

STRATEGIC COSTING AND FIRM SURVIVAL OF FIRMS TO BE RECOGNIZED IN GOOD MANUFACTURING PRACTICE (GMP): MEDIATING EFFECTS OF RESOURCES ALLOCATION AND COST EFFICIENCY

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ABSTRACT

This research aims at examining the effects of strategic costing on firm survival of firms to be recognized in good manufacturing practice (GMP) in Thailand through mediators of resources allocation and cost efficiency. In this research, 104 firms to be GMP in Thailand are the samples of the research. In order to investigate the research relationship, structural equation model (SEM) as a statistical method is employed. Based on the results of the study, (1) strategic costing has a positive effect on resources allocation, cost efficiency, and firm survival, (2) resources allocation has a positively influenced to cost efficiency and firm survival, (3) cost efficiency positively affects firm survival. Moreover, resources allocation and cost efficiency are a mediator of the strategic costing-firm survival relationships. According to the research results, Strategic costing, resource allocation, and cost efficiency can create firm survival in the current situation. The organization's executives should use cost data as a guideline for resource allocation, planning, controlling resource utilization to achieve cost efficiency and enable the firm to survive in a highly competitive environment and the rapid changes that are taking place today

Keywords

Strategic Costing, Firm Survival, Resources Allocation, Cost Efficiency

Introduction

In the last ten years, there are changes in the management of the organization to achieve continuous, drastic and rapid goals, such as changing the cost structure of an entity that prioritizes variable costs over fixed costs. Focusing on customers and stakeholders by producing quality products that are environmentally friendly. The change in communication technology that has made the world narrower, more intense competition and the outbreak of the COVID-19 pandemic, which has a severe and inevitable impact on business operations (Ketchen & Craighead, 2020). Therefore, businesses that are unable to adapt will be disturbed by the market and businesses that survive must find strategies in new operations or restructuring competitive strategies to create survival and good performance to have costs and resources that will continue to grow in the future when the situation returns to normal (Phornlaphatrachakorn & Na-Kalasindhu, 2020). Porter (1985) categorizes competitive strategies for building competitive advantage into 3 dimensions consisting of cost leadership; differentiation, and focus strategy. Besides, organizations can also create a competitive advantage from external factors is called market-based view and internal factors is called resource-based view; knowledge-based view and capability-based view (Peteraf & Bergen 2003; Barney, 1991; Ramos-Rodríguez and Ruíz-Navarro's, 2004; and Tiwana, 2002). In addition, the selection of competitive strategies must be consistent with the nature of the products and services as well as the goals of the organization and link the goals and competitive strategies into the normal operating processes of the business that consist of planning, directing, controlling, measuring performance, and decision. This requires information that is useful and relevant to decision-making, especially cost accounting information

that is the basis for classification and categorize costs for management to make effective decisions.

However, although the strategy formulation is different for each business, but under intense competition and changes in the current environment. Cost focus is one of the most important ways for organizations to make the most efficient use of resources. No matter what competitive strategy an entity chooses, if a cost system is prioritized. Whether or not planning, cost control, cost reduction or cost management effectively and efficiently are along with executing competitive strategies, it will result in the business operating in accordance with its goals and surviving in all circumstances (Phornlaphatrachakorn, 2018). The focus on cost efficiency and effectiveness relies on strategic costing, which here refers to the analysis, calculation, and classification of cost objects for goods and services to obtain information to respond to the information needs of management in strategic operations. For example, an entity may need to calculate activity base costs to assess the profit of goods and services and each customer. In addition, in the dimension of linking strategic costing with competitive strategies of organizations such as cost leaders. It is necessary to classify the total cost as fixed and variable costs to be used for planning and controlling sub-sectors to operate within allocated costs and resources or for use in estimating the break-even point, etc.

Past research has been widely studied in the dimension of strategic costing. The results of past research have found that strategic costing comprises Life-cycle costing, quality costing, target costing, value-chain costing, attribute costing, activity based costing, and product teardown analysis (Phornlaphatrachakorn, 2019) and the results of the application of strategic costing together with information richness, goal achievement as well as the results of operations which can be classified as strategic performance

consists of cost leadership, cost advantage, cost efficiency; management efficiency (Phornlaphatrachakorn, 2018; Phornlaphatrachakorn and Na-Kalasindhu, 2020) and financial performance includes market share, brand strength, organization survival as well as the sustainability of the organization (Phornlaphatrachakorn, 2019; Langfield-Smith, 2008) and most of the research focuses on choosing a manufacturing business. From past research, it was found that there is a research gap that is important in relation to strategic costing. That is, past research has found that strategic costing has a positive correlation with the survival of the organization and allocate resources. At the same time, resource allocation is also associated with firm survival, but there is no empirical evidence to test the mediator variable of resource allocation. Therefore, this research will be conducted to test whether resource allocation variables play the role of mediator variables between strategic cost computation and corporate survival. The results of the research will complement the concept of strategic cost management to be complete, practical in the current situation of the Covid-19 epidemic and the organization, and draw a complete literature conclusion.

