

# Strategic Costing Models as Strategic Management Accounting Techniques at Private Universities in Riau, Indonesia

Evi Marlina<sup>1</sup>, Hendri Ali Ardi<sup>1</sup>, Siti Samsiah<sup>1</sup>, Kirmizi Ritonga<sup>2</sup> & Amris Rusli Tanjung<sup>2</sup>

<sup>1</sup> Faculty of Economic and Bussines, Universitas Muhammadiyah Riau, Pekanbaru, Indonesia

<sup>2</sup> Faculty of Economic, Universitas Riau, Pekanbaru, Indonesia

Correspondence: Evi Marlina, Department of Accounting, Faculty of Economic and Bussines, Universitas Muhammadiyah Riau, Jl. Tuanku Tambusai Ujung, No. 1 Pekanbaru, Indonesia.

Received: September 1, 2019

Accepted: October 5, 2019

Online Published: November 13, 2019

doi:10.5430/ijfr.v11n1p274

URL: <https://doi.org/10.5430/ijfr.v11n1p274>

## Abstract

As a strategic management in accounting, strategic costing has attracted the practioners and scholars because the significant influences to compitetive advantage and organizational performance. This study is aim to explore integrated strategic costing model as an effort to improve competitive advantage and performance of higher education institution. This study also provide the guideline for effectively and efficiently of cost control. A specific strategic costing –activity based costing, value chain costing, quality costing, lifecycle costing and target costing– was elaborated through literature review form each attributes simultaneously and according to comprehensive model that integrated each of principles. The study concluded the scheme is compatible and complete each other according to theoretical point of view due to the integrated implementation of the principles and attributes contribute to organization performance improve. We also argue that the scheme is contribute to distribution of strategic costing attribute and exploitation of organization resources. A new management system proposing to the incorporation of strategic costing attributes into the management of higher education organization resources, and some recommendations for practical use are presented.

**Keywords:** strategic costing models, strategic management accounting and private universities

## 1. Introduction

Since the last years, the literature of management accounting has recognized the influence of strategic costing as the strategic management accounting techniques due to competitive adavantage and organizational performance improve. However, academic studies conducted still discuss the attributes of strategic costing separately, which provides guidelines for integrating the attributes of strategic costing in an organization that is still scarce. Therefore, we were interested in conducting research at private tertiary institutions with very high level of competition, so that organizational management is demanded to be more efficient and effective in order to have better organizational performance and excellence. With focusing to the strategic, the strong interaction between operational processes and direct connections with various stakeholders, this study appears to integrate the attributes of strategic costing that consisting of activity based costing, target costing, value chain costing, quality costing, and lifecycle costing (Cadez & Guilding, 2008).

This study explores the effect of strategic costing on competitive advantage and organizational performance as well as specific strategic costing models integrated as strategic management accounting techniques in tertiary institutions. The main objectives of this study is to assess the potential benefits of integrated strategic costing attributes through identifying and analyzing theoretical similarities, and put forward an approach to the combination in practices. Due to the purposes, we present in second section a comprehensive theory of the framework of each strategic costing attribute, which consists of the definitions contained and an assessment of their relevance to efficiency and effectiveness. Likewise, in third section we introduce some broad concepts and facts that related to competitive advantage and performance, which include implementation requirements in organizations. Next, in fourth section we provides the guidelines for the effective consolidation of strategic costing practices on competitive advantage and college performance, including theoretical details of the relationship between each of the strategic costing attributes and the description of tentative schemes for their shared use. In the last section, we provide the discussion about the effective implementation of strategic costing attribute on competitive advantage and college performance.

## 2. Strategic Costing as Strategic Management Accounting Technique

Strategic cost is defined as the use of strategy and costs and market-oriented data to prioritize and develop strategies that can provide competitive advantage on an ongoing basis (Cadez & Guilding, 2008). Aksoylu & Aykan (2013) divide strategic costing into 5 dimensions, namely activity based costing, value chain, quality costing, life cycle costing and target costing.

