



Second Order Confirmatory Factor Analysis Of Target Cost Management Of Micro, Small And Medium-Sized Enterprises (MSMES) In Thailand

Anucha Thapayom^{1*}

^{1*}Associate Professor in Department of Accounting, Faculty of Business Administration, King Mongkut's University of Technology, North Bangkok, Thailand. Email: anucha.t@fba.kmutnb.ac.th

Citation: Anucha Thapayom, (2024), Second Order Confirmatory Factor Analysis Of Target Cost Management Of Micro, Small And Medium-Sized Enterprises (MSMES) In Thailand, *Educational Administration: Theory and Practice*, 3(5), 301 - 307
Doi: 10.53555/kuey.v30i5.2843

ARTICLE INFO

ABSTRACT

The main aim of this research was to analyze the second order confirmatory factor analysis of target cost management in micro, small and medium-sized enterprises in Thailand. The quantitative data collection (quantitative research) from 400 Micro, Small and Medium-sized Enterprises in Thailand through a Likert scale questionnaire. The key informants were accounting executives. Data were analyzed with second order confirmatory factor analysis by using Analysis of a Moment Structures (AMOS). Research results showed that the second order confirmatory factor of guidelines for target cost management in micro, small and medium-sized enterprises in Thailand consisted of 6 components: target price strategy, customer orientation, design process management, teamwork development, product life cycle cost management and value chain management. Analysis results of developed model were found corresponded to the evaluation criteria and fit to empirical data with 0.081 Chi-Square Probability Level, 1.160 of Relative Chi-Square, 0.955 of Goodness of Fit Index, and 0.020 of Root Mean Square Error of Approximation. Firms need to implement target cost management potentially to receive best business outcomes. They need to allocate their valuable resources, competencies, assets, and capabilities in supporting the implementation in a firm. As well, executives of firms need to search for new techniques, procedures, approach, and methods that can help firms gain a success of target cost management in the uncertain competitive markets and environments via effectiveness, efficiency, quality, and excellence of their practices, operations and activities.

Keywords: Second Order Confirmatory Factor Analysis, Micro, Small and Medium-sized Enterprises, Target Cost Management

1. Introduction

In light of global openness, markets today are witnessing intense competition in all sectors to ensure their survival by working to ensure the market share to provide them with survival and continuity. To achieve this goal, products and services should be provided with specifications and quality that meet the needs of customers. Cost management techniques, including target cost and environmental cost, are among the most important means that help economic units provide appropriate information to take appropriate decisions and thus increase their competitiveness by providing products and services that meet the needs of customers at competitive prices. And in high quality (Al-Mafrachi & Al-Quraishi, 2022).

Target costing practices guarantee the quality and reliability standards desired by the customer from a product's design phase onwards, while helping enterprises reach the profit margin they prefer (Baharudin & Jusoh, 2015). Target costing is a design-focused and price-driven profit planning tool and cost management system in which cross-functional teams work. Target costing is the concept of price-based costing instead of cost-based pricing. A target price is the estimated price for a product or service that potential customers will be willing to pay. A target cost is the estimated long-run cost of a product or service that allows the enterprise to achieve a targeted profit. Target cost is derived by subtracting the target profit from the target price (Celayir, 2020).

Studies show that many established Japanese companies use Target Cost Management (TCM), one form of Strategic Management Accounting (SMA), as their competitive tool (Thapayom, 2021). The TCM implementation helps the Japanese companies to manage their strategies and operate speedily at a profitable margin. This is because TCM ensures products are sufficiently profitable when launched by managing the cost during the design stage while ensuring the products meet the quality and reliability standards, and other customers' needs (Ansari, Bell & Okano, 2007). Furthermore, the market-driven concept in TCM helps companies to set the right price and right cost, reduces the risk of not making sufficient profit, makes better and faster product development, reduce costs, and improve the competitiveness of the economic unit.

Target costing is a market-driven costing system. It is established based on the offers of the competition and customers' requirements. Target costing is a system for profit planning and cost methods. It is a functional system at the heart of which price setting, customer centricity and design lies (Ansari & Bell, 1997). Cost management is initiated in product development phase and applied throughout the product life-cycle in a manner to cover the entire value chain. Target costing can best be described as a systematic process of cost management and profit planning. The six key principles of target costing are target price strategy, customer orientation, design process management, teamwork development, product life cycle cost management and value chain management (Swenson et al., 2003).

