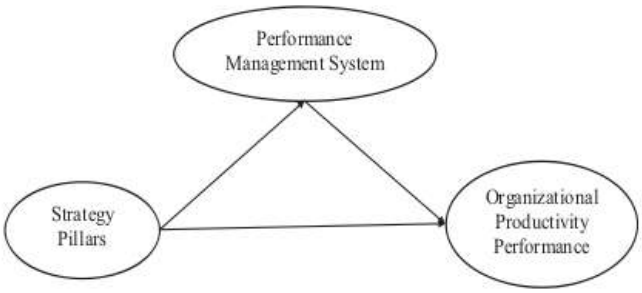


Figure 1.
Research model

3. Methodology and measurements

3.1 Research design

This study was designed to be quantitative research. In order to test the hypotheses, we employed the partial least square structural equation model (SEM). This is because a single model (1) allows us to use multiple predictors and criterion variables, (2) allows us to use latent variables and measured variables, (3) is capable of handling multiple dependent and independent variables simultaneously, (4) is capable of testing mediation and moderating relationships, (5) does not require a normal distributional assumption and (6) is capable of handling relatively small sample sizes and multicollinearity problems among the independent variables (Chin, 1998; Nitzl, 2016). We conducted our analysis at the organizational level.

3.2 Data collection

There are 4,687 HEIs in Indonesia, consisting of 586 universities, 221 institutes, 2,538 higher schools/colleges, 1,063 academies and 279 polytechnics. The data was collected using online questionnaires. As many as 1,000 questionnaires were distributed to the HEI managers as well as to the members of the social media group administered by the Directorate General of Institution of the Ministry of Research, Technology, and Higher Education (MRTHE). The managers of the HEIs consisted of the top management team (first level and second level) in the universities, institutes, academies, polytechnics, and higher schools/ colleges. First-level management consists of the president, rectors, and directors. Second level management consists of the vice-presidents, vice-rectors, research center heads, vice directors and deans. Following Sekaran and Bougie (2016), the quota sampling method was employed due to the considerations of cost, time and the need to adequately represent the minority elements in the population. Table 1 shows the distribution of the sample of universities, institutes, higher schools/colleges, polytechnics and academies as well as the participating managers. More of a quota was given to universities and institutes because both institutions are expected to have the capability to compete globally in the near future. After three months for the data collection period, as many as 182 HEIs managers (18% of the members) participated in the survey. Not all HEIs have been targeted by the MRTHE to compete globally. The participating HEIs accounted for 4% of the total population of HEIs in Indonesia. Table 2 shows the demographic analysis of the respondents.

3.3 Definitions and measurements

Strategy pillars. In this study, the construct of strategy pillars is operationally defined as the perceived collection of the basic elements of successful strategy formulation and the prerequisites for an effective strategy execution. A five-point Likert scale was used to measure the construct of strategy pillars, rated from "strongly disagree (1)" to "strongly agree (5)." A total of ten statements were developed to measure the construct of strategy pillars as follows:

To formulate a good strategic plan:

(1) My institution has developed a clear and focused vision and aligned mission statements.

(2) My institution has identified the strategic themes and strategies necessary to achieve its targeted performance.

(3) My institution is considered to have a good strategic position by prospective students, students, parents, and graduate employers.

(4) My institution has developed functional strategies to support the achievement of the organizational goals.

(5) My institution has shared values and code of conduct for members.

(6) My institution aligns the strategies it uses at every level, both vertically and horizontally, in order to create synergy.

(7) My institution has a management control mechanism in place so then the managers act in accordance with the organizational strategy.

(8) My institution uses a regular monitoring model for its strategy implementation and it provides feedback to allow the managers to make adjustments.

(9) My institution has a communication model meaning that the strategy can be understood by every member of the organization, making it easier to implement.

(10) My institution has a strategic reward model for managers who successfully achieve their targeted level of performance.

