Strategic Costing and Business Growth: Evidence from Beverage Businesses in Thailand

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ABSTRACT

This study aims at investigating the relationships among strategic costing, firm productivity, and business growth of beverage businesses in Thailand. Firm productivity is also hypothesized to be a mediator of the research relationships. Strategic costing comprises of life-cycle costing, quality costing, target costing, and value-chain costing. In this study, 172 beverage businesses in Thailand are the samples of the study. The results indicate that life-cycle costing and value-chain costing have significant positive relationships with firm productivity and business growth. Likewise, firm productivity has an important positive association with business growth. For testing the mediating effects of the research relationships, firm productivity is the mediator of the life-cycle costing-business growth relationships and the value-chain costing-business growth relationships. Accordingly, executives of firms need to develop, implement and improve both life-cycle costing and value-chain costing in order to create their organizational productivity and generate business growth by investing in appropriate valuable resources to support these costing aspects.

Keywords: Strategic Costing, Life-cycle Costing, Quality Costing, Target Costing, Value-chain Costing, Firm Productivity, Business Growth

บทความวิจัย

การบัญชีต้นทุนเชิงกลยุทธ์และการเจริญเติบโตของธุรกิจ : หลักฐานจากธุรกิจเครื่องดื่มในประเทศไทย

ดร.ปพฤกษ์บารมี อุตสาหะวาณิชกิจ

รองศาสตราจารย์ประจำสาขาวิชาการบัญชี

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บทคัดย่อ

การวิจัยนี้มีเป้าหมายเพื่อการทดสอบความสัมพันธ์ระหว่างการบัญชีต้นทุนเชิงกลยุทธ์ ผลิตภาพของกิจการ และการเจริญเติบโตของธุรกิจของธุรกิจเครื่องดื่มในประเทศไทย ซึ่งผลิตภาพของกิจการถูกตั้งสมมุติฐานว่าเป็นตัวแปรกลางของความสัมพันธ์ในการวิจัยด้วย การบัญชีต้นทุนเชิงกลยุทธ์ ประกอบด้วยการบัญชีต้นทุนวงจรชีวิต การบัญชีต้นทุนคุณภาพ การบัญชีต้นทุนเป้าหมาย และการบัญชีต้นทุนห่วงโซ่คุณค่า ในการวิจัยนี้ ธุรกิจเครื่องดื่มในประเทศไทย จำนวน 172 บริษัท เป็นกลุ่มตัวอย่างในการวิจัย ผลลัพธ์การวิจัย พบว่า การบัญชีต้นทุนวงจรชีวิตและการบัญชีต้นทุนห่วงโซ่คุณค่ามีความสัมพันธ์เชิงบวกที่มีความสำคัญต่อผลิตภาพของกิจการและการเจริญเติบโตของธุรกิจ นอกจากนี้ ผลิตภาพขององค์กรมีความเชื่อมโยงเชิงบวกที่มีความสำคัญต่อการเจริญเติบโตของธุรกิจ สำหรับการทดสอบผลกระทบของตัวแปรกลางของความสัมพันธ์ในการวิจัย ผลิตภาพของกิจการเป็นตัวแปรกลางของความสัมพันธ์ระหว่างการบัญชีต้นทุนวงจรชีวิตกับการเจริญเติบโตของกิจการ และความสัมพันธ์ระหว่างการบัญชีต้นทุนห่วงโซ่คุณค่ากับการเจริญเติบโตของกิจการ ดังนั้น ผู้บริหารของกิจการจะต้องพัฒนา ประยุกต์ใช้ และปรับปรุงการบัญชีต้นทุนวงจรชีวิตและการบัญชีต้นทุนห่วงโซ่คุณค่า เพื่อให้เกิดการสร้างสรรค์ผลิตภาพขององค์กรและเพื่อก่อเกิดการเจริญเติบโตแก่ธุรกิจ โดยการลงทุนด้านทรัพยากรที่มีคุณค่าอย่างเหมาะสมเพื่อสนับสนุนการบัญชีต้นทุนเชิงกลยุทธ์ข้างต้น