This research focuses on the effect of strategic costing by giving importance to resource allocation and cost efficiency to the survival of the business with research questions, resource allocation, and cost efficiency to be a mediator between strategic costing and organizational survival or not. The objectives of this research are (1) to test the impact of strategic costing on resource allocation; (2) to test the impact of resource allocation on firm survival; (3) to test the impact of strategic costing on cost efficiency; (4) to test the impact of cost efficiency on firm survival; (5) to test resource allocation variables as the mediates strategic costing - firm survival relationship; and (6) to test cost efficiency variables as the mediator between strategic costing and firm survival.

This study has theoretical implication that encompasses to test contingency theory and fulfills literature of systematic consequence of strategic costing. In the context of practical contribution, the results of this study provide contribution not only to firm's management but also to educators for concerning about strategic costing. The remainder of this paper is as follows. The second section presents the theoretical foundation. The third section presents literature review and hypothesis development are indicated in the followed section. The fourth section explains the research design, data collection and variable measurements of all construct in the study. The fifth section presents the results and discussion. The sixth section shows the implication of this research; the seventh section shows the limitation and suggestion for future research. The conclusion is described in the last section.

Literature Review

Contingency Theory (Fiedler, 1993) explains that under circumstances and changes that occur both internally and externally have a result that the organization is unable to have a method or the best technique to decide in order to achieve the target performance. Therefore, the organization

must adjust its operating model to be flexible to respond to the business's competitive strategy as well as to find methods or operating patterns related to planning, control, decision-making, and performance appraisals that are consistent with the current situation. Strategic costing is one of the important management accounting techniques that organizations can adopt to provide organizations with accurate cost information, summarize, and report to the management in order to make effective decisions under the competitive strategy of the organization. Therefore, this research applied the theory to explain the research conceptual framework that defines strategic costing as independent variable, resources allocation, and cost efficiency as the mediator variables and firm survival is a dependent variable. With regard to the literature review on strategic costing and supporting with contingency theory, this paper proposes a conceptual model to empirical testing in the topic "strategy costing and firm survival of firms to be recognized in GMP: mediating effects of resources allocation and cost efficiency". This paper provides relevant literature review to four sections. First, the integrative review of firms' survival and strategic costing. Second, it explains positively consequence of resources allocation and cost efficiency. Third, it illustrates the mediating effects of resources allocation and cost efficiency.

Strategic Costing

Strategic costing (STC) refers to the process of analyzing, calculating, and classifying the cost objects in order to obtain information in response to management's data needs in strategic operations. Past research has indicated that STC is a part of strategic management accounting (SMA), which includes Strategic costing, strategic performance measurement, strategic decision making, competitor accounting, and customer accounting (Phornlaphatrachakorn, 2019). In Addition, SMA consists of costing; planning, control, and performance; strategic decision-making; competitor accounting; customer accounting. Therefore, STC provides information that is critical to strategy formulation as well as the operation of the business.

Costing is the process of collecting, analyzing, categorizing costs as well as being able to determine the cost of the thing to calculate the cost object correctly coupled with the need for accurate information. The costing model may not meet the needs of the data user. An entity may choose to calculate costs using activity-based costing (ABC) to accurately determine the cost of the cost object (Intakhan, 2014), or an entity may choose to use a product teardown analysis technique to analyze and isolate product components, which will help identify components and the entity may increase the product value or reduce the cost of the product by using quality parts or lower cost components while the benefits of the product remain the same. It may apply value engineering techniques to help analyze critical parts and parts that can be replaced by other materials. Besides, target costing technique is a technique that helps businesses evaluate and adjust production processes or use modern management techniques such as lean accounting to control the cost of goods and services to meet the goals, able

