Implementation of Value Chain Model as a Tool to Measure International Competitiveness of Bali State Polytechnic

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Abstract—**Free economic transactions make competition between universities increasingly sharp. It's encouraging the development of institutions to have international competitiveness. The purpose of this study is to analyze the performance achievements of the vision towards BSP international competitiveness in 2025. The research approach uses qualitative case study research designs. With the service value chain and taxonomy approach, process internationalization is at the institutional level. The research findings provide a description of the international competitiveness of BSP still weak in the development of academic activities. The lack of funding sources and technology literacy is a weakness in the organizational dimension. Weaknesses in global-oriented learning quality standards, research and collaboration research are sources of value creation in building competitive advantage. Relevant internationalization strategies are applied through an internationalization at home approach to strengthening academic quality, and internationalization abroad in strengthening international standard research through collaborative research with foreign universities.**

Keywords—competitiveness, internationalization, value chain, Bali State Polytechnic

I. Introduction

The entry of the world of education into free economic transactions has made competition between universities increasingly sharp. This encourages the orientation of developing higher education institutions to refer to the concept of World Class University (WCU). In general, WCU is defined as a university that has international standards of excellence. The Bali State Polytechnic (BSP) in responding to the era of global competition launched its institutional development to produce graduates with international competitiveness. This target is outlined in BSP's vision to achieve international competitiveness in 2025. To get to that direction, BSP has drawn up a strategic plan that is used as the basis for its institutional management. If viewed as a system, the strategic plan actually has a function as a planning and institutional performance evaluation tool. Some studies have found that strategic plans have a relationship with performance [1].

In implementing the strategic plan, BSP has not intensively evaluated its performance achievements. No in-depth evaluation was carried out to see indicators that had

been or had not been achieved. At the level of international competition, higher education institutions must evaluate, change or develop new and innovative strategies to increase their international activities [2]. By measuring performance, it can be seen important factors that affect the competitiveness of universities. The results of performance measurement are then used as a basis for transforming values for strengthening competitiveness. The more competitive a higher education institution is, the greater the chance to get more students, and the chance to survive in the long term [3].

Another important benefit of measuring competitiveness is related to the readiness of universities in the provision of educational services in the modern market environment. The market for education services is not merely a place of interaction between the demands for educational services provided by various universities but can also be provided by non-educational institutions. Transnational companies can emerge as important players with significant resources to develop education and training programs. In this context, higher education institution must understand the competitive advantages possessed to conquer the market and as a force in the management of institutions [4]. Therefore, this research was conducted to measure the performance of BSP, especially towards international competitiveness by using the value chain approach.

II. Literature Review

A. Higher Education Competitiveness

The competitiveness of higher education institutions is currently a very important topic studied in the framework of strategic management. At present, the role of competitiveness of higher education institutions is increasing in line with the changing phenomena in overall higher education governance caused by the increasing needs of stakeholders. In the context of measuring competitiveness performance, it is very important to understand the concept of competitiveness in general and the concept of competitiveness of universities in particular. Definition of competitiveness has the understanding that the capabilities or features of objects that are owned are better position than its competitors in meeting consumer needs for products and services [5]. Competitiveness can be defined as the ability of an organization to create and maintain competitive advantage that expresses the characteristics of strength in

creating uniqueness and excellence in serving and satisfying consumer needs [6]. Competitiveness can mean the ability of a company or industry to overcome its competitors.

Being competitive means occupying a dominant or developing position in internal and external markets [7]. The competitiveness of higher education institutions characterizes the ability to meet the needs of internal and external stakeholders based on competitive advantage that is relevant to internal conditions and external conditions [8]. The internal environment of higher education institutions consists of: material, finance, personnel, infrastructure and other internal resources, and external factors formed by the external micro environment (students, and society as a whole) and the macro (external) environment influenced by national policies in the field social, political, economic, legal, scientific and technological factors [9].

B. Internationalization of Higher Education

Institutions of higher education within the framework of the national higher education system towards internationalization are important factors in ensuring economic productivity and competitiveness. Internationalization of a policy to strengthen local and global research networks, exchange of knowledge, and improve academic quality, and provide fair educational opportunities for students to meet their needs and interests without borders. According to Alpenidze, the internationalization framework of higher education is related to how to connect the concept of strategic management with the governance of higher education itself. Consolidating factors that change dynamically in the external academic environment with organizational resources. Internationalization is an important part of the modern higher education (HE) policy agenda at the global, regional, national and institutional levels.

Internationalization in higher education is a process of integrating international, intercultural, and global dimensions into functions and objectives in aspects of education, research and community service. Internationalization policies focus on the mobility of students, researchers and academic staff as well as knowledge mobility [10]. Internationalization is seen as a means to respond to local and global needs by producing graduates who have global competencies [11]. Internationalization of higher education is realized not only through the increasing number of students studying abroad, having campus branches abroad, but also how many staff and lecturers come from abroad [12]. In the cultural context, internationalization is an effort to develop individuals towards the global dimension in the fields of education and research, and to guarantee the quality of research and education [13].