### 2.1 Activity Based Costing (ABC)

Activity Based Costing is an analysis technique that allocates factory overhead costs to production activities (Alnawaiseh, 2013). ABC is an analysis technique used in order to provide accurate allocation of indirect costs (El-Dyasty, 2011). The imposition of costs incurred in higher education according to Vaxevanidis & Petropoulos (2008) can be seen from two dimensions as shown in Figure 1:

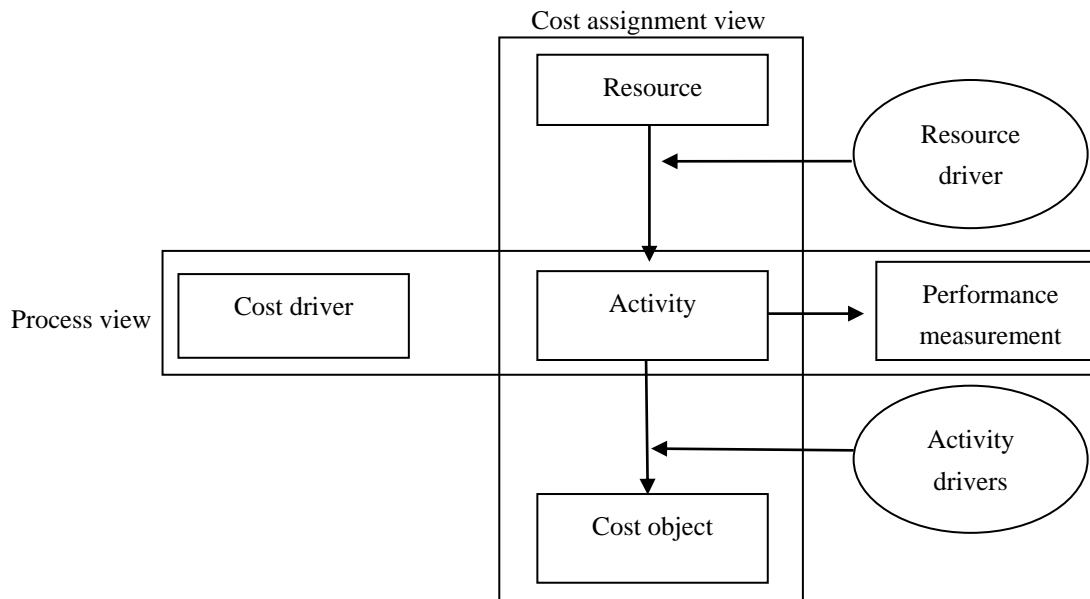


Figure 1. Two dimensional of ABC

Figure 1 shows the imposition of indirect costs from dimensions of cost view and process view. Vertically cost consists three parts: resource, activity, and cost object. From a cost view, the system allocates costs through two stages to determine costs or resources in an organization's activities. First, the costs are allocated to the existing group of activities organized, and then the new activities are allocated to the cost object based on the volume of activity that occurs. This costing provides a better understanding reason of resource used. It is provide the information that can use to identify the form of activity that the most resources and opportunities for cost reduction (Turney & Pitblado, 1996). The horizontal process view are consist the cost driver, activity and performance measurement. The left side describe the activity analysis which is an identification and detail description of the activities that carri out at the company. The analysis also included the root causes that trigger activity and the relationship between all activities. The tight side model illustrates the evaluation of activities through performance measures. General performance measurement are include the efficiency of activities, the time needed to complete an activity, and the quality of work (R. Turney & R. Pitblado, 1996; Herrington, 2000; Hansen & Mowen, 2006)

### 2.2 Value Chain Costing

Value chain costing is an analysis technique for adding value to customers by reducing costs, and understanding the relationship between a company's business and customer needs (El-Dyasty, 2011). Educational value chains were introduced by Rathee & Rajain (2013) as "graphic tools" that can be used in reengineering efforts to identify possible bottlenecks that might occur, as well as providing a route to follow when determining the value added elements of technology. The recording process that is included in the education value chain should include high-level important processes needed to achieve predetermined results. With a focus on results, the following steps are for determining the value chain:

1. Determine the results or scope on which the value chain will focus.
2. Identify the requirements elicitation methodology that focuses on identifying high-level processes in the application domain.
3. Identify the high-level processes in the application domain.
4. Use the high-level process model developed to get the sequence of processes needed, to achieve predetermined results.

### 2.3 Quality Costing

Quality cost is the cost of detecting and improving the quality of goods and services (Hansen & Mowen, 2006). Mandavgade, Jaju, & Lakhe (2015) divide quality costing into 4 main parts and known as PAF (Prevention-Appraisal-Failure). There are the follow items:

1. Prevention costs. The costs are related to design, total quality managemen system implementation and maintenance. The prevention cost are planned and carried out before the actual operation.
2. Valuation costs. The cost are related to suppliers and costumer evaluation of purchased material, processes, intermediates, products, an services to ensure the compliance with specified requirements.
3. Internal failure costs. These costs is occur when work results fail to reach quality standards that are designed and detected before transfers to customers occur.
4. External failure costs. The costs is occur when the product or service fails to reach the design quality standards but is not detected until after transfer to the customer

### 2.4 Life Cycle Costing (LCC)

Life cycle costing is one of the methods offered in the framework of calculating costs that are more accurate and more supportive in decision making and can be applied to both manufacturing and service companies (Cinquini & Tenucci, 2008). The definition of life cycle (Woodward, 1997) is the costs associated with the product during its life cycle, which includes development costs (planning, design, testing), production costs, (activities to convert resources to finished products), and logistical support costs (advertising, distribution, maintenance, and so on).

