SRIWIJAYA INTERNATIONAL JOURNAL OF DYNAMIC ECONOMICS AND BUSINESS
http://ejournal.unsri.ac.id/index.php/sijdeb

Strategic Performance Measurement System in Higher Education in Indonesia: New Public Management Approach

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Abstract: This research is a descriptive overview to describe the alignment between the criteria and measurements of several performance indicators compiled in the university's strategic plan. Key Performance Indicators (KPI) as indicators of organizational performance based on the Vision, Mission, and Organizational Strategy which are derived from Key Performance Indicators and Program Performance Indicators or Activity Performance Indicators. The alignment measurement method uses the correspondence analysis technique. This study finds that most of the measurement criteria are still dominated by the input aspect, with economic criteria. Performance measurement that focuses on input criteria will have an impact on [1]the orientation of higher education on the budget and does not describe how well the objectives of the program are being implemented. Higher education KPIs should be more result-oriented, the impact of which is on public trust, brand image, reputation, and university performance.

Keywords: New Public Management; Strategic Performance Measurement System; Key Performance Indicator

Introduction

The most crucial future challenge today is the digitalization transformation that occurs in various sectors. This phenomenon will certainly have an impact on how much the organization's ability and agility to adapt, both in preparing new skills, competencies, and job

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automation. Innovation thinking, a flexible and dynamic approach to making future-oriented decisions using new ways is the basis for future management known as strategic initiatives. Strategic initiatives as a management challenge to build a culture of flexibility with entrepreneurial strength with broad ideas to lead to certain commitments, which require a relevant performance appraisal system. This process can be viewed as a system that is reflected in the Strategic Performance Measurement Systems (SPMS). SPMS enables organizations to plan, measure and monitor their performance, so that decision-making, resources, and activities can be better aligned with strategic decisions to achieve desired results and create value for stakeholders.

SPMS is a strategic management domain area. SPMS is a performance measurement system that combines strategy, business operations, and finance to measure how well a company achieves its targets/visions and missions (Adams, SM, Sarkis, J., & Liles, D., 1995; Atkinson, AA; Waterhouse & Wells, 1997; Bryson, 2004; Marr, 2008; De Waal, 2013; Silvi et al., 2015). Throughout scientific history, the performance appraisal system has become an issue that never fades and is currently an issue that continues to be studied in various disciplines and has developed over the last few decades (Ittner et al., 2003; Chenhall, 2005; Franco et al., 2021). SPMS enables organizations to plan, measure, and monitor their performance so that decision-making resources and activities can be better aligned with strategic decisions to achieve desired outcomes and create value for stakeholders (Atkinson, AA, Waterhouse, JH, & Wells, RB 1997; Harrison et al., 2012; Silva et al., 2019; Soewarno & Tjahjadi, 2020). Previous kinds of literature have shown progress in improving the performance appraisal system and have practically demonstrated, among others, The French-style tableau (Pezet, 2009), Pyramid Performance (Lynch & Cross, 1991); The Balanced Scorecard (Kaplan & Norton, 1996); Six Sigma Performance Scorecard (Gupta & Wiggenhorn, 2003), The Performance Prism (Neely et al., 2002); Dynamic Strategic Performance (Kolehmainen, 2010); Strategic Performance Matrix (Mohanad & Nussaif, 2020) and other measurement metrics, with financial and non-financial measures.

Kolehmainen (2010) examined how the flexibility and adaptability of SPMS can be used for strategic alignment that allows companies to find a balance between empowerment and alignment. This means that dynamic SPMS is needed to provide sufficient power to account for external and internal changes. In line with (Bisbe & Malagueño, 2012) who stated that the use of a strategic performance measurement system for strategy formulation is moderated by dynamic environmental factors. According to Akhtar and Sushil (2018), strategic flexibility is one of the critical success factors for SPMS design in an uncertain business environment. The SPMS variable can be placed as a mediating variable as shown by Micheli and Mura (2017) that PMS which used comprehensive non-financial and financial indicators became a mediating variable between strategy and company performance, and SPMS is used to reflect strategic priorities (Siska, 2018). The dynamics of SPMS today have added new knowledge to organizations, including public organizations.

The establishment of a performance-based public sector management system is driven by pressure on public sector organizations to improve their performance. Performance-based management is part of the New Public Management (NPM) reform carried out by developed countries in Europe and Anglo-America since the 1980s (Mahmudi, 2019). One of the important elements of the NPM concept is accountability and performance measurement (Tolofari, 2005). In the NPM concept, performance measurement is expected to be developed by each work unit to measure progress in achieving the organizational

goals that have been set. A study conducted by (Akhtar & Sushil, 2018) found that strategic planning, strategy implementation, strategic flexibility, strategic performance management design, information system flexibility, implementation problems, key success factors, and feedback, as well as learning, are macro-level factors that affect the effectiveness of the strategic performance management system in measuring and managing organizational performance.

In public organizations, the strategic performance measurement system will be more complex, including bureaucratic problems which become the main challenge to ensuring the effectiveness of strategic performance from the central government to the local government. Bureaucracy is a problem in various developing countries and is always criticized for its rigid characteristics, low response, corruption, and inefficiency (Berman & Kim, 2010) (Martin & Sripeni, 2020). A review conducted by the OECD on several European countries in 2013 concluded that there are two fundamental problems in the governance of the public service sector, namely there are weaknesses due to the poor relationship between strategy and budget; the availability of performance data, and the use of performance measurement (Joyce, 2015). The problem that is also often faced by public sector organizations is that they do not understand the main goals and strategies to achieve these goals (Marr, 2008).