C. Value Chain as a Measurement Tool

According to Hudzki & Stohl, the measurement of process approaches uses taxonomies of inputs, outputs, and outcomes [14]. Input includes the source and availability of supporting efforts, output includes activities that encourage the achievement of internationalization, and outcomes in the

form of impacts or results related to the measurement of the achievements of the institution's mission. In measuring the internationalization issues of higher education there are several important questions that must be answered, including regarding how to measure, what is measured, the determination of measurement indicators, whether to measure the quality of processes or activities, and whether measurement focus is carried out on inputs, outputs, and or outcomes [15]. In relation to the vision of achieving international competitiveness through strengthening competitive advantage, the measurement of internationalization in this paper uses a process approach.

From the Value Based Management perspective, building competitive advantage can be done by utilizing the model developed by Porter, namely Services Value Chain Model (SVCM). The value chain model plays an important role in understanding systematic needs and competitiveness, in addition to business enterprises, it can also be used in higher education with modification of the model [16], application to the delivery of curriculum material by Laurites [17]. Task-based value chains are called modern-day universities by Sison and Pablo [18], Educational Value Chain as a re-engineering process with the use of technology as added value by Merwe and Cronje [19]; Value Co-creation Model for services in the form of shared value creation in meeting needs [20]; reconfiguring the value chain in higher education where support services are important in the teaching and learning process in improving efficiency and service [21]. From several models developed, in this article the discussion refers to the model from Pathak & Pathak.

III. MATERIALS AND METHOD

The study approach adopts a qualitative case study design. The creation of values in building competitive advantage BSP refers to the model developed by Pathak and Pathak, and measurement of internationalization is carried out by the taxonomy process approach with input, process, output, and outcome (modification of taxonomy Hudzki & Stohl). Data was collected using a questionnaire related to respondents' assessment of the performance of BSP's international competitiveness. The number of respondents was 135 people consisting of leaders, non-academic staff, lecturers, and students. Secondary data is obtained from policy documents and annual institutional performance reports.

The approach to measuring internationalization is carried out at the institutional level in three dimensions of the process, namely: the function of institutions in the implementation of teaching and learning processes, research, and community service [22]. Assessment of performance results is divided into three categories:

- Less, if X < (Mean - SD);

- Enough, if (Mean-SD) ≤ X ≤ (Mean + SD);

- Good, if X > (Mean + SD)

Measurement indicators include institutional policy, human resource development, availability of infrastructure,

teaching and learning activities, and the use of technology in learning, research and service. The research framework is shown in Fig. 1.
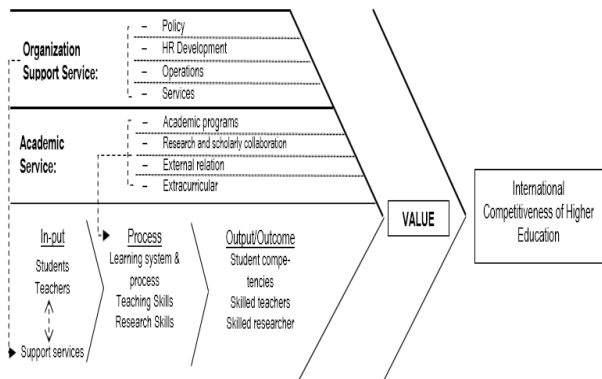

Fig. 1. Research framework.

IV. RESULT AND DISCUSSION

A. Result

BSP competitiveness performance is measured in two dimensions, namely the academic dimensions and organizational dimensions grouped into three organizational process taxonomies, including: input, process, and output / outcome. International competitiveness performance is measured by assessing the internal perceptions of institutions with the category of assessment results as in Table I.

TABLE I.   PERFOMANCE ACHIEVEMENT CATEGORIES

No.	Formula	Categories
1	X < 2.78	Weak
2	2.78 ≤ X ≤ 3.54	Sufficient
3	X > 3.54	Good

Input performance is part of the organizational dimension that serves as a support for achieving BSP internationalization. Input indicators include: institutional policy, availability of infrastructure, development of international capabilities of lecturer and non-academic staff, availability of funding for international activities, and utilization of information system technology in the process of implementing institutional functions.

TABLE II.   RESULT OF INPUT PERFORMANCE MEASUREMENT

Variable	Mean
Institutional Policy	4.14
Availability of international standard infrastructure	2.98
Human Resources	3.67
Funding for international activities	3.01
Availability of Information System Technology	2.67

Source: results of data analysis (2019)

Input performance is in the lowest value range of 2.67 and the highest value is 4.14. Measurements on input

performance indicators obtained the results of institutional policy indicators of 4.14 (good), human resource performance 3.67 (good), funding for international activities 3.01 (sufficient), infrastructure 2.98 (sufficient), and information system technology at 2.67 (weak).