to compete, and survive in the market continuously (Kongkadvanich & Sincharoonsak, 2021). The important dimensions that are continuation from the preliminary principle were found that the value chain cost analysis process. In this dimension, will identify the process costs that are linked from factors of production to products and services by classifying each activity in the production process as well as analyzing and identifying which activities can reduce costs, what activities add value to enable the entity to use resources more efficiently, and the overall cost is reduced. In addition, attribute costing technique is the defining characteristics of the product that attracts the customer. These cost attributes are viewed as the main costs that an entity must focus on, possibly adding to these costs in order to make the goods and services desirable as they meet the needs of the customer (Rashid, Ali, & Hossain, 2021). However, under conditions of intense competition customer focus by applying the concept of customer accounting, which focuses on customers that generate profits for the business by applying data from activity-based costing to allocate expenses to customers and evaluate customers for grouping and management to make appropriate and resulting in good business performance (Al-Mawali, Zainuddin, and Nasir Kader Ali, 2012). Besides customer accounting concept, quality costing technique is another technique that focuses on calculating product cost in the perspective of opportunity cost. This refers to the costs associated with activities that contribute to the quality of goods and services. The cost of quality consists of prevention costs, appraisal costs, and failure costs. The most protection and monitoring due to when poor quality products or services are delivered to customers, they may suffer losses such as litigation, damage to their appearance, which will cost a lot more than the cost of inspection and prevention. Quality costing will lead to a reduction in the overall cost of goods and services, resulting in good performance and sustainable survival. (Phornlaphatrachakorn, 2019)

In addition, an important technique for calculating costs accurately and can be used as a basis for resource allocation is the activity-based costing (ABC) technique. This technique is more elaborate and complex than before by determining cost drivers and set the cost for each activity (cost pool). In the ABC process, there are 2 levels of allocation, which is allocated from related expenses activity costing and allocate from activity group into what needs to be costing. Therefore, to obtain accurate cost information and proximity allows the entity to properly allocate resources to value-added activities and can reduce non-value-added activities. As a result, the use of resources of the business is efficient. In addition, the use of accounting or quantitative information as a basis for allocating resources to each department in the organization will reduce uncertainty and reduce the pressure that may arise from the management. This is corresponded to Martin and Lee (2017), who said that cognitive, social, and political use such as cognitive bias, business size as proxy of political power (Bardolet, Brown, & Lovallo 2017) was a tool or base for allocations and found that it is complex and the causal relationship cannot be drawn clearly. Therefore,

obtaining data from STC will allow for a more conclusive resource allocation. It affects the overall effectiveness and efficiency of resource allocation.

Under the circumstances of the covid 19 epidemic, the organization must operate with caution and retain existing customers in order for the business to survive. One of the most important factors to keep an organization competitive is cost efficiency. Here means the business has a cost that is suitable for goods and services. Appropriate in the current situation may mean the cost of goods and services that is competitive and the entity is profitable enough to offset all costs incurred. Cost efficiency (COE) is the point of view that the entity places importance on planning, controlling, and evaluating the cost-effective use of resources. From the literature of the past, it was found that strategic costing plays an important part in making an enterprise able to control costs effectively. Small and medium sized organizations commonly use cost control by budgeting system. However, STC has techniques used to measure and assess COE appropriately; life-cycle costing is the calculation of goods and services that focuses on long-term operations. The product will consist of 3 cost periods, which are pre-production costs, production cost, and post-production costs. This is to bring the cost of the product life cycle into the cost of the product. The life-cycle costing is divided into two aspects: product cost life cycle which each period will have different characteristics depending on the type of product, for example, harder to replicate products have a longer life cycle than easily replicated products. Another point of view is customer life cycle, such as how much money the customer pays, time, and effort to buy product. Learning and factors that customers think are important, looking at the cost of goods and services throughout the cycle will make the appraisal to the overall cost and to identify at what stage of the cost cycle how much it should cost. This makes the decision to use resources worthwhile, resulting in efficiency. (Ussahawanitchakit, 2018). Avoids the potential pitfalls when considering cost data discretely. Therefore, organizations implementing STC will result in cost-effective use.

The survival-based theory focuses on the continuous adaptation of the organization. It has to adjust the form or method or find new techniques that are suitable for the operating environment in order for the organization to compete and survive (Otungu, et al, 2011). Therefore, the organization needs to have a competitive strategy which can be classified as cost leadership; focus; and product differentiate. It can be seen that cost focus is the main strategy that industrial or manufacturing businesses use to create cost advantage and competitive advantage (Langfield-Smith, 2008; Phornlaphatrachakorn, 2018) and enable the organization to survive in today's violent and brutal situations. However, all types of competitive strategies must obtain important, relevant, timely information to enable the management to make the right decisions in all circumstances. Accurate cost information is critical to achieving strategic objectives and survival. STC is a method of analyzing, categorizing costs in response to strategic goals. From a value chain costing perspective, an entity can evaluate the main activities, support activities, and focus on

the main activities that add value to products and services. That means responding to potential customers correctly. In addition, from the ABC and ABM perspective, it is possible to assess value-added and non-value-added activities. An entity can use that information to decide to reduce non-essential activities. This results in lower overall costs (Intakhan, 2014; Ussahawanitchakit, 2017), generating more profits and create short-term and long-term survival.

