THE IMPACT OF BENCHMARKING, STANDARDIZATION AND PURCHASING ON BUSINESS PERFORMANCE IN THE FOOD & BEVERAGE INDUSTRY IN THAILAND

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ABSTRACT

The researcher examines benchmarking, standardization, and purchasing characteristics to identify their relationship with purchasing performance and business performance. Hypotheses, derived from the key features as presented by previous authors, are tested using Structural Equation Modeling through field research on a sample of manufacturing companies in Thailand.

Findings from this study indicate that there is significant evidence to support the hypothesized model in which benchmarking, standardization, purchasing characteristics have a direct impact on purchasing and business performance, as well as an indirect impact on business performance mediated through purchasing performance. Firms can thus improve their purchasing and business performance through an increased emphasis in benchmarking, standardization, and purchasing characteristics.

Keywords: Benchmarking, Standardization, Purchasing Characteristics, Purchasing Performance, Business Performances.

INTRODUCTION

The 2006 edition of 'What's Hot around the World - Insights on Growth in Food & Beverage Products' looks at the fastest-growing categories and product areas across 66 key markets around the world, based on the value in sales increases from mid-year 2005 to mid-year 2006. The consumers in these markets make up more than 75% of the world's population, contributing more than 90% of the world's GDP. (AC Nielsen, 2006). The research question for this research is: '*How can firms can enjoy higher purchasing and business performance by focusing on three main factors which include benchmarking in the purchasing*

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function, standardization in the purchasing function, and purchasing function characteristics?'

The first purpose of this research is to examine the relationship between benchmarking, purchasing performance and business performance. We also examine the indirect positive impact of benchmarking in purchasing on business performance mediated by purchasing performance. For the second purpose, we aim to verify whether standardization in purchasing significantly and positively affects purchasing performance. We also examine the indirect positive impact of standardization in purchasing on business performance mediated by purchasing performance. For the Purchasing function characteristics, researchers have produced a range of models and typologies which attempt to identify the various developmental stages of purchasing. The third purpose of this study is to examine empirically the relationship of purchasing function characteristics and business performance. Another major objective is to examine empirically the effect of purchasing performance on business performance.

LITERATURE REVIEW

Benchmarking

Benchmarking has been defined as "the search for industry best practices that lead to superior performance" (Camp, 1989). Consequently, and for the purpose of this research, benchmarking in purchasing is defined as the formal process of gathering and analyzing information about the purchasing process and purchasing performance of other organizations (competitors and/or non-competitors) in order to improve the company's own purchasing process and performance. Previous studies of benchmarking have addressed such issues as:

TABLE 2.1: Summary of previous research papers on Benchmarking

Previous research paper	Author
Types of benchmarking	Bogan and English, 1994; Sackman, 1992);
How to perform benchmarking	Camp, 1989; McNair and Leibfried, 1992; Spendolini, 1992; Bendell et al., 1993
What to benchmark	Parvoty, 1994
Decision support systems for benchmarking	Korpela and Tuominen, 1996
The relationship between benchmarking, learning orientation, and the firm's operational and business performance	Voss et al., 1997

Hence, purchasing managers may use benchmarking to improve purchasing performance in several ways. Benchmarking could be used as a tool to identify more advanced purchasing practices; to set challenging purchasing performance goals; and to acquire a better understanding of the company's purchasing strengths and weaknesses relative to competitors, and implement improvement activities based on existing needs. (Cristobal et al., 2003) However, few studies have addressed the implementation of benchmarking in the supply function and its impact on purchasing and business performance.

Standardization in Purchasing

Standardization of materials can also increase purchasing performance by improving the delivery reliability from suppliers and reducing the obsolescent cost of materials. The reduction in the number of vendors and improving the relationships with suppliers, can both prevent unexpected delays and increase delivery reliability. A great reduction of obsolescent cost can be expected from standardization of materials among several products and among product generations (Perera et al., 1999).