2. Literature Review

TCM was originated from the Japanese automobile industry in 1960s and then was successfully introduced to Western companies since 1980s (Feil et al., 2004). Many large firms have adopted TCM to improve their cost management and consequently increase their competitiveness (Thapayom, 2022). In this research, target cost management refers to a system of profit planning and cost management that is price-led, customer-, design-centered and cross functional (Ansari, Bell and Swenson, 2006). TCM is a system under which a corporate plans in advance for the product costs, price points, and margins that it wants to reach for a new product. If it cannot produce a product at these planned levels, then it cancels the design project entirely. With TCM, a management team has a powerful instrument for continually monitoring products from the moment they enter the design phase and onward throughout their product life cycles. It is considered one of the most critical tools for completing consistent profitability in a manufacturing environment (Thapayom, 2021).

TCM is an outstanding tool for planning a suite of products that have high levels of profitability. This is opposite to the much more common method of creating a product that is based on the engineering department's view of what the product should be like, and then struggling with costs that are too high in comparison to the market price (Baharudin & Jusoh, 2020). Here, TCM as one source of firms' abilities is valuable, non-imitate, and non-substitute. It is a key factor of driving cost advantage, customer satisfaction, and sustainable competitive advantage. In this research, key principles of TCM include target price strategy, teamwork development, customer orientation, product life cycle cost management, value chain management and design process management (Swenson et al., 2003).

2.1 Target Price Strategy

In target costing, target selling price is determined first. The target selling price stands for the amount consumers consider paying for the products produced by an enterprise. Target profit margin is subtracted from this price to determine the target cost. Costing per price is composed of two key subprinciples (Ansari & Bell, 1997). Product and profit margin are determined by market prices. The process should be regularly analyzed for the enterprise to opt for products with consistent and reliable profit margins. Target costing is based on knowledge and analyses of active competition. It is important to understand how market prices have been set.

2.2 Customer Orientation

Target costing is a process under the impact of the market, and customers' opinion is continuously considered. Customer requirements for quality, cost, and time are simultaneously incorporated in product and process decisions and guide cost analysis. The value (to the customer) of any features and functionality built into the product must be greater than the cost of providing those features and functionality. What needs to be considered in product design is elimination of those features that will add on the product cost but nevertheless fail to bring in further value for the consumer (Celayir, 2020).

2.3 Design Process Management

Target costing manages costs before they are incurred. Although most costs arise in production, many of them are caused by issues related with design. Target costing, though, focuses on a design that enables cost control/reduction throughout the life-cycle of a product. Cost control is emphasized at the product and process design stage. Therefore, engineering changes must occur before production begins, resulting in lower costs and reduced "time-to-market" for new products (Slater, 2010).

2.4 Teamwork Development

One of the key aspects of target costing is the adoption of a team approach to achieve the target cost. Team members represent a broad group of people including producers, engineers, designers, R&D experts, procurement, cost accounting, marketing specialists, and from outside the economic unit suppliers, customers, traders, distributors, and other service providers (Szczerbak, 2022). Cross-functional product and process teams are responsible for the entire product from initial concept through final production and that these functions are considered an essential part in developing products and avoiding problems that may occur later, through participation and coordination between functions.

2.5 Product Life Cycle Cost Management

The method is primarily aimed at minimizing product life-cycle costs on the side of both producers and customers. Total life-cycle costs are minimized for both the producer and the customer. Life-cycle costs include purchase price, operating costs, maintenance, and distribution costs. Blocher (2010) defines the product life cycle as a management technique used to determine and control costs along the life cycle of products that include research and development, design, manufacturing, marketing, distribution, sales, and after-sales services.

2.6 Value Chain Management

Target costing deals with all the stakeholders of a value chain, from vendors and distributors to customer services. The method is built on long-standing, beneficial relationships to be established with the aforementioned. This is how it extends cost reduction efforts across the entire value chain, by partnering with all other parties outside an enterprise. The development of the relationship between these parts leads to a greater possibility of reducing costs within the value chain, and the existence of long-term and mutually beneficial relationships with suppliers and other members of the value chain form the basis of a target cost management system. The value chain is the large organization that shares design information and cost information and is involved in setting cost-reduction goals (Al-Mafrachi & Al-Quraishi, 2022).

3. Research Methods

3.1 Sample Selection and Data Collection Procedure

Population in this research included accounting executives of micro, small and medium-sized enterprises (MSMEs) in Thailand and registered with the Office of Small and Medium Enterprise Promotion with a total population of 776,977 firms. The questionnaires are directly distributed by random choice to 1,920 MSMEs in Thailand who are selected by a simple random sampling procedure. As a result, completed questionnaires were 400. The effective response rate was approximately 21.89% which was considered suitable for the response rate for a mail survey because it was greater than 20% (Aaker, Kumar, & Day, 2001).