All of the above leads to research hypothesis

H1. Strategic costing has a positive influence on Resources allocation.

H2. Strategic costing has a positive influence on Cost efficiency.

H3. Strategic costing has a positive influence on Firm survival.

Resources allocation

Resources allocation (REA) is a fundamental process in strategic operations by planning, controlling, and allocating the necessary operational resources that help the organization achieve strategic results (Maritan & Lee, 2017). Resource allocation processes can be classified into two levels: corporate level and business level. Corporate level is the management decision to allocate resources into geographical areas, business or services department, while business level is planning and allocation of resources by assessing whether resources should be used in any part of the organization in order to best achieve the strategic objectives of the organization.

Potential scenarios in the resources allocation process include minor changes in the base allocation of resources, allocation base changes in cases where the entity is growing, and allocation base changes are reduced in the current situation. That each organization has to face problems with the epidemic of Covid 19, most of them have to deal with problems with operations. Resources tend to decrease may cause a decrease in the allocation base change. Therefore, organizations must seek effective allocation criteria. For example, organizations with small or reduced allocation base changes should have clearly defined numerical criteria to minimize the changes the organization will experience in its strategic actions to make the use of resources cost-effective cost efficiency (Busenbark, Wiseman, Arrfelt, and Woo, 2017; Maritan & Lee, 2017). Besides, when resources are allocated in line with strategic goals under the decreasing trend of resources are allocated in value-added activities, create value in the key customers of the organization, the business has a continuous income. Organizations can survive in the short term and long term.

Besides, past research has shown that STC has a positive correlation with Resource allocation (REA) and organizational survival (FIS) together with REA has a positive influence on FIS. Thus, from the definition of a mediator variable, it is a variable that separates the causal relationship between the independent variable and the dependent variable. It can be called the third variable that changes the relationship between the independent variable and the dependent variable where the mediator variable describes the relationship between the independent variable and the dependent variable. This is because it is a variable

that helps in understanding the direct and indirect influence of independent variables on the dependent variable. Therefore, this leads to research hypothesis

H4. Resources allocation has a positive influence on Cost efficiency.

H5. Resources allocation positively influenced on firm survival.

H6. Resources allocation significantly mediates strategic costing - firm survival relationship.

Cost Efficiency

Cost efficiency (COE) refers to the process of using resources to be cost-effective by improving the process of obtaining and using resources and improvement of products and services (Phornlaphatrachakorn, 2018). Cost efficiency is usually measured by comparing inputs or costs incurred with goods or services or income generated when compared to expenses, etc. From the above concepts, it can be concluded that the cost efficiency process is an intrinsic process through which an entity can find ways to produce higher quality goods and services at a lower cost, e.g. cost cutting, value creation as well as continuously create innovation in the organization, which will significantly reduce costs and increase efficiency of resource utilization. Past research indicates that an enterprise with a cost efficiency strategy strikes a balance between reward and risk. In addition, cost efficiency also affects the profitability of the business, generate more market share from lower settable prices due to lower cost than competitors (Swink, Narasimhan & Kim, 2005). That means businesses can compete and survive in severely competitive situations.

Moreover, this research tested the cost efficiency interstitial variable. Past research has shown that STC COE and FIS correlation can be tested: STC is positively correlated to COE and COE is positively correlated to FIS (Cite as Naidoo, 2010; Phornlaphatrachakorn, 2018). Therefore, this leads to research hypothesis

H7. Cost efficiency positively influences Firm survival.

H8. Cost efficiency significantly mediates strategic costing-firm survival relationship.

Methods

Population and sample

Thailand is the 13th food exporting country in the world. GMP is a good production method according to international standards by the International Food Standards Agency Codex Alimentarius which is designed to ensure clean, safe, quality food production with a focus on eliminating the risks that will negatively affect consumers. GMP certification has been assured by food scholars from all over the world as a process that ensures clean, safe, quality food production is the minimum requirement that each plant must meet to get the right food. This is to manage the readiness of the environment in the production process such as personal hygiene, insect and disease control, cleaning of production premises, machinery and equipment, control of water used in factories, chemical control, etc. This research selected Firms to be recognized in good manufacturing practice (GMP) are population and sample of this research because they are one of the growth rate.

Moreover, Thailand is also a producer and processor country and agricultural products exporter is the 13th in the world. However, the nature of business as well as the information of the said industry group is still very small by key information is accounting controller or accounting manager of each firm to be recognize. Database has been from Department of Agriculture website: <https://www.doa.go.th/th/>. Based on this database, it shows 522 sites, 178 processing factories and 344 packing factories.