The linkage of planning, implementation and organizational performance as a strategic control tool is a sequential strategic management process. This is also in line with Bourne & Franco-Santos (2004) and Franco et al. (2021) who stated that a strategic performance measurement framework is needed to monitor and evaluate performance circularly in the organizational transition perspective. Pollanen et al. (2017) showed that the efficiency and effectiveness of strategic performance measurement in public organizations had a positive effect on performance in strategy implementation and strategy assessment decision-making. Research conducted by Al-Dhaafri and Alosani (2020) in the public sector in Dubai, UAE, found that strategic planning and strategy implementation have a positive and significant effect on organizational performance. More importantly, this study also found that organizational excellence has intervening power between strategic planning and organizational performance, as well as between strategy implementation and organizational performance.

SPMS in the public sector, especially in higher education, is reflected in the hierarchy of strategic plans, which are linked to strategic boundary conditions (Marr, B. (2008). Strategic boundaries can be values that serve as core values of the organization, including vision, mission, and goals. Core values are generally an orientation or philosophy that is used as the main basis for business processes or core values as organizational cultural identity). Not many educational organizations in Indonesia declare their core values because they consider generic business processes. However, there is an orientation that is reflected in the strategic plans of several universities, namely a shift from a research campus to an entrepreneurship campus (Zechlin, 2010; El Nemar et al., 2020), as well as the approach to NPM in an entrepreneurial perspective.

Higher education is one of the organizations providing public services, in this case, higher education services. Universities are non-profit organizations. As a public organization, the main source of funding for the operation and development of higher education is public funds, in the form of education donations (see Mukhopadhyaya, D; Banerjee, 2015; Kenno

et al., 2021; Wilkins, 2020). In addition, to improve the quality of their human resources, several countries have allocated very large budgets for higher education purposes, such as Malaysia (Thirumanickam & Ahmad, 2013), Singapore (Lewis, 2018), and Indonesia, as well as various other countries. The high budget allocation for these universities has increased the responsibility and accountability of the institution to its stakeholders (Thirumanickam & Ahmad, 2013). Thus, issues related to performance measurement in the higher education sector become a priority (Humphrey et al, 1993). Measurement of the performance of state universities in various countries cannot be separated from the application of NPM, which is caused by an increase in the limited government budget (Rutherford & Rabovsky, 2014). A study conducted by Sherwani (2014) concluded that universities need to implement performance management policies to improve individual performance and align individual goals and objectives with the university's strategic goals. It is intended to improve the overall performance of the university to achieve its objectives. Other researchers have described strategic performance research in universities carried out comprehensively with a multi-criteria approach with cognitive and behavioral styles (Chalaris & Gritzalis, 2020). Research conducted by Tanveer & Karim, (2018) also showed that universities apply the concept of performance management, however, it needed to be adjusted to the university's vision and mission.

In 2020, there were 4,593 universities in Indonesia, a decrease compared to 2018 when there were 4,670 universities. However, the number of study programs in 2020 increased compared to 2018, which was 27,779 study programs to 29,413 study programs in 2020. Furthermore, the number of registered students in 2020 was 8,483,213 students, an increase compared to the number of students in 2018 which was 8,043,480 students (Pusdatin Kemerintekdikti, 2018; PDDikti, 2020). The qualifications of existing lecturers in 2020 also increased compared to 2018. In 2020 the number of lecturers with doctoral qualifications was 16.46perrcent of the total lecturers, while in 2018 the number of lecturers with doctoral qualifications was 14.47perrcent of the total lecturers (Pusdatin Kemerintekdikti, 2018; PDDikti, 2020). The number of excellent and A accredited universities in 2018 was 73 universities (1.56 percent of total universities) and increased to 99 universities in 2020 (2.15 percent of total universities) (BAN-PT, 2018; BAN-PT, 2020).

From the available statistical data, it can be seen that there are some problems in universities in Indonesia, including the accreditation gap between universities and human capital such as the number of lecturers with doctoral qualifications and professors, the uneven distribution of professors in various fields of science and regions, and the percentage of the age group of lecturers. These problems show that governance with the same guidelines may differ in implementation. In addition, there are other problems such as the ratio of lecturers to students, gross enrollment rate, sources of funding for higher education, implementation of information technology, research results that can be utilized by the community, and graduates who are ready to work in the world of work. Some of these problems are directly related to key performance indicators (KPI), which need to be continuously measured and evaluated to see the quality of higher education and improvements that may be needed to improve the quality of higher education (Azma, 2010). The results of Azma's research (2010), showed that KPI in universities included research and scientific journals, education and technology, teaching staff, and administrative staff which are the most important factors in performance evaluation. These performance indicators will form the building of a performance measurement system (Kahveci et al., 2013).

Currently, the Indonesian government has given greater attention to measuring the performance of higher education organizations, to achieve the same level of quality of higher education, which will lead to the independence of higher education. Thus, it is necessary to measure higher education performance indicators that can be used as a centralized strategic decision-making tool. Universities ensure whether these strategic decisions can be implemented effectively.

Although the topic of performance measurement systems has come a long way, this topic still requires further study to meet various needs and an increasingly broad scope and there is still a lot of room to be researched, especially for cases in Indonesia to face the challenges ahead. Looking at some of the performance measurement models mentioned above, there are still some gaps and shortcomings, for example how a futuristic-based performance appraisal measurement system as an example of performance against ideas, innovation, entrepreneurial, and strategic initiatives, is needed by future management. This topic is very important when organizations are faced with the need for dynamic performance appraisals, which provide information as soon as possible and not only based on traditional performance measurement but also performance measurement based on strategic management initiatives and future entrepreneurial needs.