A second source of standardization contained in the literature pertains to the standardization of procedures implemented in procuring goods and services for manufacturing (i.e. pre-set procedures and reference material for performing normal daily purchasing tasks such as ordering, expediting, selection of suppliers, and receipt and inspection of goods). Like standardization of materials, the standardization of purchasing procedures could also be a potential point of cost savings for companies. (Perera et al., 1999). Because there is a lack of empirical evidence about the impact of standardization of materials and purchasing procedures (standardization in purchasing) on purchasing and business performance, this paper fills an important gap in the purchasing literature in the Thailand Food and Beverage industry.

Purchasing function characteristics

Drawing upon research into the role of the purchasing function, we defined four variables that we expected would influence different purchasing configurations and business performance (Carr and Smeltzer, 1997; Rosenzweig et al., 2003). These variables capture information on the role of purchasing in strategic planning, its status in the eyes of top managers, the level of internal integration and skill development. The following section explains how each variable was defined and why it is likely to influence the configuration of a purchasing function.

Strategic purchasing

A strategic purchasing function can help a firm to sustain its competitive advantage in a number of ways. First, it provides value in the area of cost management. Effective management of the cost of inputs to production saves the firm dollars that go straight to the firm's bottom line

profits. Second, it provides the firm with valuable information concerning supply trends that will enable the firm to make better decisions and achieve its goal. Third, it establishes close relationships, where appropriate, with suppliers, to improve the efficient quality and delivery of material (Hogan and Armstrong, 2001).

Status of the purchasing function

We define status as how purchasing is viewed by top management, and by other functions (Carr and Smeltzer, 1997). Purchasing status acts as a precursor for many of the characteristics of purchasing that the literature considers to be 'strategic'. High levels of status occur where the function has strong top management support.

Integration of the purchasing function

The integration of internal business functions and processes is a difficult challenge for most organizations. The issue is further compounded in purchasing functions where they are expected not only to integrate with other internal functions, but also to align with their supply chain activities. Purchasing integration has been discussed by scholars focusing on internal aspects (Narasimhan and Das, 2001) and external aspects (Frohlich and Westbrook, 2001); Narasimhan and Kim, 2002). Purchasing integration, in the context of this study, is "the integration and alignment of strategic purchasing practices and goals with that of the firm" (Narasimhan and Das, 2001, p.593).

Skills of the purchasing function

The skills required of purchasing professionals have also changed considerably over recent years. The role has moved from that of a buyer, focusing predominantly on price, delivery and quality, to that of a purchasing professional managing strategic long-term, complex agreements between internal stakeholders and suppliers (Faes et al., 2001). The literature consistently states that before purchasing can be elevated to a strategic level, the function needs to possess a strong set of these underlying skills and competencies (Carr and Smeltzer, 2000). We argue that the supply chain management literature has distinguished purchasing configurations along a range of four dimensions: strategic planning, status, internal integration and skills level. The literature argues that different types of purchasing function characteristic will tend to lead to different performance outcomes (Carr and Pearson, 1999, 2002).

Purchasing Performance Measurement

Cavinato and Kauffman (1999) have discussed ten different purchasing performance measurement areas in their handbook. Van Weele (2000) and Knudsen (1999) recommended measurement areas that are derived from purchasing effectiveness and purchasing efficiency,

Purchasing effectiveness is defined as the extent to which, by choosing a certain course of action, a previously established goal or standard is being met. Further, purchasing efficiency is defined as the relationship between planned and actual sacrifices made in order to be able to realize a goal previously agreed upon.