Data Collection

This Research uses the questionnaire as an instrument to collect data from accounting executive. The questionnaire is constructed by each of constructs' definition and related literature and that designed on a five-point Likert scale. Questionnaires are sent to key participants of firms to be GMP to provide data for this study via mail. Length of time for collect data is about eight weeks. With respect to the questionnaire mailing, four mails were returned. After eight weeks, 104 questionnaires were received. The valid mailing was 522 firms, from which 104 responses were received and usable. Hence, the effective response rate was approximately 19.99%.

Variable Measurements

For study the strategic costing and firm survival, and all variables were obtained from the data collection. The variables measurements of dependent, independent, mediators are explained as follow:

Firm survival is measured using four items. The questionnaires concern of rising sales and profit trends, new innovations or practices, customer acceptance of the quality of goods and services, and competitiveness (Cite as Naidoo, 2010)

Strategic Costing is measured using four items to calculate life-cycle costing of goods and services to increase and improve the quality of products and services. The value of goods and services is added using activity cost data and the cost of goods and services is calculated as attribute product and service. (Phornlaphatrachakorn, 2019)

Resource allocation is measured using four items asking information about planning for the use of limited resources,

committed to monitoring, and controlling the use of resources. The process of improving the resource allocation model and allocate resources by integrating with performance measurement

Cost efficiency is measured using four items asking information about how organizations can reduce the cost of goods and services, can cut unnecessary operating costs, be able to control major operating costs and produce goods and services on time and at the specified cost. (Phornlaphatrachakorn, 2018).

Reliability and Validity

This research uses Cronbach Alpha values to verify reliability of the questionnaire should have a rule of thumb not less than 0.70 which indicates that the measurement tool is reliable. It is an assessment of internal consistency and stability. In this study, factor loading was used to test the validity of the instrument used in the research, where the factor loading in each construct should be greater than 0.50 (Hair et al., 2006), and use an Item-total correlation value that evaluates discriminant power, that is, a measure of the discrimination of the questionnaire individually. It is a measure of the exactness of the questions that should be distinguished from other items in the same variable which should be greater than 0.3 (Churchill, 1979). The results of the experiment showed that all variables (constructs) exceeded the threshold, where factor loading was between 0.78- 0.93 and item total correlation was between 0.62-0.87 and Cronbach's alpha was between 0.83-0.91. It was concluded that the instruments used in this research were reliable and acceptable accuracy. Table 1 shows the results of measuring the quality of the instrument with details as below.

Table 1. Results of measure validation

Variables	Factor loading	Item-total correlation	Cronbach's Alpha
Strategic costing (STC)	0.80-0.88	0.66-0.78	0.87
Resource allocation (REA)	0.83-0.93	0.71-0.87	0.91
Cost efficiency (COE)	0.78-0.84	0.62-0.70	0.83
Firm survival (FIS)	0.79-0.88	0.64-0.75	0.85

Data Analysis

To examine the strategic costing – firm survival relationship, structural equation model (SEM) is conducted because every variable in the study was an interval scale, and the use of SEM also provided structural answers. This will be useful in applying theoretical and managerial implication appropriately. The results are presented in the next section.

Results and Discussions

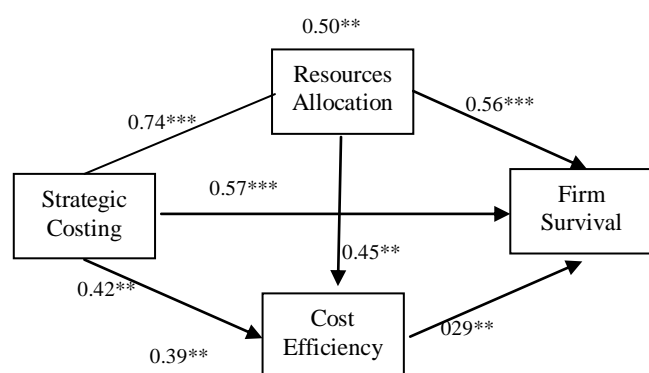
In Table 2 presents the basic statistical values and a correlation matrix for all variables by checking the problem multicollinearity in data analysis, where the problem multicollinearity occurs when the independent variables are related to each other, which affects the explanation of the variance of the dependent variable. The correlation of independent variables should not exceed 0.8 (Hair et al.,

2010). The results showed that the correlation of the variables was between 0.47 – 0.66, indicating that there was no problem of multicollinearity in this analysis.