The objectives of the LCC are identified by the Royal Institute of Indonesia Chartered Surveyors are:

1. to enable investment options to be more effectively evaluated;
2. to consider the impact of all costs and not just the initial capital costs;
3. to assist in effective management of finished buildings and projects;
4. to facilitate choices between competing alternatives.

### 2.5 Target Costing

Target costing is the cost that is willing to be charged to products or services in accordance with competitive prices, which can be used to achieve desired profits (El-Dyasty, 2011). Application of target cost techniques in various organizations is designed to achieve the following objectives:

1. Contribute in achieving satisfactory profit margins for companies, competitor selling prices for their production units to ensure and achieve their strategic objectives.
2. Provide competitive products in terms of specifications and quality, price, time, and meet the needs of consumers in accordance with their financial potential.
3. Monitor the stages of the product life cycle, and after sales service.
4. Reduce the cost of product production elements to achieve profit targets.
5. Achieve the company's management goals in the long run (Al-Matarnah, 2011; Cooper, 2017; Robinson, 2013)

## 3. Competitive Advantage and University Performance

### 3.1 Competitive Advantage

Competitive advantage is the advantage obtained from competitors by giving consumers higher value, either at a lower price or providing greater benefits and services that are priced higher. According to Porter (1998) there are 2 strategies that can be used to create competitive advantage, including cost leadership and differentiation. Cost leadership can be defined as the company's efforts to produce excellence by achieving the lowest costs in the

industry. The focus of this cost leadership is on efficiency and cost control in all operational areas. Differentiation is related to the development of attributes that can characterize a company's product or service and provide different values from competitors' products or services.

### 3.2 University Performance

According to Lee (2010), university performance is seen from the following dimensions:

1. Administration, namely administrative efficiency and non-academic staff development
2. Curriculum, namely curriculum design based on industry requirements and contributions to student competencies
3. Technology transfer, namely effective knowledge management to innovate new technologies and commercialize research universities, such as external research revenue
4. Research, namely the number of research publications and actual outcomes of research universities (patents, licenses, spin-offs)
5. Teaching, namely professionally oriented and the quality dimension which includes student attributes
6. Services, namely expenses for student services, especially libraries and IT as well as campus committees, student academic advisors, average waiting periods for student work

## 4. Strategic Costing Attribute Integration

### 4.1 Theoretical Compatibility Between Strategic Costing Attribute

As stated earlier, the simultaneous application of strategic costing attributes that consists the activity based costing, quality costing, value chain, lifecycle costing, and target costing in the organization's operational activities in order to run more effectively and efficiently. The integration of these costing attributes can bring benefits to the organization so that it can contribute to the spread of the utilization and exploitation of the resources of the organization in order to function more optimally.

However, to make the integration feasible in practice, detect and understand the theoretical links between these different approaches is mandatory. From the each theoretical framework exploration, it can be concluded that each costing attribute is complementary. First, the activity costing attribute calculates the cost based on the next activity and then is charged to the cost object. This approach is very useful for indirect costs so that the cost caused by the cost object is more accurate. Second, the quality costing attribute reports costs ranging from prevention, assessment, internal and external failures. This approach is very useful in improving the quality of higher education services. Third, value chain classifies costs incurred ranging from inputs, processes and inputs so that the process of organizational activities is more effective and efficient. Fourth, lifecycle costing looks at costs not only in one period but sees starting from product launch to no longer selling products on the market. Fifth, target costing is related to the efficiency of costs incurred set the targeted selling price reduced by the profit set.

A clearer theoretical relationship between the attributes of strategic costing can be seen in the following Table 1.

Table 1. Relationship of strategic costing attribute (modified from Sakurai & Liboff, 1996)

Tools	Main Purpose	Cost Elements	Emphasis
ABC	Product Profitability Analysis	Overhead	Cost assignment for managerial decision making
Quality Costing	Increase quality	Direct cost, overhead and periodic cost	Process improvement
Life Cycle Costing	Process reengineering	Direct cost, overhead periodic cost, and investment cost	Process Improvement
Value Chain Costing	Process reengineering	Direct cost, overhead and periodic cost	Process improvement
Target Costing	Strategic cost management	Direct cost and overhead	Cost reduction

The main purpose of ABC is provided the information to various objectives. The main general objective is to analyze the profitability product to make a price decision or mixing the product (R. Cooper & Kaplan, 1998). ABC also useful technique to continuously improvement, then identification activity and prices can contribute to strong information to cost reduction. The fact, the information for improvement process provide by ABC. Then, the ABC project should be had a top-down commint to be successful.