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This article aims to describe how the NPM-based performance measurement system is implemented by state universities in Indonesia and to examine whether there are differences in performance measurement systems between universities. The analysis process is carried out based on the documentation of the strategic plans of all universities in Indonesia ranging from 2016 to 2025. The analysis technique used is descriptive statistics and correspondence analysis. These techniques and methods are a new challenge for business organizations and public organizations that require a holistic performance appraisal system to meet the needs of ranking policies, reputation, brand image, and competitive advantage.

This study contributes to the development of knowledge, especially regarding the application of performance measurement systems in public organizations based on NPM. This research serves as the basis for building an effective performance measurement system in higher education organizations in Indonesia, both at the strategic and operational levels.

Literature Review

Strategic Performance Measurement System (SPMS)

Strategic performance measurement has been an interesting issue for quite a long time, ranging from productivity model appraisal systems to optimization solutions (Dogramaci, 1984; Sudit, 1984); efficiency and effectiveness, (Färe & Grosskopf, 2005); profitability (Ilarslan et al., 2015; V. Kumar, et. all, 2018); competitive advantage (Rumelt, 1984; Barney, 1995; Porter, 1998). It is also related to firm capabilities (Mohamed et al., 2014; Yuliansyah et al., 2019); shareholder value (Kiliç et al., 2011); and stakeholders (Silva et al., 2019). SPMS also plays a role in bringing about positive changes in organizational culture, processes and systems, to contribute to the realization of the strategic vision (Pinheiro De Lima et al., 2013).

Furthermore, in the development of systems and performance measurement in several decades, it has been written in the important literature, that the strategic performance measurement system was discussed before the 1980s, and was recorded in 1986. Balaji, S. Cahkrawarthy showed the results of research that distinguished traditional and strategic performance appraisal systems with include a reputation dimension for stakeholder interests (Chakravarthy, 1986). Further developments, the strategic performance appraisal system is influenced by information technology and digital factors. It is characterized by the automation of performance appraisal systems (Kurstedt, 1990; Carlsson & Jacobsson, 1995; Buchta et al., 2007; Turban 2011). An important note in strategic performance appraisal became popularly stated by Kaplan with the Balance-Scorecard concept introduced for business and non-profit organizations by distinguishing financial and non-financial measures (Kaplan & Norton, 1991, 1996). The balanced scorecard has made an important contribution in the strategic management domain because it emphasizes the balance of managerial perspectives on aspects of marketing, production, human resources, and finance which are supported by main activities and supporting activities which are interpreted by the translation of the strategic level to the operational level. The literature on performance appraisal systems is growing, which is implemented in business and non-profit organizations with a strategic theme. Other scorecard models are the pyramid performance (Lynch & Cross, 1991), the six sigma business scorecard (Gupta & Wiggenhorn, 2003), and the performance prism model (Neely et al., 2002). Enlightenment on a better performance appraisal system continues to be developed through performance management as proposed by Baldwin et al., (2000), and Wade & Recardo (2001). Recently the orientation of the performance appraisal system has placed more emphasis on the importance of how to build competitive advantage and with a wider impact on the interests of stakeholders. Thus, the performance measurement system is increasingly dynamic by promoting the concept of sustainability (Charbonnier-Voirin & Roussel, 2012; Civelek et al., 2015, Rastislav & Petra, 2016). Until now, the strategic performance measurement system is still being discussed in various studies with various developments in measurement dimensions (Mohanad & Nussaif, 2020; Dal Molin et al., 2017, Amos et al., 2021).

SPMS's distinctive features include a) financial and non-financial metrics; b) forming a causal chain; c) providing a sequence of objectives-metrics-targets-action plans/strategic initiatives; and d) an integration of long-term strategy and operational goals (Siska, 2018). Then, in his research, Silvi et al (2015) proposed the SPMS model which is a combination of the following characteristics: a) includes long-term and short-term insights, b) integration of financial and non-financial measures, c) a combination of external and internal orientations of action, including customer, competitor, supplier perspectives, d)

inclusion of forward-looking perspectives (eg innovation, human resource management), and e) identification of causal relationships between various actions and perspectives.

As a strategic evaluation that uses multiple SPMS criteria, it must be chosen to represent the causal relationship between strategic drivers and outcomes (Lan Guo, et al 2018). According to Pietro Micheli and Jean Manzoni (2010), SPMS is not something easy to operate, although some researchers have shown a positive impact on the achievement of organizational performance it can be dysfunctional for several reasons such as bad behavior, inhibiting learning innovation, inhibiting decision making so that SPM is only as a assets not, liabilities. Meanwhile, Rajnoha et al. (2016), translate financial measures into a strategic performance measurement system as a reflection of the concept of corporate sustainability.

Some literature distinguishes the term "performance measures" from "key performance indicators/KPIs", although the two terms are often used interchangeably. Performance measures are central to the strategic performance management process. Although there are many definitions of strategic performance management and measurement, performance measurement cannot be done without examining performance measures. Performance measures or metrics are often used in the literature on management systems and strategic performance measurement of the private sector, while the public sector literature usually uses the term KPI (Muravu, 2021).

Several studies have been conducted to formulate the measurement of university performance. Most research tries to answer what performance criteria should be and how performance criteria can be measured, as done by Martin (2003), Azma (2010), Kahveci et al. 2(013). Other studies focus more on the specific dimensions of universities and the techniques used to determine their performance indicators, such as Ahmadi (2012) examines university performance appraisal systems and introduced AHP, and Kiakojoori et al. (2011) who evaluates the performance of each branch of Azad Islamic University by applying the Anderson Peterson Method. Furthermore, AL-Dahiyat (2020) developed a model for measuring strategic performance of higher education institutions using the balanced scorecard perspective.

Strategic Performance Measurement System: A New Public Management Approach

The design of the SPMS in the public sector is still a contentious issue, especially if it will be used as a legal basis for a public policy fo developing countries. In the SPMS bureaucratic system, it is something new that has begun to be developed in various countries such as (Berman, 2020).