Table 2. Descriptive statistic and correlation matrix

Variables	STC	REA	COE	FIS
Mean	4.43	4.43	4.43	4.43
SD	0.46	0.46	0.46	0.46
STC	1.00			
REA	.55**	1.00		
COE	.47**	.55**	1.00	
FIS	.54**	.66**	.52**	1.00

**Correlation is significant at the .01 level (2-tailed)



p<.05, *p<.01; CFI = 0.99; GFI = 0.91; IFI = 0.99; RMSEA = 0.03; p-value = 0.33

Figure 2

A Summary of the strategic costing-firm survival relationships

Figure 2 and table 3 presents the results of structural equation model (SEM) analysis of the effect of the strategic costing (STC) and firm survival (FIS) via resources allocation (REA) and cost efficiency (COE) as a mediator. By this research, it is expected that STC has a positive correlation with resources allocation and cost efficiency. In addition, resources allocation variables and cost efficiency variables have a positive impact on firm survival and resources allocation variables have a positive correlation with cost efficiency.

Based on the results of the concordance test of the empirical data and the defined structural equation model. This research presents the goodness of fit index, including p-value, CMIN/DF, goodness of fit index (GFI), the comparative fit index (CFI), the incremental fit index (IFI), and the root mean square error of approximation (RMSEA), found that p-value = 0.326, cmin/df = 1.063, GFI = .910, CFI = .994, IFI = .994, and RMSEA = 0.025. From the statistical value compared to the specified criteria. It was concluded that the empirical data were consistent with the studied model at a good level (Byrne, 1998).

The test results based on the strategic costing hypothesis were positively correlated with resources allocation ($b = 0.74$, $p < 0.01$). From the literature, it was found that the strategic costing calculation provided information that was consistent with the competitive strategy of the organization. As a result, the organization's resource allocation is limited to activities that add value to the organization. The internal department that

is the main unit responsible for the success of the strategy will have sufficient resources to create products and services that meet the needs of customers and meet the company's goals, in line with Intakhan (2014) said activity-based costing is an innovative way to calculate accurate goods and services and closer to reality and can be applied in the organization to achieve the goals of the organization. Costing calculation classifies costs as direct costs and indirect costs and use a 2-step allocation to allocate indirect costs. Things to calculate cost by activity which the cost derived from the method reflects the use of resources of goods and services as well as classify activities as value-added activities such as production activities and non-value-added activities such as moving activities. As a result, the entity can use the information in planning the allocation of limited resources to value-added activities make the entity's resource allocation process efficient. Value-added activities acquire a reasonable amount of resources and non-value-added activities can be reduced by cutting or modifying production processes or management processes to achieve production efficiency and it is in line with Rashid, Ali, & Hossain (2021) and Smith et al. (2008) who say that an entity can apply strategic cost data as a resource allocation criterion to make processes use finite resources of the business has the highest value. Therefore, it accepts H1.

In addition, strategic costing has a statistically significant positive correlation with cost efficiency ($b = 0.45$, $p < 0.04$). Strategic costing provides useful information consistent with the normal operations of the entity whether it is planning, controlling, evaluating performance, and making the right decisions in each situation. In particular, the use of the budget system in addition to providing useful information in planning. Costs can also be controlled for the organization by assigning expenses to each department according to the operating level. There are cost savings and continuous good performance. In addition, strategic costing also helps the production system to be efficient from the layout or value chain in the organization to be the most concise and economical using the lean accounting system consistent with Kongkadvanich and Sincharoonsak (2021) who said that the use of accounting information obtained from the lean accounting system will help the production process of goods and services be economical, reduce wastage, increase productivity in the production cycle. Lean accounting is an in-house costing system that solves problems and improves production processes as well as to control costs effectively. In addition, Arneson (2018) concluded that data from cost accounting systems will directly affect the efficiency of the organization. Besides, costing in the form of value chain costing also allows businesses to assess the cost of goods and services in all dimensions since the process of obtaining raw materials until the product is delivered to the customer. This makes it possible to manage unnecessary costs and does not create value for the organization. Organizations get costs reduction (Garlatti, et al. 2019), which means cost efficiency. Then, it accepts the second hypothesis.

Moreover, when testing the direct effect between strategic costing and firm survival, there was a positive and statistically significant correlation ($b = 0.57$, $p < 0.01$). Hypothesis 3 was accepted because strategic costing was an early process of strategic cost management (SMA), in which

the SMA process includes costing, planning control and performance, strategic decision making, competitor accounting, and customer accounting (Cadez and Guilding, 2008), and the SMA is a part of the corporate management system in order to obtain accounting information to support the decision of the management. Therefore, if the business has the correct cost calculation it can be applied to the situation, such as investing in profitable goods and services, or focusing on the profitable customers with customer accounting and making the right decisions. As a result, companies can survive under today's fierce competition, in line with Phornlaphatrachakorn (2018) who said organizations that have calculated costs and are linked to strategic goals will result in the business having good operating results and survive sustainably. Besides, it is also in line with Cadez and Guilding (2008) and Phornlaphatrachakorn and Na-Kalasindhu, 2020, who summarize the impact of SMA and Strategic costing on operating results, competitive advantage, survival, and Sustainability.