The main purpose of quality costing is to provide information to improve the quality of higher education (Mandavgade et al., 2015) as the formal institution where the institution define as any form of constraint that human beings devise to shape human interaction (Zusmelia, Firdaus, & Ansofino, 2019).. Quality cost is also a useful technique for continuous improvement to improve the quality of education and services at tertiary institutions in which the quality cost provides information for improving the quality of the process by displaying starting from prevention costs, assessment costs and the costs of internal failures and external failures. The implementation of quality costing must also have a top-down commitment to succeed because achievement is a process that cannot be realized in the short term.

The main objective of lifecycle costing is the calculation of costs incurred since the product or service issued until the product or service is no longer accepted in the market (Woodward, 1997; Collings & Baxter, 2016; Firdaus, Ariesta, Rahayu, & Shalihin, 2019). Life cycle financing is expressed in the form of equivalent value for money, and can be divided into three components, namely initial cost, cost in use and disposal cost (Collings & Baxter, 2005). Initial costs are all costs required for procurement including planning, designing, constructing and commissioning. Usage fees are the overall cost of ownership of the project or its components, including maintenance, cleaning, alteration, replacement and support. The initial costs and the costs of dismantling and disposal are not included in the cost of use. Disposal costs are the costs of covering operating costs and disposing of assets at the end of the life cycle, that is, costs incurred due to the end of economic life.

Value Chain Analysis is the process of an organization identifying existing activities into two groups of activities, namely the main activities and supporting activities. The main activities are activities to add value to the services or products provided while supporting activities are activities that support the main activity, and then analyze the activities to reduce costs or increase differentiation (Rachel Cooper, 2017; Govindaraju, Jeyasingam, Habib, Letchmana, & Ravindran, 2018). Value Chain Analysis is a strategy used to analyze the company's internal activities. In other words, by looking into internal activities, the analysis reveals where a company's competitive advantage or drawbacks are. The target costing is a technique to provide the ideal product prices to maximize the profit in all product's cycle. The activity based costing is usually applied to already products in production processes (Cokins & Lawson, 2006). Cost targets provide a decision environment where relevant information (including ABC information, quality costing, lifecycle costing and value chain costing) can be used (Sakurai & Liboff, 1993).

#### *4.2 Strategic Costing as Strategic Management Accounting at Private University*

After analyzing the theoretical compatibility between the strategic costing attributes, it is possible to proceed within the management framework to guide the implementation of the integration of strategic costing attributes at private university. This new model combines the attributes of strategic costing (previously explained in tables 2 and figure 2) all the processes, procedures, notes, and functions needed to apply the strategic costing techniques systematically. By adopting this new approach, which is the integration of strategic costing attributes, the organizational management becomes more effective and efficient. In addition, it might be in a better position to fully exploit each of the strategic costing attributes including activity based costing, quality costing, lifecycle costing, value chain and target costing in higher education management.

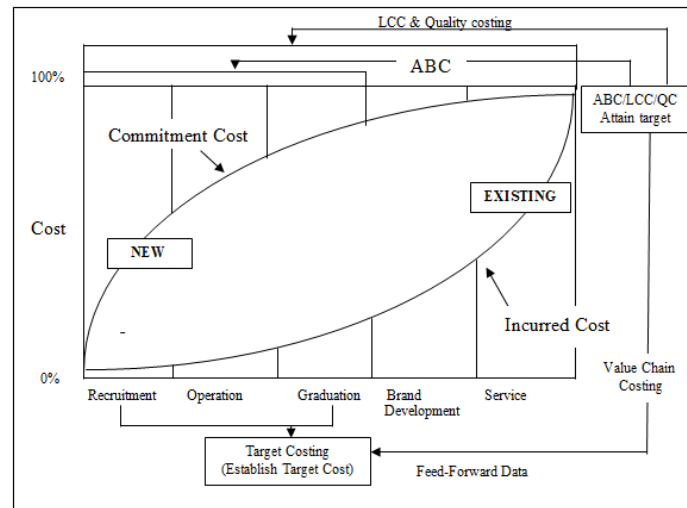


Figure 2. Integration strategic costing attribute (modified from Cokins, 2002)

The integration between ABC, quality costing, value chain, lifecycle costing and target costing in universities (see Figure 2) shows the main focus of setting target costing on direct costs related to the main activities of the organization, which starts from recruitment, operation and graduation. Furthermore, indirect costs that occur in the main activities of the organization apply activity-based costing. The quality costing and lifecycle costing in all main and supporting activities are in an effort to create organizational development and continuous improvement. Here it is shown the initial cost process for higher education which emphasizes the stabilization or continuous improvement at the level of educational and non-educational service, and target facilities to support higher education activities. The goal of the stage is to pursue the continuous cost reduction at each stage of service activity that does not provide additional value to close the remaining gap between incurred and determined cost.