3.4 *Performance management system (PMS)*

In this study, PMS is operationally defined as the perceived existence of a management system that enables the execution of a strategy and the effective control of the resulting performance achievements. A five-point Likert scale was used to measure the construct of

Institutions	Quota samples	%	Participating managers	%
University	586	58.6	85	46.7
Institute	221	22.1	47	25.8
Academy	70	7.0	15	8.2
Polytechnic	48	4.8	25	13.7
Higher School/College	75	7.5	10	5.5
Total	1,000	100	182	100

Table 1. Quota sampling

Description	Respondents Total	%
Gender		
Male	138	75.8
Female	44	24.2
Total	182	100.0
Education		
Master	93	51.1
Doctoral	89	48.9
Total	182	100.0
Experiences		
1–5 years	89	48.9
6–10 years	35	19.2
10 years	58	31.9
Total	182	100.0
Top management team level		
First-level management	111	61
Second-level management	71	39
Total	182	100.0

Table 2. Characteristics of the respondents

PMS, rated from "strongly disagree (1)" to "strongly agree (5)." A total of ten statements were developed to measure the construct of performance management system as follows:

(1) My institution implements a reliable and systematic performance management system to control the behavior of its managers.

(2) My institution applies strategic measurement methods in the form of key performance indicators.

(3) My institution has a special division that focuses on managing organizational strategy and performance.

(4) My institution implements a monitoring system that enables managers to analyze any data for a sound decision-making process.

(5) My institution has a reliable strategic communication system that enables managers to disseminate information effectively and efficiently.

(6) My institution implements a fair reward system that motivates individuals and departments to build a strong performance culture.

(7) My institution has an application software that allows the managers to discuss their performance through the use of performance dashboards.

(8) My institution implements a discussion system that allows the managers to provide coaching to their subordinates concerning the problems that they face and the solutions that they must implement.

(9) My institution implements the best practice performance management system that is widely adopted by organizations around the world.

(10) My institution develops the strategic skills needed to effectively execute any necessary strategies.

3.5 Organizational productivity performance (OPP)

In this study, OPP is defined as the perceived results (outputs) of the HEIs generated by the inputs over the period of the last three years. A five-point Likert scale was used to measure the construct of OPP, rated from "strongly disagree (1)" to "strongly agree (5)." A total of eight statements were developed to measure the construct of OPP as follows:

In the last three years:

(1) Teaching productivity performance at my institution has tended to get better.

(2) Research performance at my institution has tended to increase.

(3) Community service in my institution has tended to develop and is increasingly recognized by society.

(4) The financial performance of my institution has tended to get better.

(5) The overall human capital performance, particularly in relation to competencies, has tended to increase.

(6) The information and communication technology performance tends to be more reliable and trusted.

(7) Our cooperation with other institutions has tended to increase.

(8) The development of the facilities and infrastructure at my institution has tended to increase.

4. Empirical results

Table 3 shows the results of the descriptive statistics. First, the result for the strategy pillars (mean = 4.321; SD = 0.609) suggests that the HEI managers in Indonesia strongly agree with the questionnaire items, revealing the important role of strong strategy pillars in their respective organizations. Second, the result of PMS (mean = 4.570; SD = 0.474) suggests that the respondents strongly agree with the questionnaire items, indicating the importance of PMS in their respective organizations. Finally, the result for OPP (mean = 0.4136; SD = 0.603) suggests that the respondents agree with the questionnaire items for OPP, indicating the perceived achievement of OPP.

4.1 Measurement model analysis

We used measurement model analysis to assess the reliability and validity of the measures relating to specific constructs. We also employed WARP-PLS 5.0 in the analysis for the reason that it enables us to take nonlinearity into consideration when estimating the coefficients of association among the linked variables (Kock, 2016). The first iteration of the measurement model analysis showed that there were some invalid indicators (loading factor <0.6). There were several invalid indicators in both the strategy pillars ($SP_4 = 0.435$, $SP_5 = 0.569$, $SP_{10} = 0.315$) and the PMS ($PMS_{10} = 0.476$). This suggests that the variances of the aforementioned indicators do not sufficiently explain the variance of the constructs measured. Therefore invalid indicators were deleted.