คำสำคัญ: การบัญชีต้นทุนเชิงกลยุทธ์ การบัญชีต้นทุนวงจรชีวิต การบัญชีต้นทุนคุณภาพ การบัญชีต้นทุนเป้าหมาย การบัญชีต้นทุนห่วงโซ่คุณค่า ผลิตภาพขององค์กร การเจริญเติบโตของธุรกิจ

Introduction

Nowadays, business operations have dealt with highly rigorous competitive markets and environments. Firms have searched for valuable operational techniques and critical organizational strategies to develop business practices and activities in order to gain sustained competitive advantage and achieve superior performance, growth, success, and survival. In increased uncertain situations, firms also need to pay attention to supporting and creating best business practices through marketing, management and accounting aspects. These practices would play significant roles in driving, defining and determining how to do businesses efficiently and effectively. Strategic costing is one approach of management accounting practice implementation and it becomes a significant tool for helping firms succeed in business operation, practices and activities within the complex circumstances. In the management accounting literature, strategic costing is an important driver of performance and outcome prosperity in facing environmental challenges. It is the ability of firms to identify firms' major sources of profitability. It explicitly reports the consumption of all resources by cost objects, such as products, customers, channels, and organizational units (Cooper & Slagmulder, 1998). Successfully strategic costing implementation is positively related to achievement of business growth, survival and sustainability in the long-term and future operations. Thus, strategic costing is an important management accounting method for promoting and obtaining firms' growth in the increasing competitions of doing businesses.

With the growing interest in strategic costing, firms have initiated, implemented and utilized an effective strategic costing to aid their decision making and maintaining their performance. Strategic costing is defined as the management accounting concept of cost data analysis in developing superior strategies in order to gain competitive advantage by highlighting an external and future focus (Cadez & Guilding, 2007). Firms with strategic costing attempt to manage and utilize cost data by changing business views from assessing financial impacts of alternative managerial decisions to recognizing strategic management and marketing activities as most relevant business goals in strategic decision making. Accordingly, strategic costing helps firms focus in management's attention on long range of proactive cost-control goals through benefiting a coherent process for managing cost for both financial and competitive advantages (Buckingham & Loomba, 2001). It is a platform for diagnosing major sources of costs by focusing on overall cost reduction by maintaining control over efforts in high-priority competitions. In this study, strategic costing plays an important valuable role in determining and explaining business growth in the highly competitive uncertainties and pressure. It comprises of life-cycle costing, quality costing, target costing, and value-chain costing. An empirical investigation of the strategic costing-business growth relationships

is reasonably conducted. These relationships are hypothesized to have a positive interaction between each other. Greater strategic costing has an effect on better business outcome, including firm productivity and business growth.

According to the discussion earlier, the objective of this study is to examine the effects of strategic costing on business growth of beverage businesses in Thailand with firm productivity as a mediator. The key research question is how strategic costing has an effect on business growth. The specific research questions are: (1) How does life-cycle costing impact firm productivity and business growth? (2) How does quality costing influence firm productivity and business growth? (3) How does target costing link to firm productivity and business growth? (4) How does value-chain costing relate to firm productivity and business growth? (5) How does firm productivity have an interaction with business growth? and (6) How does firm productivity mediate the relationships between strategic costing (life-cycle costing, quality costing, target costing, and value-chain costing) and business growth? The rest of this study presents relevant literature reviews of strategic costing, firm productivity and business growth and the hypotheses development, discusses the research methods, indicates the results and reasonable discussions, and concludes by discussing implications for theory and management and providing suggestions and directions for future research.

Literature Review

In the conceptual model, strategic costing is hypothesized to have a positive relationship with firm productivity and business growth as shown in Figure 1. Strategic costing consists of life-cycle costing, quality costing, target costing, and value-chain costing.