3.2 Test of Non-Response Bias

To test non-response bias and to detect and consider possible problems with non-response errors was investigated by t-test that followed to Armstrong and Overton (1977). The researcher was compared early and late responses about firm capital and firm age. The results were not significant between early and late responses. Therefore, it was implied that these received questionnaires showed insignificant non-response bias for the analysis in this research.

3.3 Variable Measurement

A tool for component analysis research was a rating-scale questionnaire by determining weighing criteria into 5 scales of Likert (David & Sutton, 2011). Test results of tool quality showed 0.60-1.00 Index of Item Objective Congruence: IOC, 0.51 – 0.80 Corrected Item–Total Correlation by individually analyzing discrimination value, and 0.87 Cronbach' Alpha Coefficient from content validity analysis.

3.4 Statistical Techniques

Descriptive statistics using SPSS and multivariate statistical analysis using AMOS were used for data analysis with the 4 following values for evaluating the data-model fit; 1) Chi-square Probability Level was more than 0.05., 2) Relative Chi-square was less than 2.00., 3) Goodness of Fit Index was greater than 0.90., and 4) Root Mean Square Error of Approximation was less than 0.08 (Silpcharu, 2020).

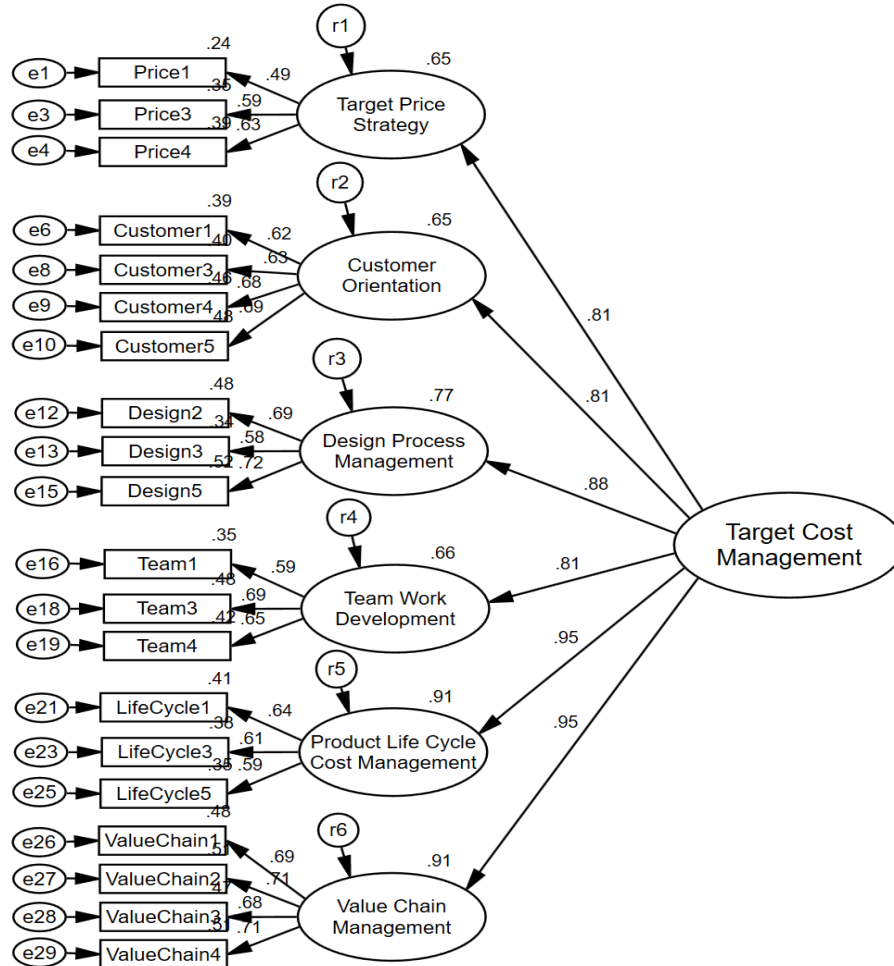
4. Research Results

Analysis results of second-order confirmatory factor analysis of target cost management for micro, small and medium-sized enterprises in Thailand are as shown in Figure 1.