In achieving the goal of cost reduction the information to identify the cause of current costs and potential impact of costs driver is requires. To improve the understanding of cost items such as organizational overhead, marketing, distribution, service and support, and general business overhead, ABC and value chains can be used. Furthermore, quality costing can be used to guarantee the quality of service of educational institutions to the stakeholders. Lifecycle costing here determines costs starting from the initial phase of establishing a new study program until the expiry of the validity of the study program. Determination of target costs can be used to set target costs after this has been compared with the actual costs that exist. The using of ABC, value chain, LCC and quality costing is not only to reduce actual costs and to meet the target costs, but also can use to maintain the quality of higher education and the sustainability of the organization. The costing and ABC targets, value chain, quality costing and lifecycle costing can be used in combination with each other. Each of the strategic costing attributes can play a part in the overhead cost management of universitynew service. To achieve the target cost, it is important to manage overhead costs and direct material and direct labor, and ABC, value chain, LCC and quality costing enable such management in managing effective and efficient cost management (Innes & Booher, 2004; Horvath & Forte, 2011; Cokins & Lawson, 2006). This adaptation enables them to acquire and maintain the resources necessary for their survival (Nduwayo & Sayumwe, 2018).

## 5. Discussion

As a higher education institution, university in running its operational activity in the form of tridharma needs to be managed effectively and efficiently by implementing strategic costing in order to excel in competition. The implementation of strategic costing in private universities can be seen as follows:

### 5.1 Activity Based Costing

Higher education as a service company engaged in higher education types of costs incurred can be grouped into 2, namely direct costs and indirect costs (Marlina, Ardi, & Samsiah, 2018; Hansen & Mowen, 2006). Both direct costs and indirect costs must be accommodated in the cost object in the form of products or activities. Direct costs such as education and teaching costs, research and community service can be calculated directly based on the number of

research activities carried out. On the other hand, indirect costs such as recruitment, brand development, service and supporting department activities such as administration, library, and information technology cannot be calculated accurately based on the activities carried out, but based on the allocation of activities that occur. The higher the activities that occur will have an impact on increasing costs incurred and vice versa, the lower the activity that occurs will also have an impact on decreasing costs (Cadez, Dimovski, & Zaman Groff, 2017; Zubir & Ibrahim Kamal, 2009; Ibrahim, Yusoff, & Sidi, 2011; Marlina et al., 2018)

According to Tuney (1996), the application of activity-based costing can be seen from two dimensions, namely cost view and process view. Based on the cost view, it can be seen on how to allocate costs by detailing costs based on existing activities in higher education such as recruitment, education and teaching, research and community service, graduation, brand development, and service. Furthermore, the costs of each of these activities are allocated to the cost object based on the activity used. Next in process view, it can be seen what triggers the cost of each of these activities so that they can assess which activities provide added value to be increased and which activities that do not provide added value to be eliminated. In order for universities to excel in competition, the costs must be managed effectively and efficiently so that the tuition fees charged to students can be lower than competitors that can ultimately improve the performance of the college (Kennedy & Affleck-Graves, 2001)

### 5.2 Value Chain Costing

After the management identifies the activities that occur in the organization, the tertiary institution must be able to identify each activity carried out in an effort to sort out and choose which activities are important and which are merely supporting. Through the grouping of activities contained in this tertiary institution and then dissected using a value chain analysis knife, the main and supporting activities can be formulated in the business process of the tertiary institution. It aims to create added value in the business processes carried out by universities in order to achieve optimal profit so that they can excel in competition and ultimately can improve college performance (Marlina et al., 2018, Gabriel, 2006).

Based on the review done by the researchers, the description of supporting activities in private universities can be grouped as follows:

1. Administration and fund raising, such as employee recruitment, employee training, archiving, finance, facilities and infrastructure, and health and safety.
2. Libraries, such as procurement of books, processing of library materials, and library material services.
3. Research and faculty development, such as curriculum design and teaching, development of information technology, and monitoring and evaluation

Then the main activities can be grouped as follows:

1. Student recruitment, such as promotion on media, exhibition, registration, document selection, test, and registration.
2. Teaching & learning, such as academic introduction program, academic, guidance, tutorial, exams, and practicum. Industry visit
3. Research & community services, such as final assignment supervision, seminar, final assignment exam, internship. and community service program.
4. Graduation, such as graduation briefing, graduation, and the legality of documents.
5. Brand development, such as creating brand, brand communication, and maintaining brand
6. Service; such as Alumni gathering. job market, and industrial cooperation.