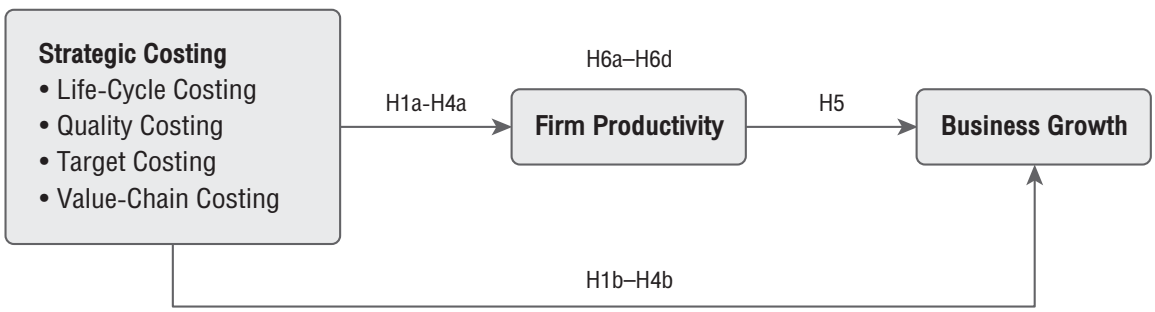

Figure 1 Conceptual Model of the Relationships among Strategic Costing, Firm Productivity and Business Growth

Life-Cycle Costing

Life-cycle costing is a valuable management accounting method in determining firm productivity and business growth and it definitely helps develop technical operations and create strategic opportunities successfully in doing businesses for the long-term and future aspects. Life-cycle costing refers to an approach of management accounting that focuses on the total costs of a product's life (Lindholm & Suomala, 2007). It is considered to estimate costs on a whole life cycle basis and monitor the cost incurred throughout a product's life cycle from research and development and manufacture to its use and subsequent disposal. Cost collection in a life-cycle costing system comprises of research and development cost, production and construction cost, operation and maintenance support cost, and retirement and disposal cost (Korpi & Ala-Risku, 2008). Firms that implement life-cycle costing tend to comprehend an interaction of the cost items that accumulate among the relevant stakeholders during the different cycle stages. Succeeding life-cycle costing implementation, they are likely to manage their product costs effectively through planning their uses of costs and improving their products and assets that lead to productivity, competitive advantage, success, and growth in the highly competitive situations. Likewise, life-cycle costing is defined as a technique that seeks to economically evaluate and assess the total life costs of products which start from research through disposal. These costs include initial cost, operation and maintenance costs and finance cost over these products' life times (Higham, Fortune, & James, 2015). Life-cycle costing would enable better financial decisions to be made in relation to the long-term life of the proposed products. It helps firms utilize their resources and capabilities efficiently and manage their costs and expenditures through the whole life cycles of products. Thus, firms with life-cycle costing effectiveness tend to have a positive relationship with firm productivity and business growth. Therefore, the research hypotheses are as follows:

H1a: Life-cycle costing is positively related to firm productivity.

H1b: Life-cycle costing is positively related to business growth.

Quality Costing

Quality is considered as an important strategic competence and a key competitive weapon of firms in turbulent business markets, environments and situations (Sharma, Kumar, & Kumar, 2007). It helps firms differentiate their products to improve their competitiveness in order to increase and retain market share in the global marketplace. Greater product quality explicitly promotes firms to respond to customer demands better and to increase more customer satisfaction. To achieve a goal of responding customers' quality demands, firms need to implement quality management programs. Thus, quality costing is important for a quality management technique and it is essentially used to-date as a management tool by which to support the organizational change associated with the paradigm shift. Quality costing

refers to the practices, policies and procedures of firms which relate to selecting, collecting, measuring, classifying, analyzing, reporting, and using quality cost data (Luther & Sartawi, 2011). It is a critical step for effective planning and implementation of quality improvement programs by focusing on reducing the costs associated with attaining high quality. Similarly, firms can reduce manufacturing costs by identifying excessive cost and non-value adding activities (Eldridge, Balubaid, & Barber, 2006). They need to quantify their quality-related costs incurred in ensuring and assuring satisfactory quality. These quality-related costs include prevention costs (supplier assurance, quality planning and verification of design), appraisal costs (stock evaluation, receiving inspection and materials consumed during inspection and testing), internal failure costs (scrap, lost productive time and rework), and external failure costs (loss of sales, warranty claims and recall costs and consequential loss of sales (Giakatis & Rooney, 2000). With an effective quality costing implementation, firms have attempted to improve quality and reduce costs of quality within their business operations and activities. They can also improve productivity, operational systems and procedures and higher standards and increase customer satisfaction and business growth. Accordingly, quality costing is likely to have a positive relationship with firm productivity and business growth. Therefore, the research hypotheses are as follows:

H2a: Quality costing is positively related to firm productivity.