After the second iteration, Table 4 shows that all of the measures are significant and above the 0.60 loading level. This means that the measures account for at least 60% of the variance of the underlying latent variable (Chin, 1998). The composite reliability (CR) coefficients for the constructs are more than the accepted level of 0.70, suggesting that the measures are reliable (Nunnaly, 1967; Hair *et al.*, 2014, p. 104). The construct validity was assessed using convergent validity and discriminant validity. To assess convergent validity, we employed average variance extracted (AVE). As shown in Table 4, the AVEs for all constructs were above 0.50. Following Hulland (1999), this study provides evidence of convergent validity.

We evaluated the discriminant validity by comparing the square roots of the AVEs with the correlation between the constructs to describe whether a construct shares more variance with its measures than with other constructs. It is valid when the square root of the AVE of a construct is greater than the correlation between the construct with another construct (Fornell and Larcker, 1981). As shown in Table 5, the correlation among the constructs in the off-diagonal and the square root of AVE in the diagonal indicate that there is adequate discriminant validity. In conclusion, this proves that the measurement model is reliable and valid. It can also be seen from Table 5 that the strategy pillars have a positive and significant correlation with PMS ($r = 0.726$; $p < 0.001$) and OPP ($r = 0.486$; $p < 0.001$). This suggests that strategy pillars are important when developing PMS as well as OPP. In addition, PMS is also positively correlated with performance ($r = 0.545$; $p < 0.001$), indicating that PMS may improve OPP.

Constructs	Mean	SD	Category
Strategy pillars	4.321	0.609	Strongly Agree
Performance management system (PMS)	4.57	0.474	Strongly Agree
Organizational Productivity Performance (OPP)	4.136	0.603	Agree

Note(s): (1) Interval = (highest score – lowest score/number of scores
Interval = (5–1)/ 5 = 0.8 (2) The category of the average respondents' answers follows the following rules: $1.00 < \alpha < 1.79$: Strongly Disagree; $1.80 < \alpha < 2.59$: Disagree; $2.60 < \alpha < 3.39$; Neutral: $3.40 < \alpha < 4.19$: Agree; $4.20 < \alpha < 5.00$: Strongly Agree

Table 3.
Results of the descriptive statistics

Latent variable	Loading	*p*-values
Strategy Pillars (Composite Reliability = 0.919$^{(r)}$; AVE = 0.621$^{(cv)}$)		
SP1	0.722	<0.001
SP2	0.813	<0.001
SP3	0.684	<0.001
SP6	0.808	<0.001
SP7	0.814	<0.001
SP8	0.823	<0.001
SP9	0.84	<0.001
Organizational Performance (Composite Reliability = 0.934$^{(r)}$; AVE = 0.641$^{(cv)}$)		
OPP1	0.814	<0.001
OPP2	0.846	<0.001
OPP3	0.798	<0.001
OPP4	0.797	<0.001
OPP5	0.856	<0.001
OPP6	0.796	<0.001
OPP7	0.765	<0.001
OPP8	0.724	<0.001
PMS (Composite Reliability = 0.930$^{(r)}$; AVE = 0.597$^{(cv)}$)		
PMS1	0.776	<0.001
PMS2	0.747	<0.001
PMS3	0.792	<0.001
PMS4	0.83	<0.001
PMS5	0.793	<0.001
PMS6	0.762	<0.001
PMS7	0.84	<0.001
PMS8	0.689	<0.001
PMS9	0.707	<0.001

Note(s): (1) $^{(r)}$CR of 0.70 or more: sufficient reliability. (2) $^{(cv)}$AVE of 0.50 or more: convergent validity