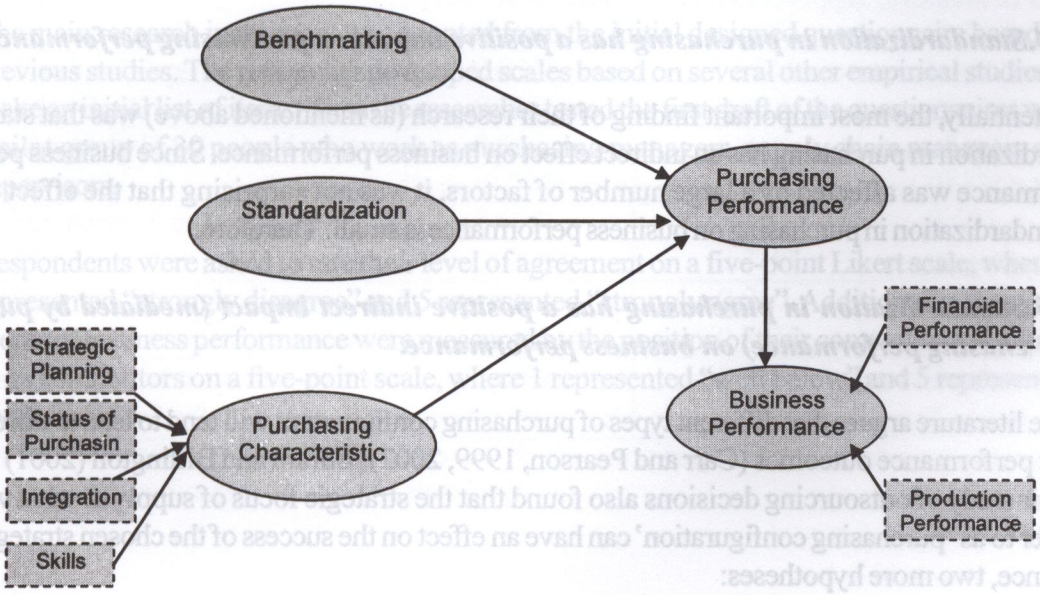
This construct is based on the objective criteria which Chao et al. (1993) used for evaluating purchasing performance, and which included quality of materials purchased, on-time delivery, and actual versus target cost of materials. This construct also included an indicator that referred to materials' inventory performance and another referring to internal customer satisfaction.

Business Performance Measurement

Carr and Pearson (1999) show how different supplier-buyer relationships can deliver differing levels of firm and financial performance. Production performance assessed the firm's performance on dimensions of product quality, delivery speed, delivery reliability and flexibility of production, using scales adapted from Carr and Smeltzer (2000). Financial performance was assessed on the basis of return on investment, return on sales, profit growth, and return on total assets (Carr and Pearson, 2002; Carr and Smeltzer, 2000).

CONCEPTUAL FRAMEWORK AND HYPOTHESES

FIGURE 3.1: Research Framework



Carr and Smeltzer (1999) found in their empirical study a positive relationship between benchmarking in purchasing, strategic purchasing, and business performance. Therefore it is hypothesized that benchmarking in purchasing has a positive impact on the firm's business performance. However, the effect of benchmarking on corporate performance can be direct and/or indirect, i.e. mediated by the positive effect of purchasing performance on corporate performance. Hence, the following hypotheses:

H1.Benchmarking has a positive impact on purchasing performance

H2.Benchmarking has a positive indirect impact (mediated by purchasing performance) on business performance.

A third hypothesis was enunciated in order to test H2. Business performance is the result of the actions of the individual business areas that comprise a company, i.e. production, marketing, finance, purchasing, etc. Improvements in purchasing performance should have an effect on business performance. Thus, this hypothesis proposes a positive relationship between purchasing performance and business performance:

H3. Purchasing performance has a positive impact on the firm's business performance

In the research titled 'An empirical study on the impact of standardization of materials and purchasing procedures on purchasing and business performance', Cristóbal et al., (2006) show that standardization in purchasing has a significant positive effect on both purchasing and business performance. Thus, standardizing materials and purchasing procedures is important and may help firms to meet their materials expenditure targets, and increase the quality of materials, on-time delivery from suppliers, and inventory performance. Hence, this hypothesis:

H4.Standardization in purchasing has a positive impact on purchasing performance.