H2b: Quality costing is positively related to business growth.

Target Costing

In highly competitive markets, target costing is widely adopted and promoted as a response to structural changes in the manufacturing environment in order to achieve cost reduction and main profitability (Hamood, Omar, & Sulaiman, 2011). It is an important effective cost management technique of a strategic management accounting system for managing and controlling product costs during the design and development stage. In this study, target costing is defined as a systematic process of planning new product offerings, establishing market sales prices and target profit margins for new products, reducing the overall cost of new products, and meeting customer requirements and expectations (Cooper & Slamulder, 1997). It focuses an examination of all ideas for cost reduction in the product planning, research and development process. Both systematic market and profit planning and proactive cost management activities are considered during the product development phase. Firms with effective target costing implementation tend to meet customer requirements, increase market acceptance, promote productivity, improve competitive advantage, and achieve superior performance, success and growth. To obtain the benefits of target costing system, there are seven fundamental characteristics of this system, namely identifying the desired product

and service attributes, establishing the target price, determining the target profit, determining the target cost, decomposing the target cost, closing the cost gap, and concerning with continuous improvements (Ax, Greve, & Nilsson, 2008). Successfully adopting target costing explicitly leads to cost management efficiency, competitiveness enhancement and long-term profit achievement by providing cost leadership and creating a product's quality and functionality. Furthermore, target costing is recognized as a critical approach for determining product costs and it refers to a cost management tool for reducing overall costs of a product over an integration of production, engineering, research and development, marketing, and accounting practices and activities (Feil, Yook, & Kim, 2004). It is a companywide profit management activity during the new product development stage. Hence, target costing basically involves product planning by satisfying customer attributes, meeting market requirements and generating firms' profits. Firms have implemented target costing as a proactive cost management strategy to maintain their performance and become a market leader. Accordingly, target costing is likely to enhance firm's productivity and growth. It tends to have a positive relationship with firm productivity and business growth. Therefore, the research hypotheses are as follows:

H3a: Target costing is positively related to firm productivity.

H3b: Target costing is positively related to business growth.

Value-Chain Costing

Value-chain costing is important for achieving competitive advantage in rigorously complex competitive situations and it is the last component of strategic costing. It is a management accounting operationalization of value chain analysis by viewing an organization as a link in the chain of all value-creating activities associated with the provision of a product and considering any latent cost savings that lie unrealized in a firm's linkages with its suppliers and customers (Cadez & Guilding, 2007). It refers to a costing method where costs are allocated to value-added activities required to design, procure, produce, market, distribute, and service the firms' products. Firms with successful value-chain costing implementation are likely to manage their product costs effectively and efficiently with a linkage of important and necessary activities as value-added activities of business operation cycle. Thus, value-chain costing can lead to firms' productivity, competitive advantage, success, and growth. Value-chain costing is defined as an ability of firms to manage and utilize costs effectively along a whole value chain and maintain their competitive advantage in the competitive markets and environments. It enables firms to maximize the margin between the revenue generated by a product's value package and the costs of supplying it. Firms need to understand, manage and cut all costs of their own value chains currently and prospectively and increase their efficiency and productivity compared to competitors. These value chains through value-added activities become integral components in

the strategy process, namely the evaluation of the organization's core competencies, processes and assets and their response to opportunities and threats posed by the business environments (Walters & Jones, 2001). Effective cost management of the value-added activities would help firms achieve their goals successfully in the long-term and future operations. Hence, value-chain costing is likely to have a positive relationship with firm productivity and business growth in the innovative, complex and dynamic environments. Therefore, the research hypotheses are as follows:

H4a: Value-chain costing is positively related to firm productivity.

H4b: Value-chain costing is positively related to business growth.