According to Figure 1, it showed statistical values evaluating the fit of post-improvement second-order confirmatory factor analysis model of target cost management by considering Modification Indices (MI) according to the study of Arbuckle. It was found that Chi-Square probability level (CMIN-P) value equaled to 0.081 which was greater than 0.05. Relative Chi-Square (CMIN/DF) was 1.160 which was less than 2.

Goodness of Fit Index (GFI) was 0.955 which was greater than 0.90 and Root Mean Square Error of Approximation (RMSEA) was 0.020 which was less than 0.08. These can be concluded that all 4 statistical values were qualified. Therefore, the second-order confirmatory factor analysis model of target cost management for micro, small and medium-sized enterprises in Thailand was fit to the empirical data.

Target cost management for micro, small and medium-sized enterprises in Thailand consisted of 6 latent variables which could be ascendingly prioritized according to its weight as follows; 1) Product Life Cycle Cost Management; Regression Weight=0.954, R2=0.910, 2) Value Chain Management; Regression Weight=0.954, R2=0.909, 3) Design Process Management; Regression Weight=0.887, R2=0.770, 4) Teamwork Development; Regression Weight=0.811, R2=0.657, 5) Target Price Strategy; Regression Weight=0.808, R2=0.653 and 6) Customer Orientation; Regression Weight=0.806, R2=0.649.



Chi-square = 185.554 ,df = 160, p=.081
 CMIN/DF =1.160, GFI = .955, RMSEA = .020

Fig. 1. Second-order confirmatory factor analysis of target cost management for micro, small and medium-sized enterprises in Thailand

Analysis results of levels of significance of post-improvement second-order confirmatory factor analysis model of target cost management for micro, small and medium-sized enterprises in Thailand showed mean and Standard Deviation (S.D.) values of each component as shown in Table 1.

According to Table 1, it was found that overall significance of target cost management for micro, small and medium-sized enterprises in Thailand was high with 4.34 mean values.

Considered individually, significance of all components was high. The significance of customer orientation, product life cycle cost management, design process management, value chain management, target price strategy, and teamwork development were 4.42, 4.39, 4.39, 4.33, 4.28 and 4.23, respectively.

Individual analysis results of levels of significance of second-order confirmatory factor of target cost management. Significance of individual analysis results was high with 4.14 – 4.47 mean value as follows:

Table 1: Mean and standard deviation of the guidelines for target cost management in Thailand

Guidelines for Target Cost Management		\bar{X}	S.D.
The Overall of Target Cost Management		4.34	0.42
1. Target Price Strategy		4.28	0.55
TPS1	Set the price of the product at the level that customer is willing to pay before the start of production.	4.38	0.76
TPS3	Flexible pricing and changing according to consumer demand.	4.19	0.70
TPS4	Estimate the competitor cost and future costs as a criterion for determining product prices.	4.27	0.69
2. Customer Orientation		4.42	0.49
COR1	Focus on the needs of the customers and consider the best interests of the customers.	4.47	0.62
COR3	Pay attention to customer satisfaction to create repeat service.	4.47	0.63
COR4	Define various channels to access products or services and increase channels to deliver goods or services to customers.	4.35	0.70
COR5	Focus on production costs to provide customers with access to products.	4.38	0.65
3. Design Process Management		4.39	0.53
DPM2	Design products or services that meet the needs of consumers.	4.39	0.67
DPM3	Choose quality parts or raw materials for production.	4.39	0.66
DPM5	Constantly and consistently improving the design.	4.39	0.71
4. Teamwork Development		4.23	0.58
TDE1	Manage the team to create consistency in operations by asking for cross-functional cooperation.	4.35	0.66
TDE3	Rotate the team as a tool to develop personnel's potential.	4.20	0.80
TDE4	Provide opportunities for employees from all departments to develop products together.	4.14	0.75
5. Product Life Cycle Cost Management		4.39	0.52
PLC1	Focus on planning and controlling costs incurred in the production process.	4.44	0.64
PLC3	Set the product improvement costs to create product differentiation.	4.34	0.70
PLC5	Control distribution costs to achieve the best value.	4.38	0.69
6. Value Chain Management		4.33	0.55
VCM1	Clearly specify the costs in the main activities and supporting activities in the production of goods or services.	4.37	0.68
VCM2	Emphasis on comparing costs in each activity against competitors.	4.34	0.69
VCM3	Identify weaknesses in the value chain and find ways to improve them.	4.30	0.71
VCM4	Analyze operational activities to differentiate and reduce unnecessary costs.	4.32	0.72

For the target price strategy, it is comprised of 1) set the price of the product at the level that customer is willing to pay before the start of production; 2) estimate the competitor cost and future costs as a criterion for determining product prices; and 3) flexible pricing and changing according to consumer demand with 4.38, 4.27, and 4.19 mean values, respectively.