Potentially, the most important finding of their research (as mentioned above) was that standardization in purchasing has an indirect effect on business performance. Since business performance was affected by a large number of factors, it was not surprising that the effect of standardization in purchasing on business performance is small. Therefore:

H5.Standardization in purchasing has a positive indirect impact (mediated by purchasing performance) on business performance.

The literature argues that different types of purchasing configuration will tend to lead to different performance outcomes (Carr and Pearson, 1999, 2002). Ellram and Billington (2001) in their study of outsourcing decisions also found that the strategic focus of supply or what we refer to as 'purchasing configuration' can have an effect on the success of the chosen strategy. Hence, two more hypotheses:

H6.Purchasing Function's characteristics have a positive impact on purchasing performance.

H7.Purchasing Function's characteristics have a positive indirect impact (mediated by purchasing performance) on business performance.

RESEARCH METHODOLOGY

The target population of this study comprised mainly of purchasing / sourcing people: those who work in the supply chain field and are familiar with the purchasing function in the Thailand Food and Beverage industry. A simple random sampling technique was employed to gather the data in this study. A total number of 260 samples was randomly selected by the researcher. The size of the sample has a direct impact on the appropriateness and the statistical power of the Structural Equation Model (Hair et al. 1998).

A list of around 260 respondents from the industry was comprised of supply chain managers; and purchasing managers/supervisors. For the sampling size (Hair et al. 1998) a minimum 5 times of one parameter is required for Structure Equations Modeling. Thus, the research uses 20 respondents per parameter. This research comprised 11 parameters including Benchmarking, Standardization, Purchasing Function Characteristic, Purchasing Performance, Business Performance, Strategic Purchasing, Purchasing Status, Internal Integration, Purchasing Skills, Perceived Production Performance and Perceived Financial Performance. Thus: ***Sample Size = 11 parameters x 20 per parameter = 220 samples***. However, this is a relatively small sample size, and as Byrne (1998) points out, the CFI and incremental-fit index (IFI) are more appropriate when the sample size is small.

The main research instrument was adopted from the initial designed questionnaire based on previous studies. The researcher developed scales based on several other empirical studies to make an initial list of items. Then the researcher tested the first draft of the questionnaires with a pilot group of 30 people who work as purchasing managers, supply chain managers and supervisors.

Respondents were asked to rate their level of agreement on a five-point Likert scale, where 1 represented "strongly disagree" and 5 represented "strongly agree". Additionally, three elements of business performance were measured by the position of their company with respect to its competitors on a five-point scale, where 1 represented "well below" and 5 represented "well above".

Cronbach's α Measure for reliability Assessment

Establishing construct reliability shows that each of the multiple indicators of a construct appropriately co-vary. The traditional measure of reliability is Cronbach's α (Nunnally and Bernstein 1994) which assumes that the indicators are measured without error. Values for Cronbach's α range from 0 to 1, with α - values greater than 0.70 considered acceptable (Nunnally and Bernstein 1994). Cronbach's α will be calculated for each of the constructs in the model. If α is less than 0.70, items that caused a significant drop in α will be deleted. The value for α will be recalculated until an acceptable level could be obtained.

Data Analysis Strategy

Structural equation modeling (SEM) is a statistical technique that combines elements of both multiple regression and factor analysis. SEM is often used to specify the phenomenon under study in terms of linkage between constructs and their indicators, and provides the researcher with a straightforward method of dealing with multiple relationships simultaneously while providing statistical efficiency. SEM incorporates observed (indicator) and unobserved (latent) variables. The measurement models specify how the latent variables are measured in terms of the indicator variables as well as addressing the reliability and validity of the indicator variables in measuring the latent variables or hypothesized constructs. The Structural Equation Model provides an assessment of predictive validity, specifies the direct and indirect relations among the latent variables, and describes the amount of explained and unexplained variance in the model (Byrne,1998). In SEM there is no single test of significance that can absolutely identify a correct model given the sample data. Many goodness-to-fit criteria have been established to assess an acceptable model fit. Consequently, several authors recommend presenting a number of indices to support model fit (Bentler et al.1987).