Firm Productivity

Firm productivity is a main value outcome of strategic costing implementation, including attribute costing, life-cycle costing, quality costing, target costing, and value-chain costing. In existing literature, firm productivity refers to an ability of firms to respond to and create market change through integrating, reconfiguring, gaining, and releasing resources and capabilities in rapidly changing environments by accomplishing necessary internal and external transformations and weighting higher outputs and lower inputs (Pan, Pan, & Lim, 2015). It reflects a firm's capability to create and increase outputs and manage and utilize inputs by matching and trading off these issues efficiently and effectively. It has a strong association between firm productivity and business growth. Greater firm productivity can lead to more business growth. Thus, firms with productivity achievement are likely to have a positive relationship with their growth. Similarly, firm productivity is one of the major drivers in determining and explaining firms' growth (Du & Temouri, 2015). It is a value channel for aggregating business growth. Productivity differences are key determinants of firms' heterogeneities in building their value and growth. Firms need to pay attention to initiating, creating, developing, and improving their productivity in order to gain sustainable competitiveness, generate superior performance and success, and promote organizational growth in highly and rapidly competitive markets, environments and situations. Hence, firm productivity is likely to have a positive relationship with business growth. Firm productivity is an important consequence of effective strategic costing implementation while it is also a significant determinant of business growth. Accordingly, firm productivity is hypothesized to mediate the relationships between strategic costing and business growth. Therefore, the research hypotheses are as follows.

H5: Firm productivity is positively related to business growth.

H6: Firm productivity is a mediator of (a) the life-cycle costing-business growth relationships, (b) the quality costing-business growth relationships, (c) the target costing-business growth relationships, and (d) the value-chain costing-business growth relationships.

Business Growth

As mentioned earlier, strategic costing plays an important role in defining, determining and explaining business growth. In this study, business growth is a key outcome of successful strategic costing implementation and it is a dependent variable of the research relationships. Business growth is defined as a common measure that focuses on an increased performance development in highly complex competitive environments (Wood, Bradley, & Artz, 2015). It is a significant outcome of strategic costing and firm productivity implementations because these implementations can enable firms to create valuable opportunities and build their growth in business operations and activities. Its measure mechanism comprises positive changes in objective performance measures as profitability, market share, sales, and a subjective performance measure as value creation via reliability, creditability, image, and reputation. To stay, survive and sustain competitive in rapidly changing markets and environments, strategic costing is important for driving firm productivity and business growth while firm productivity can significantly lead to business growth and it also mediates the strategic costing-business growth relationships. Therefore, the aforementioned discussions are empirically investigated in this study.

Data and methods

Samples and data

In this study, all 653 beverage businesses in Thailand from Department of Business Development, Ministry of Commerce, Thailand were selected as the samples. A mail survey procedure via questionnaire was implemented by using accounting executives of beverage businesses in Thailand as the key informants. In the questionnaire mailing process, 35 surveys were undeliverable because some listed firms had moved to unknown locations. Of the surveys completed and returned, there are 172 usable questionnaires. The effective response rate was approximately 27.83% which is considered acceptable for the response rate for a mail survey because it is greater than 20% (Aaker, Kumar, & Day, 2001). To test potential and non-response bias and detect and consider possible problems with non-response errors, this study also uses a comparison of the first and the second wave data, such as firm age and firm capital as recommended by Armstrong and Overton (1977). Thus, neither procedure explicitly showed significant differences because there were no statistically significant differences at a 95% confidence level as firm age ($t = 0.118$, $p > 0.05$), firm size ($t = 0.127$, $p > 0.05$ and firm capital ($t = 0.131$, $p > 0.05$).

Variables

All constructs were measured using a 5-point Likert scale (1 = strongly disagree to 5 = strongly agree), except from firm size, firm age, and firm capital. Firstly, four-item scale was issued to assess

life-cycle costing as to how firms estimate costs on a whole life cycle basis and monitor the cost incurred throughout a product's life cycle from research and development and manufacture to its use and subsequent disposal. Secondly, four-item scale was developed to gauge quality costing as to how firms provide the practices, policies and procedures of firms which relate to selecting, collecting, measuring, classifying, analyzing, reporting, and using quality cost data Thirdly, seven-item scale was established to evaluate target costing as how firms provide a systematic process of planning new product offerings, establishing market sales prices and target profit margins for new products, reducing the overall cost of new products, and meeting customer requirements and expectations. Fourthly, four-item scale was initialed to measure value-chain costing as how firms implement a costing method where costs are allocated to value-added activities required to design, procure, produce, market, distribute, and service the firms' products. Fifthly, four-item scale was introduced to assess firm productivity as how firms respond to and create market change through integrating, reconfiguring, gaining, and releasing resources and capabilities in rapidly changing environments by accomplishing necessary internal and external transformations and weighting higher outputs and lower inputs. Lastly, four-item scale was developed to examine business growth as how firms achieve positive changes in objective performance measures as profitability, market share, sales, and a subjective performance measure as value creation via reliability, creditability, image, and reputation. For the control variables of this study, firm age (FA) was measured by the number of years a firm has been in existence. Next, firm size (FS) was measured by the number of employees in the firm. Also, firm capital (FC) was measured by the amount of money a firm has invested in doing business.