Performance measurement of BSP's main activities in the field of organizing education, research, and community service. Internationalization performance is measured on four indicators, including: academic programs, research and collaborative research with researchers from other institutions, external collaboration, and extracurricular programs that build a global insight into students, and alumni.

TABLE III.   PROCESS PERFORMANCE MEASUREMENT RESULTS

Variable	Mean
Academic programs	3.01
Research and Research collaboration	2.84
Extracurricular Program	2.70
External Cooperation	3.28

Source: results of data analysis (2019)

The results of process indicator measurements on the activities of each institution: an academic program with a value of 3.01 (sufficient); research and research collaboration 2.84 (sufficient); extracurricular program 2.70 (weak); and external cooperation 3.28 (sufficient). The value range of the average institutional process performance leads to internationalization between 2.70 to 3.28. The lowest performance is in student extracurricular activities. This extracurricular activity is intended to develop students' insights to be ready to face the global environment, easy to adapt, and be able to work together across cultures.

Measuring the outcomes of international performance of higher education is rather difficult to do, many challenges are faced in measuring it. In general, institutions only measure up to the output as a portrait of the performance of internationalization activities or generally called internationality performance.

TABLE IV.   OUTPUT / OUTCOME PERFORMANCE MEASUREMENT RESULT

No.	Internationalization on Institutional Level	Mean
Output / Outcome Indicator		*2.97*
1	Number of international cooperation	3.85
2	Student mobility	2.90
3	International student	2.46
4	International cooperation for teaching	2.89
5	Number of articles published in international journals	2.90
6	The number of lecturers as speakers at international seminars	2.80

Source: results of data analysis (2019)

Based on the data analysis, the measurement results obtained for the achievement of the output / outcome performance respectively: the number of collaborations with a value of 3.85 (good); student mobility of 2.90 (sufficient); international student 2.46 (weak); international cooperation for learning 2.89 (sufficient); publication in international journals 2.90 (sufficient); and lecturers as speakers at

international seminars 2.80 (sufficient). Only one indicator that shows the performance of competitiveness is strong, namely number of cooperation. But five other indicators still need to be strengthened.

B. Discussion

Based on the SVCM concept that BSP's international competitiveness is systematically determined by how well input performance and process performance are at the institutional level. The results of the analysis show that institutional leaders are very serious in building the strength of international competitiveness of BSP. Planning has been done well through the formulation of strategic plans towards international competitiveness followed by relevant policies. The support of human resources for international activities is very adequate from the aspect of commitment and common perception. Internationalization policies are very well understood by internal institutions. However, the availability of funding is still not yet, infrastructure, and utilization of technology information systems are still not optimal to support the achievement of BSP's international competitiveness performance. From the aspect of funding its performance is included in the category of adequate, the availability of infrastructure is included in the sufficient category but tends to be close to weak, and weak in the utilization of information technology. The use of ICT in the learning process, and information systems supporting the performance of institutions still need efforts to be improved.

In the dimensions of academic performance, the average performance achievement towards internationalization falls into the adequate category but tends to be close to weak (score 2.96). Almost all indicators on the dimensions of academic process performance fall into the category of sufficient performance, and even non-academic activities (extracurricular) are classified as weak in performance. In the context of academic programs there are many things that must be dealt with seriously in order to achieve international quality standards. The development of a global based learning model really needs to be developed to improve the competence of graduates who are on par with international quality standards. Strategic efforts are needed in strengthening research through intensive research collaboration. Research and collaborative research with foreign universities is actually a strategic first step in developing the competitiveness of tertiary institutions in the international arena. Excellence in research can simultaneously reflect high standards of quality and reflect the strength of the competitiveness of a nation. Encouraging strength in research is inseparable from the funding capabilities of the institution.

The impact of performance achievements on inputs as supporting systems and process performance as a primary system towards internationalization has a direct impact on the achievement of BSP international output performance. Output performance reaches an average score of 2.97 which is quite sufficient but tends to be close to weak. Only one output indicator is classified as good, namely the number of

international cooperation, the rest are classified as sufficient and weak (international student). BSP actually has great potential to be able to improve its competitiveness performance, by optimizing the amount of collaboration it has. Stronger efforts are needed to realize the collaboration so that it is implemented according to the target. Internationalization is actually a systematic process in which the international dimension is integrated continuously into the three main functions of an institution: teaching / learning, research, and community services supported by strong policy and commitment at the institutional level. Building international competitiveness in the SVCM concept, innovation in value chains is needed. Through the creation of this value the international competitiveness of tertiary institutions can be carried out effectively and efficiently.

V. CONCLUSIONS

The research results conclude that the weak performance of international BSP competitiveness is caused by several factors, namely relating to the use of technology, funding, and academic activities. In strengthening international competitiveness strategies are needed in creating value in academic programs in two aspects, namely learning programs, and research accompanied by strengthening in the availability of funding sources and technological literacy capabilities. The strategy of developing international competitiveness is carried out through internationalization of at home through the improvement of academic quality standards referring to international quality standards, and international internationalization through strengthening lecturer competencies in research and research collaboration internationally.

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