### 5.3 Quality Costing

Furthermore, in improving the performance of tertiary institutions as educational institutions, it cannot be separated from the quality of the education service they provide. To improve the quality of this education service, a process by establishing a quality assurance unit or institution to deal with planning, implementing and evaluating the higher education system including teaching, research and service in accordance with the quality standardized by the national accreditation body of higher education (BAN-PT). In realizing excellent service quality, which is indicated by the minimum accreditation value of B, of course it will require a significant amount of costs. How the costs incurred in accordance with the results expected by management can make quality cost reports so that costs can be controlled effectively and efficiently. The concept of quality costs (quality costing) of costs incurred in operational and non-operational activities of higher education can be divided into 3 groups, namely:

1. **Prevention costs:** These costs are related to curriculum design, training of education and non-education personnel, and maintenance of quality assurance systems and others. Prevention costs are related to the costs planned and carried out before the actual higher education operational activities are carried out, example competency certification, certificate selection, and academic transcripts
2. **Valuation costs:** These costs are related to evaluations starting from the admission process until they graduate. The assessment is carried out on education personnel including educational and teaching activities, research and publications, and community service. As for non-education personnel, it is related to services provided to students ranging from entering college until they are graduated. Evaluation is carried out to ensure that the activities that are carried out are truly in accordance with the requirements set out in the operational standards and procedures of higher education, example lecturer training, debriefing of students, evaluating the teaching and learning process, remedial student, students drop out, and students pass the study period
3. **Failure costs:** These costs occur when work results fail to reach quality standards that are designed and detected before students graduate or enter the workforce which, for example, is remedially referred to as internal failure costs. Furthermore, the cost of external failure is the cost incurred when the alumni do not reach the quality standards so that they do not receive recognition in the workforce or in the community, example quality audit, and waiting period for work

#### 5.4 Life Cycle Costing

Moreover, in order to create competitive advantage and the sustainability of higher education organizations, it is necessary to calculate the overall costs of all costs of a product during the product life phase. This product calculation is called life cycle costing where the calculation includes design, advertising costs, marketing costs, growth, maturity, decline, and product removal (Woodward, 1997). For higher education institutions, life cycle costing can present costs more accurately because the cost calculation does not cover one accounting period but is based on the service phase provided (Mohammed H. S. Al Ashry, 2017). Where the services at this tertiary institution are very closely related to operational permits and study program accreditation. Therefore, the cost calculation starting from the stage of establishing a new study program until the end of the accreditation period include:

1. **Investment Costs;** investment costs which are in the form of infrastructure and human resources.
2. **Operation Costs;** costs incurred for operational activities during the validity of the accreditation period
3. **Maintenance Costs;** the cost of maintaining facilities and infrastructure used in the year activities
4. **Renewal Costs;** Annual costs incurred to build brand development
5. **Disposal costs;** asset replacement costs that already cover the operational costs used.

#### 5.5 Implementation of Target Costing

Of all operational activities of higher education, it will be closely related to operational costs incurred. These costs must be accommodated in the object of higher education costs. For this reason, all costs incurred are accommodated in tuition fees for students determined through target costing. Target costing is the cost charged to the product or service after deducting the desired profit. Higher education is an institution engaged in educational services which in today's context is inseparable from competition. In order for these universities to excel in competition, one of them is the concept of low cost in which student tuition fees are lower than other universities by not reducing the established quality standards (Yasemin Zengin & Erhan Ada, 2010; Siswanto, 2016; Marlina et al., 2018). For this reason, tertiary institutions must manage their costs effectively and efficiently in every activity which includes education & teaching, research and community service activities.

Here every tertiary institution has a set cost standard if necessary to charge fees so that a single tuition fee that is set for students has covered all service activities provided to students. Target costing in tertiary institutions can be seen with the following equation:

$$\text{Target cost} = \text{Target price} - \text{Profit Target}$$

Example: Single Tuition (UKT), and all budget items of operational activities are based on the general service body (BLU) determined by the university.