The New Public Management Approach (NPM) is a method used as a guide to build SPMS in the public sector because the economic value in the public sector will be different from the economic value in business organizations in general. The term NPM is used as an approach to public sector administration and management (Pidd, 2012), as public sector governance and is a critique of public services with complicated bureaucracy and passive administration. Hood (1991) describes the characteristics of NPM, including (a) professional handling in management in the public sector (b) clear standards and performance measures (c) greater emphasis on controlling output (d) shift to disaggregation of units in the sector public (e) following the style of private sector management practice (f) emphasis on discipline and simplicity in the use of resources.

The main principle of the value of public sector services is the added value to a community. Just like private businesses, profitable businesses must add value to their stakeholders, including shareholders, employees, and customers, as should organizations that provide public services. Public organizations should also actively seek to add public value, but not necessarily replace it with market value.

An important element of performance management is performance measurement. Performance management is an instrument to achieve better results in organizations, teams, and individuals so that performance is understood and managed within agreed and planned goals, standard,s and competencies (Striteska, 2012). In the NPM concept, performance measurement is also the most important component because it has a close relationship with the other six components of NPM, especially the components of greater emphasis on controlling output and outcomes, creating competition in the public sector, emphasizing the adoption of business sector management styles into the public sector. , and an emphasis on discipline and frugality in using resources (Mahmudi, 2015).

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Organizational performance measurement is very important in providing information that explains program results to external parties of the organization. However, the information obtained from performance measurement can also be used to adjust the organization's internal operational activities (Ewoh, 2011). Therefore, for the purpose of performance measurement to be achieved, the measures used must be multidimensional (Ammons, 2008). In the public sector, performance measurements that are commonly used are measures of input, process, output, efficiency, service quality, and outcomes (Ewoh, 2011; Pidd, 2012; Kahveci et al., 2013), which are derived from simple input-output transformation theory.

Input measures are related to the resources used by the organization to achieve its goals, while output measures are tangible indicators to show how these resources are used. Outcome measures (effectiveness) are indicators that show how well a program or service is achieving its mission, including quality, cycles, and customer satisfaction. Meanwhile, the measure of efficiency is an indicator of how well an organization uses its resources, expressed as a ratio between the number of inputs and the number of outputs or results. However, efficiency does not measure the quality of programs or services (Ewoh, 2011). Process measures usually describe process efficiency, while service quality measures answer the question of "how well an organization carries out an activity or service" (Pidd, 2012).

Pidd (2012) states the "3E" of performance measurement, namely (1) the economy (economy), usually focuses on costs, and is an input; (2) efficiency, defined as the number of units of output per unit of input. Sometimes referred to as cost-effectiveness; (3)

effectiveness, which is related to the social objectives of the program, so it is rather difficult to define. Effectiveness is about the extent to which the target of a program is achieved. Furthermore, (4) equity (Equity), whether a program provides benefits or treats people fairly; (5) efficacy, where this criterion is related to effectiveness; (6) ethics (Ethicality), related to the question of whether the implemented program meets ethical norms; (7) productivity, is a measure of the number of units of output produced during some specified time interval, according to available resources; (8) process measures, which are often associated with workloads; and (9) service quality measures, including service users' satisfaction with the services provided. The following table 1 shows a simple public sector performance measurement associated with the Pidd performance measurement concept.

Table 1. **Performance Measurement, Input, Process, Output, Service Quality, and Results**

Performance Measurement	Input	Process	Output	Service Quality	Outcome
Economy	✓				
Efficiency	✓	✓	✓		
Effectiveness				✓	✓
Equity				✓	✓
Efficacy				✓	✓
Ethics		✓		✓	✓
Productivity		✓	✓		
Process measures		✓			
Service quality measures		✓		✓	

Source: Pidd, 2012

Performance Measurement System in Universities in Indonesia

In the implementation of the public sector, especially in the education sector, the performance orientation in the new paradigm has changed to outcome-based, where the concept of entrepreneurship has become an important phenomenon, especially in Indonesia. Outcome targets at the strategic level of higher education have followed three main pillars, namely the pillars of education and teaching, the pillars of research and service, and the last pillar of entrepreneurship, namely the ability of universities to produce commercialization of innovations and students who can create jobs. The three main pillars are also used to evaluate the performance of universities in Turkey and Finland (Kahveci et al., 2013; Kallio et al., 2017).

Measurement of higher education performance tends to place more emphasis on academic measures, not financial performance; and this is related to, among other things, academic activities, research, publications, teaching workloads, financial support, faculty and students, and student activities (Kaur & Singla, 2019). Furthermore, universities need to ensure that their performance measurement system is in line with organizational excellence, in order to meet the needs of various stakeholders (Thirumanickam & Ahmad, 2013). A strategic performance measurement system is a tool for internal and external control for the benefit of stakeholders (Atkinson, A.A, Waterhouse & Wells, 1997, Harrison et al., 2012). In the world of higher education, the performance measurement system has been operationalized in the form of key performance indicators (KPI) to ensure the achievement of strategic performance at the organizational level and sub-organizational units.

The key performance indicators (KPI) of State Universities and Higher Education Service Institutions under the Ministry of Education and Culture of the Republic of Indonesia in 2020 are determined based on the Decree of the Minister of Education and Culture (currently the Ministry of Education, Culture, Research, and Technology). These main performance indicators are contained in the Strategic Plan of each university.

Methods

The research design is explanatory research, to describe and explain the performance measurement system at universities in Indonesia. The type of data is secondary data with the source of the data is the documentation of the strategic plan report published on the website of each university. The strategic plan documents used are the 2016-2020 Strategic Plans and the 2020-2024/2021-2025 Strategic Plans. The performance measurement strategic plan document is grouped on based one NPM concept whose implementation can be categorized into three groups of Key Performance Indicators (KPI), Program Performance Indicators (PPI), and Activity Performance Indicators (API).