Resources allocation had a statistically significant positive influence on cost efficiency and firm survival ($b = 0.45$, $p < 0.01$, $b = 0.56 < 0.01$). Allocating limited resources to economic activities that create added value for the organization, the business will get a worthwhile return on investment in assets resulting in good operating results. It is consistent with Sathiyabama and Dasan (2013), it was found that optimum resources allocation would reduce waste. This means the cost of the food industry. In addition to that, reducing waste means using resources more efficiently and achieving cost efficiency. Besides, it is in line with Pinha and Ahluwalia (2019) who said flexible resources allocation will directly affect cost efficiency which is assessed by the production time and the cost that can be saved tangible. Then, it accepts hypothesis 4. In addition, considering the relationship of resource allocation to the survival of the entity with GMP certified organizations. When allocating cost-effective resources by allocating resources such as people, budgets, and production factors in products and services that meet the needs of customers including the allocation focuses on activities that are the main activities that create added value for goods and services. In addition to the RBV's view (Barney, 1991), the organization that has resources and capability that is unique in both tangible parts and can't catch in order to create competitive advantages and the survival of the organization. Such assets and capabilities must be valuable and rare. Therefore, the resource allocation process when companies apply cost data for decision-making in the allocation of resources will create added value and may develop into innovation until it is built into organizational routines that create added value for the business (Coleman, Cotei, & Farhat, 2013), resulting in lower overall costs than competitors, create a competitive advantage and survive in a sustainable way. Then, it accepts the H5.

Cost efficiency had a statistically significant positive influence on firm survival ($b=0.29$, $p < 0.01$). Cost efficiency was viewed as superior to cost savings. Cost efficiency here is cost effective management. This means that activities that add value to goods and services may have higher costs compared to the past, but will create profits and satisfaction with the products and services of customers to feel worthwhile.

Resulting in continuous customer and revenue in line with Coucke and Sleuwaegen (2008) who presents a cost efficiency approach to ensure the survival of the manufacturing business. Focusing on the methods of offshoring and outsourcing to save costs and be competitive today. In addition, it is also in the same direction as Langfield-smith (2008) concluded that entities need to maintain a cost advantage to offer products and services at lower prices than competitors. Maintaining a cost advantage may come from management accounting techniques such as target costing or constrain management to achieve cost efficiency. Lead to cost advantage and survive in the fiercely competitive and rapidly changing market. It accepts the H6.

The mediator variable test by Baron and Kenny (1986) method analyzed 4 models. In the first model analyzes the direct relationship between independent variables and dependent variables, hereinafter STC and FIS, for which the results of the analysis must be significant. The results of the analysis revealed that there was a direct and statistically significant correlation ($b=0.57$, $p < 0.01$). After that, Model 2 and Model 3 were analyzed for the relationship between STC to REA and REA to FIS, respectively, according to test conditions mediator variables must be statistically significant. The test results showed a positive relationship and statistically significant ($b = 0.55$, $p < 0.01$; $b = 0.66$, $p < 0.01$). Besides, Model 4 was analyzed using STC and REA as independent variables to determine the correlation of FIS, where if the REA variable is a full mediator, the relationship of the STC variable to FIS is insignificant and the REA variable must be correlated and statistically significant. However, in the case of partial mediator variables, STC and REA have a positive correlation and the correlation between STC and FIS will be lower compared to the analysis in Model 1. The results showed that the STC variables and the REA variables were positively correlated ($b = 0.30$, $p < 0.01$; $b = 0.50$, $p < 0.01$) and the correlation between STC and FIS decreased by 0.27 ($0.57 - 0.30$). Therefore, it can be concluded that the REA variable is a partial mediator. This is consistent with the concept of Porter (1985) and Zamora (2016) that the value chain is a business activity that brings goods and services from each part of the organization to customers or the final consumer, such as R&D, produce sale, and after-sales service, etc. It is consistent with Hellin and Meijer (2006) who said that mobility moving goods or services from one activity to another requires added value to the goods and services. Therefore, REA is the mediator from STC to FIS. It is the process of adding value to an organization's resources. From STC when used in an activity, REA will cause the business to create added value and become a continuous value chain to business survival. Hence, it accepts hypothesis 7.