## 6. Conclusion

Strategic costing is strategic management accounting in managing market-oriented organizational resources. Therefore, the purpose of this paper is to explore an integrated strategic costing model in an effort to improve



competitive advantage and performance of higher education institutions and provide guidelines for cost control effectively and efficiently. In developing competitive advantage of private tertiary institutions, cost management effectively and efficiently can be done with a strategic approach called strategic costing. The findings of this study are that the strategic costing attribute scheme is compatible and complementary from a theoretical point of view because their combined implementation can help organizations improve overall performance. Strategic costing as a strategic management accounting technique includes five attributes: (1) Value chain cost management includes not only the main lines, namely inbound logistics, operations, outbound, market and service but also in the administrative, library and recourse support lines, and these must be balanced to achieve optimal margins; (2) Activity based costing, cost management based on this activity is very important since charging costs will be more accurate and in addition activities that provide added value and do not provide added value can be seen so that it can be evaluated for continuous improvement; (3) Lifecycle costing, this is a cost calculation based on the product life cycle, which greatly supports the performance of tertiary institutions for the long term; (4) Quality costing, cost calculation by considering the quality of the quality of services provided will increase the competitive advantage of the organization; (5) Target costing, cost management oriented to the ability of customers is far more efficient compared to costs that are oriented to the needs of the organization.

The design and methodology used are specific strategic costing innovations analyzed in detail including activity based costing, value chain costing, target costing, lifecycle costing and quality costing. The analysis was carried out through a literature review of each attribute including the framework, identification of benefits related to its application with simultaneous design and a comprehensive model that integrates each principle. Furthermore, the implications of this research are a new management system innovation that proposes the incorporation of strategic costing attributes including activity based costing, value chain, quality costing, lifecycle costing and target costing which are not separate parts of its implementation in the organization, but something that is complementary so that they become resource management organizational power of higher education.

#### Acknowledgements

The author wishes to acknowledge the input of Assc. Prof Ferry Jie, PhD who helped in the initial review and editing of the paper. I am also grateful to Kemenristek Dikti which has founded this research with contract project number SP DIPA – 042.06.1.401516/2018

#### References

- Aksoylu, S., & Aykan, E. (2013). Effects of Strategic Management Accounting Techniques on Perceived Performance of Businesses. *Journal of US-China Public Administration*, 10(4), 1004-1017.
- Al-Matarneh, G. F. (2011). Performance evaluation and adoption of balanced scorecard (BSC) in Jordanian industrial companies. *European Journal of Economics, Finance and Administrative Sciences*, 35, 1-10.
- Alnawaiseh, M. (2013). The Extent of Applying Strategic Management Accounting Tools in Jordanian Banks. *International Journal of Business and Management*, 8(19), 32-44. <https://doi.org/10.5539/ijbm.v8n19p32>
- Cadez, S., Dimovski, V., & Groff, M. Z. (2017). Research, teaching and performance evaluation in academia: The Salience of Quality. *Studies in Higher Education*, 42(8), 1455-1473. <https://doi.org/10.1080/03075079.2015.1104659>
- Cadez, S., & Guilding, C. (2008). An exploratory investigation of an integrated contingency model of strategic management accounting. *Accounting, Organizations and Society*, 33(7-8), 836-863.
- Cinquini, L., & Tenucci, A. (2008). *Is the Adoption of Strategic Management Accounting Techniques Really "Strategy-Driven"?* Evidence From a Survey (No. MPRA 11819). Munich Personal RePEc Archive. Retrieved from <http://mpra.ub.uni-muenchen.de/11819/%0D>
- Cokins, G. (2002). Integrating target costing and ABC. *Journal of Cost Management*, 13-22.
- Cokins, G., & Lawson, R. (2006). Statements on Management Accounting Implementing Activity-Based Costing. *Statments on Management Accountings*.
- Collings, D., & Baxter, N. (2005). Valuing customers. *BT Technology Journal*, 23(3), 24-29.
- Cooper, R., & Kaplan, R. S. (1998). The promise-and peril-of integrated cost systems. *Harvard Business Review*, 76(4), 109-19.
- Cooper, R. (2017). Diagnostic and statistical manual of mental disorders (DSM). *Knowledge Organization*.
- El-Dyasty, M. M. (2011). A Framework to Accomplish Strategic Cost Management. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.704201>