In 2021, in Indonesia there will be 125 non-vocational state universities under the Ministry of Education, Culture, Research, and Technology (BPS, 2021). The sample taken is 49 state universities, or 39 percent of the total non-vocational state universities, in a stratified manner by province. Each province is represented by at least one institution.

From 49 universities throughout Indonesia, 2,739 items performance indicators recorded. used as a case sample. Each case sample was determined for accuracy as an indicator criterion grouped into 9 groups, namely (1) economy, (2) efficiency, (3) effectiveness, (4) fairness, (5) efficacy, (6) ethics , (7) productivity, (8) process measurement, and (9) service quality measurement. Meanwhile, what is measured is grouped into 5 types, namely input, process, output, outcome, and service quality. (service quality) (Pidd, 2012).

Descriptive analysis is used to describe the characteristics of the performance indicators of higher education institutions in Indonesia. The data analysis technique was carriedd out using cross-tabulation descriptive analysis, in the form of correspondence analysis (correspondence analysis). Correspondence analysis was carried out on the correspondence table, which is a two-way table whose cells contain several measurements of the correspondence between rows and columns. The most common correspondence table is the cross-tabulation. Correspondence measures can be indicative of similarity, affinity, association, or interaction between a row and column variables. This analysis can be used to examine the relationship between two nominal variables graphically in a multidimensional space. It calculates row and column scores and generates a plot based on the scores. Categories that are similar to each other appear close to each other in the plot. In this way, it is easy to see which categories of variables are similar to each other or which categories of two variables are related.

Findings

An effective performance measurement system focuses on two things, namely what is assessed (what) and how to assess it (measurement) (Kaplan & Norton, 1996; Micheli, P., & Pavlov, A., 2020), both of which are integrated in performance measurement system).

Based on what is assessed (Performance Indicators) performance measurement has been grouped based on 9 elements needed in the management of the performance measurement system of public organizations (higher education services), namely (1) economy, (2) efficiency, (3) effectiveness, (4) fairness, (5) efficacy, (6) ethics, (7) productivity, (8) process measurement, and (9) service quality measurement (Pidd, 2012). The performance indicators assessed include Key Performance Indicators, Program Performance Indicators, and Activity Performance Indicators listed in the Strategic Plan of State Universities. Measurement of higher education performance tends to place more emphasis on academic measures, not financial performance; and this is related to, among other things, academic activities, research, publications, teaching workloads, financial support, faculty and students, and student activities (Kaur & Singla, 2019).

The key performance indicators can be reflected as strategic performance indicators at the top management level, and program performance indicators are cascading from the KPI and are the responsibility of middle level management which are then set forth in the API as implementation at the operational level. The strategic performance appraisal system that has been proposed in several literacies is used to fulfill stakeholder interests (Chakravarthy, 1986; Pidd, 2012) as stakeholder value. In relation to strategic performance, Key Performance Indicator should reflect stakeholder value as indicated by Atkinson, A.A, Waterhouse, & Wells (1997); Harrison et al., 2012 ; Silva et al. (2019); Soewarno & Tjahjadi, (2020). The PPI and API are at the operational level with more measurable and observable performance measures, while the KPI is more of a combination of quantitative and qualitative measurements such as reputation, benchmarks, (Chakravarthy, 1986) innovation level (Silvi et al., 2015) or entrepreneurial (Zechlin, 2010). ; El Nemar et al., 2020). Difficulties in assessing performance can be caused by unmeasured and unspecified performance measurements at each managerial level that distinguish between KPI, PPI, and API. As in the SPMS characteristic, which uses (a) non-financial financial metrics, (b) causal relationships, (c) target action plans and strategic initiatives (d) integration of long-term strategies and short-term operations (Siska, 2018).

From 43 universities and 6 institutes in Indonesia, an analysis of the strategic plan documents has been carried out, mostly in the period between 2020-2024 or 2021-2025, and a small part of the strategic plan for 2016-2020. From the results of the observation of the strategic planning documents, there are 2,739 cases of performance indicators which are incorporated in the Key Performance Indicators (KPI), Program Performance Indicators (PPI) and Activity Performance Indicators (API). Most universities set performance targets in the form of Key Performance Indicators or Strategic Performance Indicators (51.02 percent). A total of 28.57 percent of universities set performance targets in the form of Program Performance Indicators, and 20.41 percent of universities only set performance targets in the form of Activity Performance Indicators, without compiling Key Performance Indicators. It indicates that not all universities compose the three indicators completely in their strategic plan, which normatively starts from the KPI, PPI, and API.

The results of the research confirmed that KPI, PPI, and API are contained in the strategic plan of universities, where there are several universities that have distinguished between KPI, PPI ,and API. However, there are still universities that do not differentiate between KPI, PPI, and API. Overall, from 2,739 cases of performance indicators recorded in all strategic plans which are distributed with different frequencies. The number of cases of

recording performance indicators at various universities in Indonesia is an average of 56 items, the minimum number of recording performance indicators is 8 items and the maximum number of recordings is 227 items. Difficulties in identifying KPI, PPI, and API can also be caused by the different organizational structures among universities in terms of responsibility centers and authority. For example, between state universities and private universities and higher education under the Ministry of Education, Culture, Research and Technology, the Ministry of Religion or the Ministry of Health. As (Muravu, 2021), shows that there are differences in measuring the performance of the public and private sectors.

The frequency description of the number of performance indicators for various universities and institutes is shown in Figure 1 and Table 2.