For the customer orientation, it is comprised of 1) focus on the needs of the customers and consider the best interests of the customers; 2) pay attention to customer satisfaction to create repeat service; 3) focus on production costs to provide customers with access to products and 4) define various channels to access products or services and increase channels to deliver goods or services to customers with 4.47, 4.47, 4.38, and 4.35 mean values, respectively.

For the design process management, it is comprised of 1) choose quality parts or raw materials for production; 2) design products or services that meet the needs of consumers; and 3) constantly and consistently improving the design with 4.39, 4.39, and 4.39 mean values, respectively.

For the teamwork development, it is comprised of 1) manage the team to create consistency in operations by asking for cross-functional cooperation; 2) rotate the team as a tool to develop personnel's potential; and 3) provide opportunities for employees from all departments to develop products together with 4.35, 4.20, and 4.14 mean values, respectively.

For the product life cycle cost management, it is comprised of 1) Focus on planning and controlling costs incurred in the production process; 2) Control distribution costs to achieve the best value; and 3) Set the product improvement costs to create product differentiation with 4.44, 4.38, and 4.34 mean values, respectively.

For the value chain management, it is comprised of 1) clearly specify the costs in the main activities and supporting activities in the production of goods or services; 2) emphasis on comparing costs in each activity against competitors; 3) analyze operational activities to differentiate and reduce unnecessary costs and 4) identify weaknesses in the value chain and find ways to improve them with 4.37, 4.34, 4.32, and 4.30 mean values, respectively.

5. Discussion

The most important issues derived from this research results of the guidelines of target cost management of micro, small and medium-sized enterprises can be the ways for businesses to study and learn to establish the strategic cost management tool for promoting MSME entrepreneurs' gain their target profit by achieving the target cost. Eventually, this helps the companies to produce competitive products and reduce the risk of not making sufficient profit and increase in a competitiveness to lead new business growth and opportunities. From the research results, the researcher discussed the results together with the review of related literatures in two points described as follows.

Firstly, the component most effecting on guidelines for target cost management is product life cycle cost management with 0.954 standardized regression weight and 0.001 statistical significance. Product life cycle cost management is a combination of the economic and technical aspects of the evaluated project over its projected duration (Swiderski & Rolek, 2021). Product life cycle as a management technique used to define and control costs along the life cycle of products that include research and development, design, manufacturing, marketing, distribution, sales, and after-sales services. It provides a more comprehensive and transparent representation of the total costs (Blocher, 2010). The method is a cost management approach based on the costs of the product, starting with the pre-production phase, and continuing to the end of the utilization. This approach focuses on the management of the costs at each stage of the product, from birth to death. At the same time, it also helps managers to make a good pricing decision, and to determine the profitability of the product. Costing based on the product life cycle is based on cost and profitability analysis. And as a period of strategic planning, it is based on the expected life cycle of a product consisting of the introduction, growth, maturity, and decline. The aim of this costing is to maximize the profit for the business with appropriate marketing and production decisions that the managers make at different stages of the product life cycle (Contuk, 2018).

Lastly, customer orientation aspect of guidelines for target cost management was the most significant component with 4.42 mean value. There is not any manufacturing, service and business which can survive without satisfied customers. The thing that is more important is that wants, demands and expectations of the customers are increasing daily, and this trend will be accompanied with great developments. This fact has forced the businesses consider the customers' expectations as an approach which is very important in keeping the long-term relationship with customers. Meanwhile, customer orientation has been applied mostly because of considering these long-term relationships in industries. In this method, based on surveys in the market, the sale price for the products is anticipated before production processes start and then the business tries to design and produce the product based on the predetermined cost to achieve the profit intended by the management and at the same time entail desired quality and competitive conditions in a way that it can result in customers' satisfaction as they deserve. In value-based pricing, the customers' cognition is used as the key criterion in pricing, and it should be noted here that the value for customer does not mean low prices for the product or the service. Customer orientation is the distribution of data related to the customers in the whole organization, devising strategies and tactics to meet the needs of the market practically and by all parts in an organization and achieving general commitment by all personnel regarding the programs devised (Sarokolae et al., 2012).