Methods

To verify the quality of the research tool, factor analysis was firstly conducted separately on each set of the items representing a particular scale due to limited observations. Thus, all factor loadings as values of 0.70–0.93 are greater than the 0.40 cut-off and are statistically significant (Nunnally & Bernstein, 1994). Secondly, discriminant power was utilized to gauge the validity of the measurements by item-total correlation. In the scale validity, item-total correlation as values of 0.72–0.93 is greater than 0.30 (Churchill, 1979). Thirdly, the reliability of the measurements was evaluated by Cronbach alpha coefficients. In the scale reliability, Cronbach alpha coefficients as values of 0.83–0.90 are greater than 0.70 (Nunnally & Bernstein, 1994). Thus, these measures are deemed appropriate for further analysis as they express an accepted validity and reliability in this study. Table 1 presents the results of measure validation used in this study.

In this study, hierarchical linear regression analysis which is an appropriate technique for evaluating contextual and configurational research model is conducted to estimate the research model because strategic costing, firm productivity

Table 1 Results of Measure Validation

Items	Factor Loadings	Item-total Correlation	Cronbach Alpha
Life-Cycle Costing (LC)	0.76–0.87	0.79–0.86	0.84
Quality Costing (QC)	0.70–0.89	0.72–0.87	0.83
Target Costing (TC)	0.73–0.84	0.73–0.81	0.89
Value-Chain Costing (VC)	0.77–0.92	0.77–0.92	0.87
Firm Productivity (FP)	0.90–0.93	0.91–0.93	0.90
Business Growth (BG)	0.84–0.93	0.83–0.93	0.89

and business growth are neither nominal data nor categorical data (Anderson & Eshima, 2013). The results of this study are presented in the next section.

Results and discussion

Table 2 presents the descriptive statistics and correlation matrix for all variables. Multicollinearity might occur when inter-correlation in each predict variable is more than 0.80, which is a high relationship (Hair et al., 2010), but the correlations range from 0.33 to 0.74 at the $p < 0.05$ level. Then, the possible relationships of the variables could be tested. Also, variance inflation factors (VIFs) were used to provide information on the extent to which non-orthogonality among independent variables inflates standard errors. The VIFs range from 1.12 to 4.53, well below the cut-off value of 10 as recommended by Neter, Wasserman, and

Table 2 Descriptive Statistics and Correlation Matrix

Variables	LC	QC	TC	VC	FP	BG
Mean	4.18	4.12	4.12	3.91	3.98	4.01
Standard Deviation	0.53	0.54	0.56	0.60	0.58	0.57
Life-Cycle Costing (LC)						
Quality Costing (QC)	0.74***					
Target Costing (TC)	0.69***	0.72***				
Value-Chain Costing (VC)	0.39***	0.43***	0.43***			
Firm Productivity (FP)	0.56***	0.45***	0.44***	0.66***		
Business Growth (BG)	0.39***	0.33***	0.33***	0.44***	0.68***	

*** $p < .01$

Kutner (1985). Thus, there are no substantial multicollinearity problems.