AMOS Data Analysis Software is a powerful and easy-to-use structural equation modeling (SEM) software. AMOS creates structural equation models by extending standard multivariate analysis methods, including multiple regression models; with observed and latent variables. AMOS also has a basic programming interface as an alternative.

Data Analysis

The data was collected by emailing and handing the questionnaire to prospective respondents through peers and the researcher in the industry. Typically these are the decision makers of their firms' supply chain functions, who are most knowledgeable about the firms' functional activities as indicated by their positions, which was established before the questionnaire was handed to them.

TABLE 5.1: SURVEY RESPONSE RATE

	Manufacturing Firm Operating in Thailand	Total
Total Number of Questionnaires	**260**	**100%**
1. Total Completed Questionnaires	99	**38%**
1.1 Total Valid Questionnaires for Data Analysis	89	**35%**
1.2 Total Late Responses	10	**3%**
2. Total Uncompleted Questionnaires	4	**1.5%**
Response Rate		**38%**

A total of 260 questionnaires were sent, and only 109 were returned completed, of which only 4 were incomplete and thus unusable. The constraint on data collection is described in the section on research limitations. Table 5.1 shows the distribution and summary responses. The overall response rate was 38 %.

TABLE 5.2: Comparison of Early and Late Responses

Construct	**F-Statistics: Test for Equality of Variances Assumed Assumed (P-value)**	**T-Statistics: Test for Equality Variances (P-value)**	**T-Statistics: Test for Equal Variances Not assumed (P-value)**
Company size	0.209 (0.649)	-1.865 (0.065)	-1.677 (0.123)
Benchmarking	0.035 (0.852)	0.498 (0.62)	0.626 (0.542)
Standardization in Purchasing Function	0.049 (0.825)	-0.258 (0.797)	-0.245 (0.811)
Purchasing Function Characteristics	1.625 (0.205)	0.363 (0.718)	0.595 (0.559)
Purchasing Performance	1.66 (0.201)	-0.345 (0.731)	-0.529 (0.604)
Business Performance	1.674 (0.199)	-0.968 (0.335)	-1.232 (0.24)

* Significant at 0.05 confidence levels.

To determined the non response biases in the data, we apply the statistically significant difference test on both those who return the questionnaires early and and those late in their response (Armstrong and Overton 1977; Lambert and Harrington 1990). The total survey response was separated into two groups: early response and late response. The f-test and t-test were performed to see the significance of difference between these two groups. The result is shown above in Table 5.2. These results showed that non-response bias did not significantly impact the study.

Respondent Demographics Profile

The summary of respondent profiles includes a description of respondent firms (Table 5.3). Over 80% of the firms classified themselves as manufacturing firms. A large percentage of the respondents (approximately 60%) have operated their business in Thailand for 11-50 years. Around 46% have over 500 employees, while 17% have fewer than 500 employees.

TABLE 5.3: A description of the respondent firms

Demographic Profile	*Number of respondents*	*Percentage of respondents*
Main operation		
Distributor	6	6.1
Manufacturing	87	87.9
Wholesaler	2	2
Retailer	3	3
Other	1	1
Products		
Milk Producer	17	17.2
Coffee	7	7.1
Beer	11	11.1
Snack	13	13.1
Fruit Juice	13	13.1
Frozen food	6	6.1
Instant food	1	1
Ice cream	4	4
Flavor and Fragrance	1	1
Multiple kind of food and beverage	14	14.1
Tobacco	3	3
Liquor	2	2
Creamer	2	2
Drinking Water	5	5.1

Demographic Profile	*Number of respondents*	*Percentage of respondents*
Company size		
500 or less	36	36.4
501 - 2,500	46	46.5
2,500 or more	17	17.2
Company Age		
10 or less	17	17.2
11 -50	63	63.6
50 or more	19	19.2

A list of the organizations' types of partnership in Table 5.4 shows the general feedback from the survey result.