Table 4. Results of the reliability and convergent validity testing

	Strategy pillars	OPP	PMS
Strategy Pillars	*0.788$^{(dv)}$*		
OPP	0.486***	*0.800$^{(dv)}$*	
PMS	0.726***	0.545***	*0.772$^{(dv)}$*

Note(s): (1)***Significant at $p < 0.001$.(2)$^{(dv)}$discriminant validity: diagonal elements > respective off-diagonal elements

Table 5. Discriminant validity

4.2 Structural model analysis

This study employed the bootstrap method. This is a non-parametric resampling test developed by Preacher and Hayes (2004). This method does not rely on a normality assumption; therefore it is suitable for smaller sample sizes (Hair *et al.*, 2014). In this study, bootstrapping was conducted twice. Baron and Kenny (1986) and Hair *et al.* (2011) have stated that the first step in testing a mediation model is to test the direct effect before inserting a mediating variable. The result of the direct effect must be significant. Table 6 (Panel A) supports the first hypothesis, stating that strategy pillars are positively associated with OPP ($\beta = 0.49$; $p < 0.01$).

In the second step, PMS as a mediating variable was introduced. Table 7 shows the results of the structural model analysis. According to Hair *et al.* (2010, p. 746), the following

Direct effect	β coefficient	Probability	Decision
Panel A			
Before including PMS as the mediating variable			
Strategy Pillars > OPP	0.49	$p < 0.01$	Significant, H1 is supported
Panel B			
After introducing PMS as the mediating variable			
Strategy Pillars > OPP	0.2	$p < 0.01$	Significant
Strategy Pillars > PMS	0.73	$p < 0.01$	Significant, H2 is supported
PMS > OPP	0.4	$p < 0.01$	Significant, H3 is supported
Panel C	Indirect Effect	Probability	Decision
Indirect effect			
Strategy Pillars > PMS > OPP	0.174	<0.001***	H4 is supported, partial mediation

Note(s): (1) ***significant at $p < 0.01$

Table 6. Summary of the structural model analysis

Hypothesis	VAF%	*p*-value	Category	Decision
Strategy pillars > PMS > OPP	37.34^	<0.001***	Partial Mediation	Supported

Note(s): (1) *** $p < 0.001$. (2) ^VAF value is between 20% and 80%, meaning that it is a partial mediation (VAF > 80%: full mediation; VAF 20%–80%: partial mediation; VAF < 20%: no mediation)

Table 7. Result of the hypothesis testing (indirect effect)

requirements of the mediating effect should be met: (1) the path coefficient from the independent variable to the dependent variable is significant; (2) the path coefficient from the independent variable to the intervening variable is significant and (3) the path coefficient from the intervening variable to the dependent variable is also significant. Before introducing PMS as the mediating variable, the path coefficient of SP > OP was significant ($\beta = 0.49$; $p < 0.01$). After introducing PMS, the path coefficient of SP > OP was still significant ($\beta = 0.20$; $p < 0.01$) but the beta value was reduced from 0.49 to 0.20. This indicates that PMS partially mediates the relationship between strategy pillars and organizational performance.

The variance accounted for (VAF) value was used to assess the strength of the mediation, as suggested by Hair *et al.* (2014). Furthermore, following Hair *et al.*'s *work* (2010, p. 746), a VAF value of more than 80% indicates a full mediation, a VAF value of 20–80% means there is partial mediation and a VAF value of 20% suggests no mediation. The VAF value of this study was calculated as follows:

Indirect effect (SP > PMS > OPP) = 0.73 × 0.40 = 0.292

Direct effect (SP > OPP) before introducing PMS as mediation = 0.49 (Table 6)

Total effect = 2.292 + 0.49 = 0.782

VAF value = indirect effect/ total effect = 0.292/ 0.782 = 0.3744 or 37.34%. The result confirms that PMS partially mediates the SP-OPP relationship (see Figure 2).