Table 3 presents the results of hierarchical linear regression analysis of the relationships among strategic costing, firm productivity and business growth. In existing literature, life-cycle costing is important for successful business operation and activities in the long-term and future in the highly and rapidly competitive markets and environments. It is considered to estimate costs on a whole life cycle basis and monitor the cost incurred throughout a product's life cycle from research and development and manufacture to its use and subsequent disposal. These costs include research and development cost, production and construction cost, operation and maintenance support cost, and retirement and disposal cost (Korpi & Ala-Risku, 2008). Firms with effective life-cycle costing implementation can manage their product costs effectively through planning their uses of costs and improving their products and assets. They can implement

Table 3 Results of Hierarchical Linear Regression Analysis[a]

Independent Variables	Dependent Variables				
	FP	FP	BG	BG	BG
LC		0.37*** (0.13)	0.26** (0.11)		0.04 (0.16)
QC		0.07 (0.17)	0.12 (0.22)		0.08 (0.19)
TC		0.03 (0.16)	0.10 (0.20)		0.11 (0.18)
VC		0.47*** (0.10)	0.26** (0.12)		0.03 (0.13)
FP				0.63*** (0.09)	0.62*** (0.14)
FA	0.14 (0.07)	0.13 (0.09)	0.19 (0.17)	0.15 (0.09)	0.18 (0.10)
FS	0.09 (0.12)	0.08 (0.14)	–0.07 (0.18)	–0.10 (0.14)	–0.12 (0.16)
FC	–0.05 (0.09)	–0.03 (0.10)	–0.02 (0.13)	–0.01 (0.10)	0.01 (0.11)
Adjusted R^2	0.19	0.52	0.24	0.45	0.42

*** $p < .05$, *** $p < .01$, [a] Beta coefficients with standard errors in parenthesis.

life-cycle costing as valuable technique and strategic mechanism to create their productivity and generate organizational growth. Thus, life-cycle costing can enable firms to utilize their resources and capabilities efficiently and manage their costs and expenditures through the whole life cycles of products. Similar to the existing literature, this study shows that life-cycle costing has a significant positive relationship with firm productivity (b = 0.37, $p < 0.01$) and business growth (b = 0.26, $p < 0.03$). Firms can increase their productivity and promote their growth through implementing life-cycle costing system. *Therefore, Hypotheses 1a–1b are supported*.

Value-chain costing is also an important driver in determining and explaining firm productivity and business growth in rigorously complex competitive situations. To verify the relationships among value-chain costing and its outcomes, value-chain costing plays a significant role in generating firms' productivity and growth. Value chain analysis views an organization as a link in the chain of all value-creating activities associated with the provision of a product and considers any latent cost savings that lie unrealized in a firm's linkages with its suppliers and customers (Cadez & Guilding, 2007). Firms have allocated costs to value-added activities required to design, procure, produce, market, distribute, and service their products. They can manage their product costs effectively and efficiently with a linkage of important and necessary activities of business operation. Thus, value-chain costing can lead to firms' productivity and growth. Accordingly, value-chain costing has a positive relationship with firm productivity (b = 0.47, $p < 0.01$) and business growth (b = 0.26, $p < 0.04$). It enables firms to create productivity and generate growth in highly competitive markets and situations. *Therefore, Hypotheses 4a–4b are supported*.

Interestingly, firm productivity is a key determinant of business growth and a mediator of the life-cycle costing-business growth relationships and the value-chain costing-business growth relationships. In existing literature, firm productivity refers to an ability of firms to respond to and create market change through integrating, reconfiguring, gaining, and releasing resources and capabilities by accomplishing necessary internal and external transformations and weighting higher outputs and lower inputs (Pan, Pan, & Lim, 2015). It reflects a firm's capability to create and increase outputs and manage and utilize inputs by matching and trading off these issues efficiently and effectively. It is a value channel for aggregate business growth. Firms with greater productivity are likely to create more values and promote longer growth in rigorously competitive environments. Thus, firm productivity has a positive relationship business growth (b = 0.63, $p < 0.01$). *Therefore, Hypothesis 5 is supported*. Likewise, firm productivity has a mediating effect on the life-cycle costing-business growth relationships and the value-chain costing-business growth relationships. In Hypotheses 1a and 2a, both life-cycle costing and value-chain costing are confirmed to have positive relationships with firm productivity. Congruence with Baron and Kenny (1986)'s study for testing the mediating effects, life-cycle costing, value-chain costing and

firm productivity are considered as the independent variables of the study. The results shows that only firm productivity has a significant association with business growth (b = 0.62, $p < 0.01$). Hence, firm productivity is a mediator of the research relationships between life-cycle costing and business growth and between value-chain costing and business growth. *Therefore, Hypotheses 6a and 6d are supported, but Hypotheses 6b and 6c are not*.