TABLE 5.4: A description of organizations' partnership

Organization's Partnership	*Number of respondents*	*Percentage of respondents*	Percentage of respondents
Partnership-supplier	81	81.8	29.2
Partnership-distributor	83	83.8	30.0
Partnership-manufacturer	77	77.8	27.8
Partnership-wholesaler	13	13.1	4.7
Partnership-retailer	19	19.2	6.9
Partnership-others	4	4.0	1.4
Total	**277**	**279.7**	**100.0**

This Table, derived from the respondents' profiles, showed that their partnership within the industry consists of relationships with their supply chain at both upstream and downstream, i.e. manufacturer, wholesaler, other, retailer, supplier, and distributor. The largest type of partnership is with a distributor, at 30.0%.

Reliability Assessment

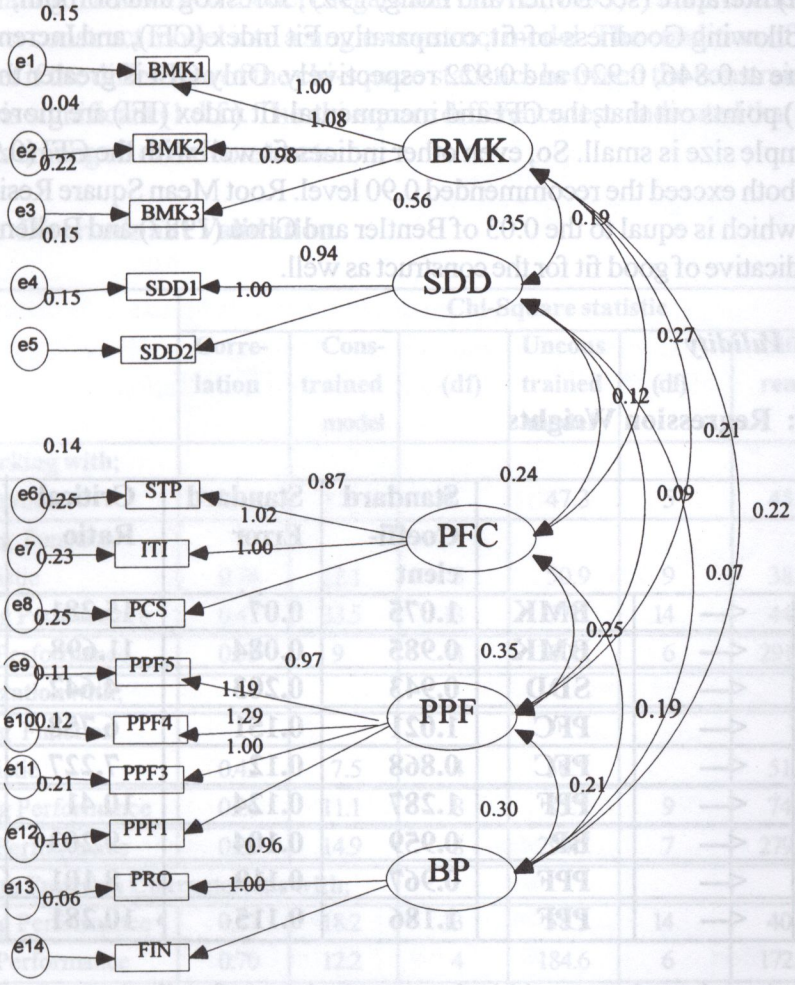
TABLE 5.5: Research Constructs

Construct/item	*No. of Items*	*Cronbach's Alpha*
Benchmarking in purchasing function	**3**	**0.923**
Standardization function characteristic	**2**	**0.816**
Purchasing function characteristic		
STP: Strategic Planning	5	0.813
PCS: Purchasing Status	3	0.730
ITI: Internal Integration	6	0.895
PCS: Purchasing Skills	4	0.916
Purchasing performance	**5**	**0.924**
Business performance		
PRO: Perceived - Production Performance	4	0.915
FIN: Perceived - Financial Performance	4	0.917