4.3 Discussion

In this study, we have investigated the mechanism through which strategy pillars affect organizational productivity performance via the performance management system. Strategy and system are two intangible assets and unique resources that can be used by an

organization to build a competitive advantage. An organization has a sustainable competitive advantage when it implements a strategy that is not identical to the strategy pursued by a competitor (Serra and Ferreira, 2010).

The first hypothesis stating that strategy pillars have a positive effect on organizational productivity performance is supported. This finding empirically proves that strong strategy pillars affect the productivity performance of Indonesian HEIs. The managers of the HEIs suggest that building strong strategy pillars is important when they have to compete globally. The fact that only 3 Indonesian HEIs out of 586 universities and 221 institutes have been listed among the top 500 QS WUR universities indicates the weakness of the HEIs' present strategy pillars. The important role of strategy is generally formulated in the form of a standardized strategic plan which strategy pillars should become an important part of. Although most HEIs in Indonesia have developed formal strategic plans, the process and quality of each strategic plan is not the same. The difference in the resources behind the process of identifying, formulating, developing and building the strategy pillars will determine the quality of the strategy pillars themselves and the success of the strategy formulation and execution. The result of this study support the previous studies (Strang, 2018; Arunprasad, 2017; Friis *et al.*, 2016; Martello *et al.*, 2016; Gabrielsson *et al.*, 2016; Alzoubi and Emeagwali, 2016; Serra and Ferreira, 2010; Song *et al.*, 2007).

The second hypothesis stating that the strategy pillars have a positive effect on PMS is also supported. This finding also empirically proves the important role of strategy pillars on PMS. The HEIs managers suggest that the design of an effective PMS should follow the architecture of the strategy pillars. This also implies that the HEIs should develop PMS and its infrastructure to support the smoothness of the strategy pillar implementation. As stated by Kaplan and Norton (2004a, b), many organizations fail to achieve their desired level of performance because they do not have a management system that links strategy formulation with their plan execution. This was common in companies around the world when the Balanced Scorecard concept was introduced in the 1990s as a strategic management system. At present, public organizations in Indonesia such as government institutions and HEIs have started to adopt performance management systems including the Balanced Scorecard framework. The results of this study provide additional support for the previous studies (Ledin and Machin, 2016; Vieira *et al.*, 2016; Asad and Mahfod, 2015; Arjaliès and Mundy, 2013).

The third hypothesis stating that PMS has a positive effect on organizational productivity performance is supported. This finding empirically confirms that the end result of a performance management process is information that helps the management to make better decisions and improve performance. The managers of the Indonesian HEIs deeply understand and suggest that PMS plays an important role in translating, measuring, implementing and monitoring strategy as a part of improving productivity performance. The management should not ignore the role of PMS in effective strategy execution as stated by

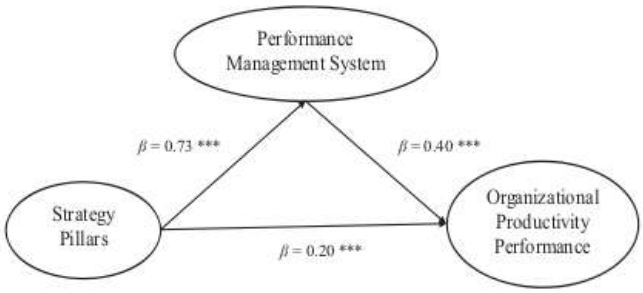


Figure 2.
Result of the structural model

Asad and Mahfod (2015). This finding also provides empirical support for the previous studies (Beitsch *et al.*, 2015; Kroll, 2015; Willems *et al.*, 2015; Gerrish, 2015).

The fourth hypothesis stating that PMS mediates the strategy pillar–organizational productivity performance relationship is also supported. This finding empirically demonstrates the mechanism of how the strategy pillars affect productivity performance via the performance management system in the Indonesian HEI research setting. This suggests that when dealing with global competition in the context of higher education, HEIs need to build strong strategy pillars as the basis for planning and implementing strategies. Strong strategy pillars do not guarantee good performance without the existence of an effective and reliable performance management system. This study contributes to the very limited number of studies on the mediating role of PMS on the strategy pillar–OPP relationship, especially in the HEI research setting in Indonesia. This study provides additional support for the previous studies focused on profit-oriented companies conducted by Micheli and Mura (2017) and Wijethilake *et al.* (2018).