Table 2. **Frequency of Recording All Performance Indicators at Various Universities and Institutes in Indonesia Listed in the Strategic Plan**

No	Higher Education Institution	Freq.	Percent
1.	Institut Seni Budaya Indonesia	8	0.4
2.	ISI Surakarta	25	1.3
3.	ISI Yogyakarta	17	0.9
4.	Institut Teknologi Bandung	73	3.9
5.	Institut Teknologi Sumatera	62	3.3
6.	Institut Teknologi Kalimantan	29	1.6
7.	Universitas Palangkaraya	121	6.5
8.	Universitas Brawijaya	33	1.8
9.	Universitas Indonesia	24	1.3
10.	Universitas Negeri Malang	10	0.5
11.	Universitas Airlangga	13	0.7
12.	Universitas Andalas	49	2.6
13.	Universitas Cendrawasih	24	1.3
14.	Universitas Nusa Cendana	29	1.6
15.	Univ. Pendidikan Ganesha	144	7.7
16.	Universitas Halu Uleo	135	7.3
17.	Universitas Hasanuddin	14	0.8
18.	Universitas Bengkulu	85	4.6
19.	Universitas Lampung	40	2.1
20.	Universitas Negeri Jakarta	77	4.1
21.	Universitas Jambi	15	0.8
22.	Universitas Lambung Mangkurat	55	3.0
23.	Universitas Negeri Makassar	19	1.0
24.	Universitas Mulawarman	25	1.3
25.	Universitas Negeri Semarang	68	3.7
26.	Universitas Negeri Padang	136	7.3
27.	Universitas Padjadjaran	22	1.2
28.	Universitas Mataram	68	3.7
29.	Universitas Riau	24	1.3
30.	Universitas Sebelas Maret	26	1.4
31.	Universitas Siliwangi	94	5.0
32.	Universitas Samratulangi	12	0.6
33.	Universitas Sriwijaya	12	0.6
34.	Universitas Syiah Kuala	28	1.5
35.	Universitas Tanjung Pura	10	0.5
36.	Universitas Tidar	10	0.5

No	Higher Education Institution	Freq.	Percent
37.	Universitas Sultan Ageng Tirtayasa	55	3.0
38.	Universitas Udayana	104	5.6
39.	Universitas Negeri Yogyakarta	24	1.3
40.	Universitas Pendidikan Indonesia	43	2.3
41.	Universitas Khairun	70	2.6
42.	Universitas Terbuka	154	5.6
43.	Universitas Sumatera Utara	96	3.5
44.	Universitas Pattimura	21	.8
No	**Higher Education Institution**	**Freq.**	**Percent**
45.	Universitas Tadulako	115	4.2
46.	Universitas Negeri Medan	42	1.5
47.	Universitas Negeri Gorontalo	138	5.0
48.	Universitas Bangka Belitung	227	8.3
49.	Universitas Maritim Raja Ali Haji	10	.4
	Total	2739	100.0

Source: Processed from HEI Strategic Plan, 2021

Figure 1. **Number of Performance Indicators Recorded in Strategic Plans in Various Universities in Indonesia**
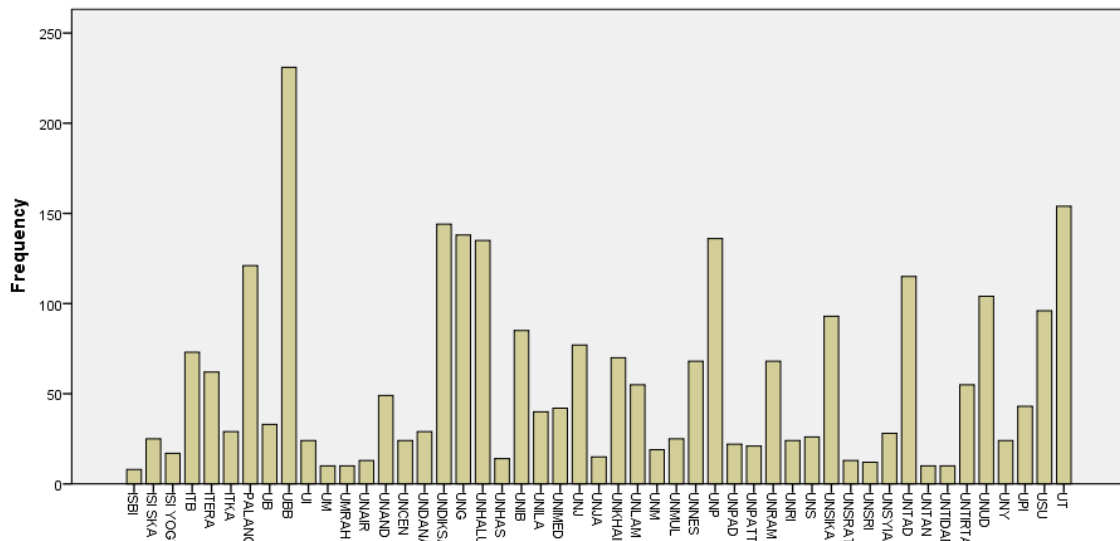
Source: Universities' Strategic Plans

From the study of KPI, API, and PPI of 49 state universities in Indonesia, there are 2,739 cases of measurement systems that have been grouped into 9 measurement elements. The analysis of criteria elements in Table 3 shows that 27.67 percent of performance appraisal cases use productivity criteria and 23.29 percent use economic criteria. Only one item uses equity criteria.