- Firdaus, F., Ariesta, A., Rahayu, S., & Shalihin, N. (2019). Market Organizer Network At Fish Auction ; Case Study Of Gauang Market , Padang , West Sumatera , Indonesia. *International Journal of Scientific & Technology Research*, 8(9), 37-41.
- Govindaraju, B., Jeyasingam, J., Habib, M. M., Letchmana, U., & Ravindran, R. (2018). Factors That Contribute to the Achievement of Sustainability in Private Universities of Malaysia. *International Journal of Supply Chain Management*, 7(2), 32-42.
- Hansen, D. R., & Mowen, M. M. (2006). *Cost Management Accounting & Control*. Australia: Thomson South-Western.
- Herrington, J., & Oliver, R. (2000). An Instructional Design Framework for Authentic Learning Environments. *Educational Technology Research and Development*, 48(3), 23-48. <https://doi.org/10.1007/BF02319856>
- Horvath, C. P., & Forte, J. M. (2012). *Critical thinking*. New York: Nova Science Publishers Inc.
- Ibrahim, I., Yusoff, W. Z. W., & Sidi, N. S. S. (2011). Space charging model: Cost analysis on classrooms in higher education institutions. *Procedia - Social and Behavioral Sciences*, 28, 246-252. <https://doi.org/10.1016/j.sbspro.2011.11.048>
- Innes, J. E., & Booher, D. E. (2004). Reframing public participation: Strategies for the 21st century. *Planning Theory and Practice*, 5(4), 419-436. <https://doi.org/10.1080/1464935042000293170>
- Kennedy, T., & Affleck-Graves, J. (2001). The Impact of Activity-Based Costing Techniques on Firm Performance. *Journal of Management Accounting Research*, 13(1), 19-45. <https://doi.org/10.2308/jmar.2001.13.1.19>
- Lee, S. H. (2010). Using fuzzy AHP to develop intellectual capital evaluation model for assessing their performance contribution in a university. *Expert Systems With Applications*, 37(7), 4941-4947.
- Mandavgade, N. K., Jaju, S. B., & Lakhe, R. R. (2015). Assessment of qualitative factors affecting uncertainty measurement using AHP. *International Journal of Industrial and Systems Engineering*, 21(3). <https://doi.org/10.1504/IJISE.2015.072267>
- Marlina, E., Ardi, H. A., & Samsiah, S. (2018). Analysis of Strategic Costing Effect towards University Performance with Competitive Advantage as Mediating. In *CelSciTech-UMRI 2018* (Vol. 3, pp. 27-33). LP2M-UMRI.
- Al. Ashry, M. H. S. (2017). A Proposed Investment on a University Campus. *International Journal of Financial Research*, 8(4), 213-227. <https://doi.org/10.5430/ijfr.v8n4p213>
- Nduwayo, M.-G., & Sayumwe, M. (2018). Analysis Grid of Adjustment Strategies of Non-profit Organizations Benefiting From Microcredit to the Constraints of Microfinance Institutions: The Case of Burundi. *International Journal of Financial Research*, 9(3), 86-97. <https://doi.org/10.5430/ijfr.v9n3p86>
- Porter, M. E. (1998). Clusters and the new economics of competition. *Harvard Business Review*, 76(6), 77-90.
- Rathee, R., & Rajain, P. (2013). Service Value Chain Models in Higher Education. *International Journal of Emerging Research in Management & Technology*, 2(7), 1-6.
- Robinson, J. (2013). *Ordinary cities: Between modernity and development*. London: Routledge.
- Sakurai, J. J., & Liboff, R. L. (1993). *Modern Quantum Mechanics*. Boston: Addison Wesley. <https://doi.org/10.1119/1.14491>
- Siswanto, S. (2016). Desain Mutu Pendidikan Pesantren. *KARSA: Jurnal Sosial Dan Budaya Keislaman*, 23(5), 259-275. <https://doi.org/10.19105/karsa.v23i2.726>
- Turney, R., & Pitblado, R. (1996). *Risk Assessment in the Process Industries*. London: Intitution of Chemical Engineer.
- Vaxevanidis, N. M., & Petropoulos, G. (2008). A Literature Survey of Cost of Quality Models. *Journal of Engineering*, 3, 274-283.
- Woodward, D. G. (1997). Life cycle costing - Theory, information acquisition and application. *International Journal of Project Management*, 15(6), 335-344. [https://doi.org/10.1016/S0263-7863\(96\)00089-0](https://doi.org/10.1016/S0263-7863(96)00089-0)
- Zengin, Y., & Ada, E. (2010). Cost management through product design: target costing approach. *Journal International Journal of Production Research*, 48(19), 5593-5611.
- Zubir, A., & Ibrahim Kamal, A. R. (2009). Managerial Performance Measures in Management Accounting Practices of Malaysian Institutions of Higher Learning. *Malaysian Accounting Review*, 8(1), 25.
- Zusmelia, Z., Firdaus, F., & Ansofino, A. (2019). Strengthening Strategies of The Informal Sector in Traditional Market: An Institutional Approach. *Academy of Strategic Management Journal*, 18(3), 1-10.