Using perceived performance may prompt the emergence of crucial issues in this study, especially the issue of common method bias. However, scholars still extensively use perceived performance instead of objective performance for the following justifications: (1) the objective performance data is not available (Deshpandé and Farley, 2003) and (2) perceived performance reflects other important dimensions that cannot be provided by objective measures (Jaworski and Kohli, 1993). Figure 3 shows the graphical representation of the Importance–Performance Map Analysis (IPMA) identifying which indicators need to be prioritized when seeking to improve OPP.

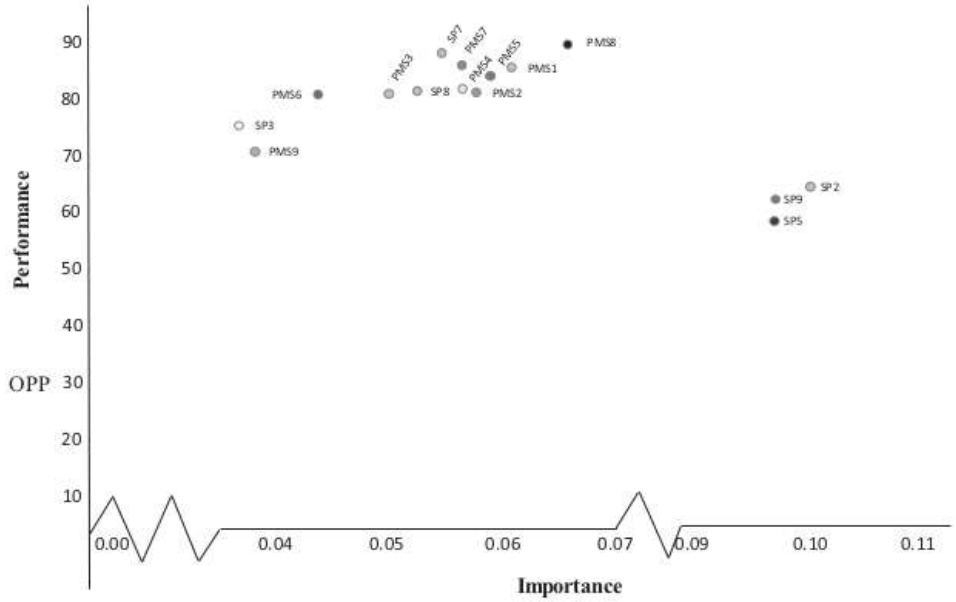
5. Conclusions and implications

Our study explores whether strategy pillars have a direct effect on organizational productivity performance, and if so, whether the effect is mediated by performance management system. Our study continuous the work of Serra and Ferreira (2010), Carroll and McAuley (2017), and Petrov *et al.* (2020) on strategy pillars but we use a different point of view. We argue that the previous studies are still inadequate when it comes to explaining the mechanism behind how strategy and its associated pillars are able to improve organizational productivity performance. We argue that the strategy pillars should refer to the collection of the basic elements of strategy formulation that can facilitate an effective strategy execution. In addition, one pillar must relate to the other pillars.

To test the hypotheses of this study, we developed a mediation research framework describing the mechanism of how strategy pillars affect organizational productivity performance via the performance management system. We employed partial least square structural equation modeling (PLS-SEM) to test the hypotheses studied.

Using a sample of 182 HEI managers in Indonesia, we have demonstrated that the strategy pillars have a positive effect on organizational performance and the performance management system, and that the performance management system has a positive effect on organizational productivity performance. Further analysis reveals that the performance management system partially mediates the strategy pillar - organizational productivity performance relationship.