Table 3. **Indicator Criteria Based on Performance Level**

Criteria	Level Performance Indicator							
	KPI		PPI		API		Total	
	Freq	%	Freq	%	Freq	%	Freq	%
Economy	235	19.7%	153	24.6%	250	27.1%	638	23.3%
Efficiency	9	0.8%	4	0.3%		0.6%	16	
Effectiveness	114	9.6%	40	6.4%	36	3.9%	190	6.9%

Equity	1	0.1%	0	0.0%	0	0.0%	1	0.0%
Efficacy	77	6.5%	17	2.7%	16	1.7%	110	4.0%
Ethicality	6	0.5%	5	0.8%	2	0.2%	13	0.5%
Productivity	354	29.7%	199	32.0%	205	22.2%	758	27.7%
Process Measures	177	14.8%	82	13.2%	236	25.5%	495	18.1%
Quality Measures	220	18.4%	122	19.6%	176	19.0%	518	18.9%
Total	1193	100.0%	622	100.0%	924	100.0%	2739	100.0%

Furthermore, how to measure it is translated into performance measurement indicators, which have been grouped based on outputs measured by inputs, process outputs, service quality, and results. If viewed from the cross tabulation between the elements of the criteria and the measurement system as in Table 4, it shows that in the economic criteria 100,00 percent is used by input indicators as process using process measures, while for productivity 29,68 percent is used by process indicators and 70.32 perrcent is used by output indicators. There is also an element of efficacy criteria as many as 109 cases with the sersvice quality indicator, which is around 100 percent.

Table 4. **Criteria and Measurement of The State HEI Performance Indicators**
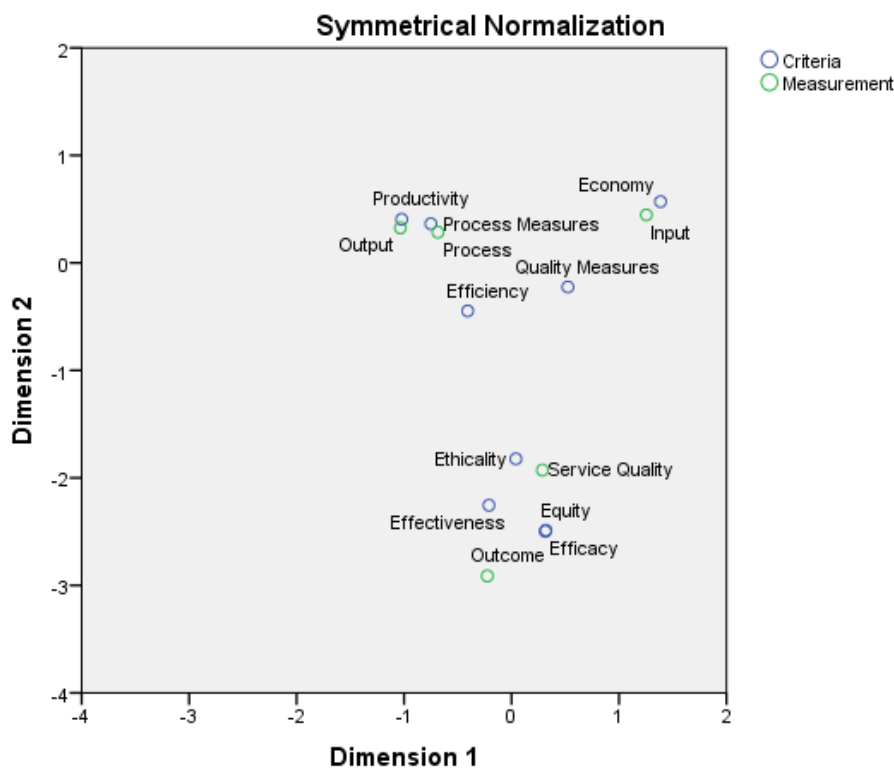
Criteria	Measurement ( )					Total	
	Input	Process	Output	Service Quality	Outcome	Freq	%
Economy	100,00	0	0	0	0	638	100,00
Efficiency	0	43,75	25,00	31,25	0	16	100,00
Effectiveness	0	10,53	14,21	34,42	40,84	190	100,00
Equity	0	0	0	100,00	0	1	100,00
Efficacy	0	0	0	99,09	0,99	110	100,00
Ethicality	0	15,38	7,69	76,93	0	13	100,00
Productivity	0	29,68	70,32	0	0	758	100,00
Process Measures	0	100,00	0	0	0	495	100,00
Quality Measures	48,07	24,13	3,47	24,33	0	518	100,00

The relationship between criteria (about what will be measured) can be seen in Table 5. This table shows that from 2739 records of performance indicators grouped according to the NPM principle, the most frequent is the measurement of productivity indicators, for example those related to the ratio of inputs to outputs. as many as 758 cases or about 27.7 percent. The second is related to economics which is related to the sacrifice of economic value, which is generally based on budget expenditures, such as infrastructure and the number of lecturers. Furthermore, the criteria relating to the measurement of quality and process as well as effectiveness. The smallest ones are related to efficacy, equity, ethics, and efficiency. This illustrates that the measurement of performance inductors still places tangible values compared to intangible values. Whereas in building the effectiveness of future performance measurement, it is more on the concept of intangible assets as the basis for building reputation and competitiveness.

The results of this study indicate that the performance indicators still tend to be input-oriented as measured by economic factors. According to Ammons & Roenigk (2015), for performance management to be more effective, a greater emphasis is needed on outputs or outcomes than on inputs and compliance with procedures.

The description above is a phenomenon that explains that not all universities formulate strategic performance measurements that focus on what they want to achieve in their strategic plans, as stated by Martin (2003), Azma (2010, regarding the management of strategic performance measurement that places quantitative and qualitative measures such as focusing on intellectual capital as intangible assets.