Hypothesis analysis 8 is an analysis of the COE role as a moderator variable if there is a relationship between STC and FIS or not and how. The analysis is performed according to the original format. In the first model, STC and FIS, the results of the analysis must be significant. The results of the analysis revealed that there were direct and statistically significant correlations ($b=0.57$, $p < 0.01$). Models 2 and 3 were STC to COE and COE to FIS, respectively, which according to the test condition, the moderator variable had to be statistically significant. The test results were found to be positively correlated and statistically significant ($b = 0.47$ $p < 0.01$; $b =$

0.57, $p < 0.01$). Moreover, in the analysis in the fourth model there was a positive correlation to FIS ($b = 0.39$, $p < 0.01$; $b = 0.39$, $p < 0.01$), and the relationship between STC and FIS was decreased by 0.18 ($0.57 - 0.39$). Therefore, it was concluded that the REA variable was the partial mediator. It is in line with Phornlaphatrachakorn (2018), it was found that the COE variable was a variable of the relationship between strategic cost management and firm performance, where strategic costing variable was an important component of strategic cost management and firm performance, which was a measure of innovation, new customer acquisition and superior to competitors imply that is the concept of survival, therefore it accepts hypothesis 8.

TABLE 3
Results of path coefficients and hypotheses testing

Hypotheses	Relationships	Coefficients	t-value	Results
H1	STC → REA	0.74***	4.79	Supported
H2	STC → COE	0.42**	2.07	Supported
H3	STC → FIS	0.57***	7.02	Supported
H4	REA → COE	0.45**	2.18	Supported
H5	REA → FIS	0.56***	2.91	Supported
H6	COE → FIS	0.29**	2.45	Supported
H7	STC → FIS	0.57**	7.02	Supported
	STC → REA	0.55**	6.59	
	REA → FIS	0.66**	8.85	
	STC → FIS	0.30**	5.88	
	REA → FIS	0.50**	3.57	
H8		0.57**	7.02	Supported
		0.47**	5.34	
		0.57**	6.92	
		0.39**	4.65	
		0.39**	4.58	

*** $p < .01$, ** $p < .05$

Conclusion

Strategic costing is a cost calculation method that is consistent with the competitive strategy of the organization. It aims to obtain usable cost data that is integrated with the strategic goals of the organization to create good performance and make the organization survive in today's fierce competitive environment. This research aims to test the impact of strategic costing on organizational survival and testing the mediator variables of resources allocation and cost efficiency. There are 104 GMP accredited enterprises in Thailand. In the hypothesis test, SEM was used and the mediation analysis was performed by regression. The results showed that STC was positively correlated with REA; COE and FIS. In addition, REA has a positive correlation with COE and FIS, and COE influences FIS. The findings are consistent with past research and confirm the contingency theory. In the test of being the mediator variables of REA and COE, it was found that they were both partial mediators, consistent with the definitions of central variables and past research. From research results, executives in GMP certified organizations should focus on strategic costing by allocating resources, improving streamline the costing process to obtain information to make strategic decisions and create resource allocations that fit the

situation, as well as to find ways to reduce costs or unnecessary activities to create cost efficiencies. This affects the overall operation and competitive advantage and survival of the organization.

Limitations and Future Studies

This research attempts to gain a reasonable understanding of the relationship between strategic costing and firm survival by applying contingency theory to explain the relationships. Interestingly, this research is one of the first known investigations the mediator's role of resources allocation in the relationship between strategic costing and firm survival. Consequently, this research also reexamination the mediating effects of cost efficiency for strategic costing and firm survival relationships to verify and expand the relationships, cost efficiency is critical factor in the link and having a direct relationship with the survival of the organization. Future research is necessary to study the dimension of both variables for a more detailed and concrete understanding. Besides, this research studies only strategic costing which is one of the main components of strategic cost management. Future research should explore the relationship between these variables in terms of cause and effect in order of costing, planning control and performance measurement, strategic decision-making, customer accounting, and competitive accounting. Moreover, this study collects data on GMP-certified agribusiness and food businesses. Future research should be conducted with another, larger sample to gain confirmation from a larger population to generalize and a comparative study between business groups or comparison between business sizes. The final point should be studied with the group, should change the study format using a case study method. In organizations that are successful in utilizing strategic costing data in order to know the key factors in their real application. Furthermore, STC is also doing a limited study under the research production business. In the future, it may study service businesses that are currently growing and have more operational complexity in order to understand the application of STC further.

Cost data from costing associated with business strategy is essential in today's business operations. Therefore, the top executives of the organization should pay attention to such information. by supporting resources, assets, knowledge, and capabilities, as well as policies and potential solutions. To apply the information in planning, controlling, and making strategic decisions as well as providing the organization with efficient resource allocation. As a result, the business has lower costs than competitors, creating competitive advantages and continual survival. In addition, the management should improve the criteria for allocating resources and continually improve ways to reduce costs so that the organization has a reasonable cost on the quality of products and services in order to deliver products and services of value that meet the needs of customers.

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