6. Recommendations for Further Research

Future research may need to review more literature relating to these target cost management issues and their characteristics, relationships, and effects to verify the current research. To expand the research results and prove the generalizability of the research, future research may need to collect data from larger samples and various businesses/industries.

Acknowledgments

This research is supported by King Mongkut's University of Technology North Bangkok, Contract no. KMUTNB-65-BASIC-02.

References

1. Aaker, D. A., Kumar, V. & Day, G. S. (2001). *Marketing Research*. New York: John Wiley and Sons.
2. Al-Mafrachi, S.K.A., & Al-Quraishi, S.A.A. (2022). The role of the target cost system in activating environmental cost management: an applied accounting and financial study at ashour general constructive contract co. *Academy of Accounting and Financial Studies Journal*, 26(1), 1-14.
3. Ansari, S., Bell, J., & Okano, H. (2007). Target Costing: Uncharted Research Territory. In C. S. Chapman, A. G. Hopwood & M. D. Shields (Eds.), *Handbook of Management Accounting Research: Elsevier Lt d.* 507-530.
4. Ansari, S., Bell, J., & Swenson, D. (2006). A template for implementing target costing. *Cost Management*, 20(5), 20-27.
5. Ansari, S. & Bell, J. (1997). *Target Costing: The Next Frontier in Strategic Cost Management*. Irwin Professional Publishing, Chicago.
6. Armstrong, J. S., & Overton, T. S. (1977). Estimating non-response bias in mail surveys. *Journal of Marketing Research*, 14(3), 396-402.
7. Baharudin, N., & Jusoh, R. (2020). Enablers of target cost management implementation: evidence from Malaysia. *Jurnal Dinamika Akuntansi dan Bisnis*, 7(1), 87-106.
8. Baharudin, N. & Jusoh, R. (2015). Target Cost Management (TCM): A Case Study of an Automotive Company. *Procedia - Social and Behavioral Sciences*, 172, 525-532.
9. Blocher. (2010). *Cost management*. Avenue of the Americas, New York, NY.
10. Celayir, D. (2020). Target Costing as a Strategic Cost Management Tool and a Survey on Its Implementation in the Turkish Furniture Industry, *Journal of Business Research-Turk*, 12(2), 1308-1321.
11. Contuk, F. Y. (2018). Product Life Cycle Costing Method a General Evaluation. In book: *Social Sciences Researches in the Globalizing World*.
12. David, & Sutton. (2011). *Social research: An introduction*, 2nd ed. SAGE, London, UK.
13. Feil, P., Yook, K.-H., and Kim, I.-W. (2004). Japanese target costing: a historical perspective. *International Journal of Strategic Cost Management*, Spring, 10-19.
14. Office of Small and Medium Enterprise Promotion. (2021). Dashboard SME Big Data. Retrieved September 2, 2021, from <https://sme.go.th/th/page.php?modulekey=348>
15. Sarokolaee, M. A., Taghizadeh, V., & Ebrati, M. (2012). The relationship between target costing and value-based pricing and presenting an aggregate model based on customers' expectations. *Procedia - Social and Behavioral Sciences*, 41, 74-83.
16. Silpcharu, T. (2020). *Research and Statistics Analysis by SPSS and AMOS*. 18th edition, Nonthaburi: Business R&D Part., Limited.
17. Slater, M. (2010). Target Costing as A Strategic COST Management Tool in the South African Motor Industry. The Nelson Mandela Metropolitan University, Faculty of Business and Economic sciences.
18. Swenson, D., Ansari, S., Bell, J., & Kim, I. (2003). Best Practices in Target Costing. *Management Accounting Quarterly*, 4, 12-17.
19. Swiderski, W., & Rolek, W. (2021). A Model of Product Life Cycle Cost Management Based on the Example of the Spartan Multimedia Shooting Training System. *Economies*, 9(2), 90. <https://doi.org/10.3390/economies9020090>
20. Szczerbak, M. (2022). The Impact of Target Costing on the Competitiveness and Financial Security of Enterprises. *Safety Engineering of Anthropogenic Objects*, 1, 28-38.
21. Thapayom, A. (2022). The relationships among target cost management, cost advantage, customer satisfaction and sustainable competitive advantage of micro, small and medium-sized enterprises (MSMEs) in Thailand. *Journal of Accountancy and Management*, 14(4), 198-215.
22. Thapayom, A. (2021). Strategic Cost Management as a Valuable Approach for Achieving Organizational Sustainability: Evidence from Industrial Businesses in Rayong. *Journal of Accounting Profession*, 17(53), 98-125.