Figure 2. **Dimensions of Performance Measurement**

Correspondence analysis shows the relationship between the alignment of the measurement criteria and the target of the measurement results. Figure 2 shows that for the economic criteria it is centered with the measurement of inputs. It can be understood that almost a large part of economic performance is measured by the level of use of inputs, for example budget absorption that uses a number of capital inputs. Another dimension is the process measure, productivity, efficiency is measured by the performance of the output and the third dimension for the criteria of ethics, efficacy, effectiveness is measured by the performance of service quality and outcome. Figure 2 shows that there is an alignment between the criteria and the outcome as shown in dimension 1. The results of the study can also conclude that most of the indicator and measurement criteria are more on the dimensions of the relationship between the economy and inputs, and a small part are clustered on other dimensions.

Several previous studies have shown that KPIs are derived to Program Indicators or Activity Indicators. For example, one of the KPI colleges "creates professional faculty" is

translated to 80 percent of faculties have PhDs, as an indicator of the alignment between KPI, KPI and PPI. Of course, this level of completion is related to cost and time. Therefore it has a relationship between the measurement criteria on the economic dimension, which is measured by cost and time as input and PhD as output. It is different if Human Resource is an input to a further process and to be outcome, such as innovation.

Table 5. **Permuted Correspondence Table According to Dimension 1**

Criteria	Measurement					
	Input	**Process**	**Output**	**Service Quality**	**Outcome**	**Active Margin**
Economy	638	0	0	0	0	638
Efficiency	0	7	4	5	0	16
Effectiveness	0	20	27	73	70	190
Equity	0	0	0	1	0	1
Efficacy	0	0	0	109	1	110
Ethicality	0	2	1	10	0	13
Productivity	0	225	533	0	0	758
Process Measures	0	495	0	0	0	495
Quality Measures	249	125	18	126	0	518
Active Margin	887	874	583	324	71	2739

Table 5 is a permutation table of correspondence showing the relationship between criteria and measurement categories, adjusted for the constructor of dimension 1. This table shows the maximum dimension of the dimension group 1 as shown in Figure 3. The 2,739 cases of recording university performance indicators, shows the grouping on dimension 1, that for economic criteria is dominated by measurement of input factors, as many as 638 cases such as learning facilities, number of lecturers, number of education staff. Economic criteria as criteria in the NPM model (Pidd, 2012), in performance indicators measured by input factors.

For quality criteria measured by input factor 249 cases, service quality 126 cases, process 125 cases. For the efficacy criteria measured by the quality of service 109 cases. The table above shows what is interesting is the low ethical criteria recorded in performance measurement, only 13 cases. The findings above also show that the NPM model has not been fully applied to universities in Indonesia.

Conclusion

Performance measurement in higher education is important, but little research has been done in this area. Performance measures are the basis, norms, standards, or criteria against which users can evaluate their own performance in a program or service. Each performance indicator or benchmark serves as a criterion that underlies the successful performance of the service or program being implemented (Ewoh, 2011). Key Performance Indicators and Activity Performance Indicators as quantifiable measures. However, quantification measures are still an obstacle in measuring higher education performance.

The results of our study found that most of the main performance indicators and activity performance indicators contained in the Strategic Plan for Higher Education in Indonesia are still dominated by input measurement factors (economic criteria and quality measurements). Performance measurement that focuses on input criteria (which is usually in the form of economic measurements) will have an impact on the orientation of higher education institutions on the budget. According to Pidd (2012), performance measurement that is only input-oriented (economy) is easier to do, but does not give any idea about how well public programs fulfill their objectives (Pidd, 2012). Meanwhile, process-oriented performance measurement usually describes the efficiency of the processes carried out by the organization. According to Ewoh (2011), the main drawback of measurement systems that focus on output indicators is their inability of what Ammons (2002) calls "inspiring managerial thinking".

Outcomes reflect what the program or institution wants to achieve; that is, the value it adds. Thus, college KPIs should be more result-oriented, the impact of which is on public trust, brand image, reputation, and university performance. This is in line with Ammons & Roenigk (2015), that a greater emphasis on outputs or outcomes than inputs and compliance with procedures is required for effective performance management. However, one of the main limitations of the outcome measures produced by institutions is that they may understate the number of failures and overestimate the number of successes just to make the organization look good (Ewoh, 2011). Therefore, to overcome this limitation, it is necessary to assess by external stakeholders, for example national and international accreditation agencies, rating organizations, and the like. In addition, this is in line with the research conducted by Kaur & Singla (2019) which concluded that the top management of higher education institutions needs to develop several effective ways to measure performance to calculate the overall organizational performance and relate it to organizational goals.

Regarding the KPI, a study conducted by Muravu (2021) revealed that a good KPI must meet the CREAM criteria (clear, relevant, economical, adequate, and can be monitored) and also follow SMART principles (specific, measurable, achievable, realistic, and realistic). time bound). Most universities have not been able to clearly identify the input, process, output, outcome variables in compiling the KPI. This has implications for the lack of clarity in the performance-based budgeting system.

In line with the suggestion conveyed by Mdindela-Majova (2021), higher education leaders need to ensure performance measurement in higher education. Effective performance measurement will support the university's competitive advantage. In addition, according to Pidd (2012), good performance measurement is an important component of improvement and planning, monitoring and control, comparison and benchmarking, as well as ensuring democratic accountability. Biondi & Russo (2022) also recommend that the information generated by the performance management system should be used to develop strategies or adapt existing strategies.

The findings reported in this paper have several limitations. First, the Higher Education Strategic Planning document used in this study was obtained only from the university's website, and some of the Strategic Planning is not up to date. Second, the number of universities studied is relatively limited, namely 39% of the total non-vocational state universities in Indonesia. Thus, future research can expand the scope of university

respondents and the data collection methods used. In addition, future researchs can also improve our understanding of more appropriate performance indicators for universities. Furthermore, future studies can also involve higher education leaders who have the authority to determine the direction of higher education policies.

ACKNOWLEDGEMENT

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