The findings of this study are important for HEIs in Indonesia. The MRTHE, the government of Indonesia, continues to encourage HEIs to compete globally so as not to be left behind by neighboring countries such as Malaysia, Singapore, the Philippines and Thailand. The MRTHE also encourages more Indonesian HEIs to be included on the list of the top 500 universities of the world in the QS WUR version. Therefore this study provides more understanding to aid the managers of the HEIs in developing and building strong strategy pillars as the basis of a good strategic plan and effective strategy execution. The results of the



Note(s):

SP2: strategic themes
SP3: strategic positioning
SP5: culture
SP7: strategic control
SP8: strategic feedback
SP9: strategic communication

PMS1: systematic and reliable system
PMS2: strategic measures
PMS3: performance management unit
PMS4: monitoring system
PMS5: strategic communication system
PMS6: reward system
PMS7: performance management software
PMS8: routine discussion system
PMS9: performance management approach

Figure 3.
Importance - performance map of the target construct OPP

mediation model of this study also confirm and provide the suggestion that strong strategy pillars should be supported by an effective and reliable performance management system in order to achieve the desired level of organizational productivity performance.

Using the importance-performance map analysis, this study also reveals which indicators in the strategy pillars and performance management system should be prioritized in order to improve OPP. By identifying the important indicators, the managers of the Indonesian HEIs will have a deeper understanding and engage in better decision making as a part of improving their performance.

5.1 Contribution to theory

Although strategy pillars are rarely researched, we consider it to still be an interesting topic contributing to the debate of the factors determining organizational competitive advantage and performance. This study provides empirical evidence for the development of the theories of resource-based view, competition, strategy and performance management. First, the results empirically support the importance of strategy pillars as the determinants of competitive advantage, especially from the perspective of strategy formulation and execution. Second, it also provides empirical evidence that the strategy pillars identified

during the strategic planning process will result in better performance only if supported by a reliable PMS. This mediation research model is empirically confirmed in the HEI research setting in Indonesia.

5.2 Contribution to practice

This study implies that by enhancing the HEIs performance, the HEIs managers should develop the strong strategy pillars needed for strategy formulation and execution. To effectively execute the strategy, managers should implement a reliable performance management system. Managers should increase their awareness of the role of PMS because their institutions are now assessed using quantitative indicators, standardized processes and algorithms. The PMS will help the managers to effectively execute the strategy needed to achieve the desired level of productivity performance. The findings also provide crucial information regarding which strategy pillars and indicators in the performance management system should be prioritized during strategy formulation and execution to enhance the HEIs performance.

5.3 Contribution to society

Our research provides a model to use to improve the performance of HEIs by employing strategy pillars and a performance management system. Because the HEIs play an important role in the welfare of society, the better the performance of the HEIs, the better the quality of life of the society in the knowledge economy era. The awareness of society will be improved regarding the issue of good university governance. This means that the HEIs must build good strategy pillars and performance management systems.

5.4 Limitations and future research

This study has several limitations. First, the sample size used is relatively small and this may raise the issue of generalization. Future studies should examine the model of this study using a larger sample size from various organizations or other industries to validate the results of our study. Second, in relation to the measurements, this study used perceived data instead of objective data. The Likert scale was used to access the perception of the respondents, therefore, it may raise the issue of judgmental bias. Future researchers are encouraged to use secondary data instead of primary data. Third, the research model is simple. This seems to oversimplify the complexity of the real world. Future studies needs to accommodate the complexity issue by adding other variables affecting organizational productivity performance such as innovation, leadership, organizational culture and commitments. Fourth, this study does not assess the strategic issues or decision-making process in different HEIs, therefore it limits the depth of the analysis of the issue. Lastly, this study is context-specific for Indonesia and caution should be used when generalizing it to other countries. Notwithstanding the above limitations, we believe that this study provides additional evidence of the importance of strategy pillars when designing a performance management system that will enhance HEI performance.

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Corresponding author
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