Surprisingly, both quality costing and target costing have no relationship with firm productivity and business growth. While quality is considered as an important strategic competence and a key competitive weapon of firms in turbulent business environments, firms have implemented quality costing as a strategic tool in selecting, collecting, measuring, classifying, analyzing, reporting, and using quality cost data (Luther & Sartawi, 2011). Quality costing is a critical step for effective planning and implementation of quality improvement programs by focusing on reducing the costs associated with attaining high quality. Firms have attempted to utilize the benefits of quality costing to gain competitive advantage. However, quality costing does not have an effect on firm productivity and business growth in this study. To reasonably explain the research result, sources of competitive advantage may include several factors, such as quality, price, and marketing mechanisms. Thus, only quality could not lead to firm productivity (b = 0.07, $p < 0.68$) and business growth (b = 0.12, $p < 0.58$). *Therefore, Hypotheses 2a–2b are not supported*. For testing the effects of target costing on the relationships, target costing is a systematic process of planning new product offerings, establishing market sales prices and target profit margins for new products, reducing the overall cost of new products, and meeting customer requirements and expectations (Cooper & Slamulder, 1997). It focuses an examination of all ideas for cost reduction in product planning, research and development process. In highly competitive markets and environments, customers and markets may require several characteristics of products from firms, such as quality, price, design, and innovation. Hence, cost leadership with new product development may not affect firms' productivity and growth. Accordingly, target costing has no relationships with firm productivity (b = 0.03, $p < 0.87$) and business growth (b = 0.10, $p < 0.64$). *Therefore, Hypotheses 3a–3b are not supported*. For examining the control variables of the study, there are no effects on the research relationships. Firm age, firm size and firm capital do not play any role in the research relationships.

Contributions and directions for future research

Theoretical contribution and directions for future research

This study attempts to study strategic costing and its characteristics, relationships and effects. In the conceptual model, life-cycle costing, quality costing, target costing, and value-chain costing are the valid components of strategic costing while firm productivity and business growth are its consequences. However, quality costing and target costing do not play significant roles in

determining and explaining firm productivity and business growth. Then, future research may need to review more literatures about the importance and necessity of quality costing and target costing in today's doing business activities and operations and verify what relationships how they with firm productivity, business growth and other outcomes. To expand and increase the contributions of the current study and prove the generalizability of the study, future research may need to collect data from larger samples, from different businesses, and in various countries.

Managerial Contribution

This study also provides the managerial contribution to executives and firms. Executives need to make an understanding of strategic costing, especially life-cycle costing and value-chain costing. Thus, both life-cycle costing and value-chain costing are critically considered for firms. Executives need to develop, implement, utilize, and improve life-cycle costing and value-chain costing systems continually in order to apply them to create improvements of operational techniques, activities, operations, practices, and actions, to build valuable managerial and business strategies, and to generate business outcome, such as performance, success, growth, survival, and sustainability. To gain the usefulness of the costing systems, executives of firms must allocate and provide their valuable resources and capabilities to these costing systems to support a success of the implementations in long-term and future operations.

Conclusion

Strategic costing has become a value tool in helping firms achieve sustainable competitive advantage and achieve superior performance. Accordingly, the objective of this study is to examine the relationships between strategic costing and business growth of beverage businesses in Thailand with firm productivity as a mediator of the research relationships. Strategic costing includes life-cycle costing, quality costing, target costing, and value-chain costing. In this study, 172 beverage businesses in Thailand are the samples of the study. In the research results, life-cycle costing has a significant positive relationship with firm productivity and business growth while value-chain costing has an important positive association with firm productivity and business growth. Also firm productivity has a critical positive interaction with business growth. To investigate the mediating effects of the research relationships, firm productivity is the mediator of the life-cycle costing-business growth relationships and the value-chain costing-business growth relationships. The executives of firms need to develop, implement and improve both life-cycle costing and value-chain costing in order to create their organizational productivity and generate business by investing appropriate valuable resources to support these costing aspects. However, attribute costing, quality costing and target costing have no effects on firm productivity and business growth. Future research may need to review more literature relating to these costing issues and their characteristics, relationships and effects in order to verify the

current study. To expand the research results and prove the generalizability of the study, future study may need to collect data from larger samples and from different businesses and industries.

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