From the results shown in Table 5.5, we can see that the Cronbach's Alphas of each construct including Benchmarking, Standardization, Purchasing function Characteristic, Purchasing Performance and Business Performance, are greater than 0.70. So, the t-tests yielded no statistically significant differences among the survey items tested. These results suggested that a non-response bias did not significantly impact the study (Nunnally and Bernstein 1994).

Analysis of Measurement Model (Confirmatory Factor Analysis -CFA)

FIGURE 5.1: Framework Correlation



Fit Measure		Recommended Values	Output
x2/df	>3.00	Chau (1997)	2.19
GFI	>0.9	Byrne (1998)	0.846
NFI	>0.9	Byrne (1998)	0.865
CFI	>0.9	Byrne (1998)	0.92
RMR	>0.03	Bentler and Chou (1987), Bollen (1989)	0.031
IFI	>0.9	Byrne (1998)	0.922

When viewing the model fit indices that had correlation across all the items (in Figure 5.1), a good fit is apparent regarding each of the fit measures. As shown in Figure 5.1, the X^2 of 147 (degree of freedom = 67) is significant at p = 0.000, and X^2 /df was 2.190, less than 3.0 (Chau, 1997), suggesting the model fit the sample data suggested by the structural equations model (SEM) literature (see Bollen and Long, 1993; Joreskog and Sorbom, 1993; Kline, 1998). The following Goodness-of-fit, comparative Fit Index (CFI), and Incremental Fit Index (IFI) were at 0.846, 0.920 and 0.922 respectively. Only GFI is greater than 0.90, but Byrne (1998) points out that, the CFI and incremental-fit index (IFI) are more appropriate when the sample size is small. So, even other indices fit well with the CFI (0.920) and IFI (0.922), and both exceed the recommended 0.90 level. Root Mean Square Residual (RMR) was at 0.03, which is equal to the 0.03 of Bentler and Chou (1987) and Bollen (1989); this value was indicative of good fit for the construct as well.

Convergent Validity

TABLE 5.8: Regression Weights

			Standard Coefficient	Standard Error	Critical Ratio	P value
BMK2	**<—**	**BMK**	**1.075**	**0.07**	**15.281**	*******
BMK3	**<—**	**BMK**	**0.985**	**0.084**	**11.698**	*******
SDD1	**<—**	**SDD**	**0.943**	**0.203**	**4.642**	*******
ITI	**<—**	**PFC**	**1.021**	**0.151**	**6.758**	*******
STP	**<—**	**PFC**	**0.868**	**0.12**	**7.227**	*******
PPF3	**<—**	**PPF**	**1.287**	**0.124**	**10.41**	*******
PRO	**<—**	**BP**	**0.959**	**0.104**	**9.203**	*******
PPF5	**<—**	**PPF**	**0.967**	**0.119**	**8.101**	*******
PPF4	**<—**	**PPF**	**1.186**	**0.115**	**10.281**	*******

The critical ratio and p-value are within the suggested range for all constructs. Critical Ratio (C.R.) showed very positive large signs for all, and the significance level for all was at p<0.001. Convergent validity is demonstrated when a set of alternative measures accurately represents the construct of interest (Churchill, 1979). One CFA model fit was established for each of the constructs in the study, the convergent validity being assessed based on the level of significance for coefficients. If all the individual construct coefficients are significant, then the indicators are effectively converging to measure the same construct (Anderson and Gerbing, 1988). Therefore, coefficients for all constructs in the model were large and significant (p>0.001), providing strong evidence of convergent validity.

Discriminant validity

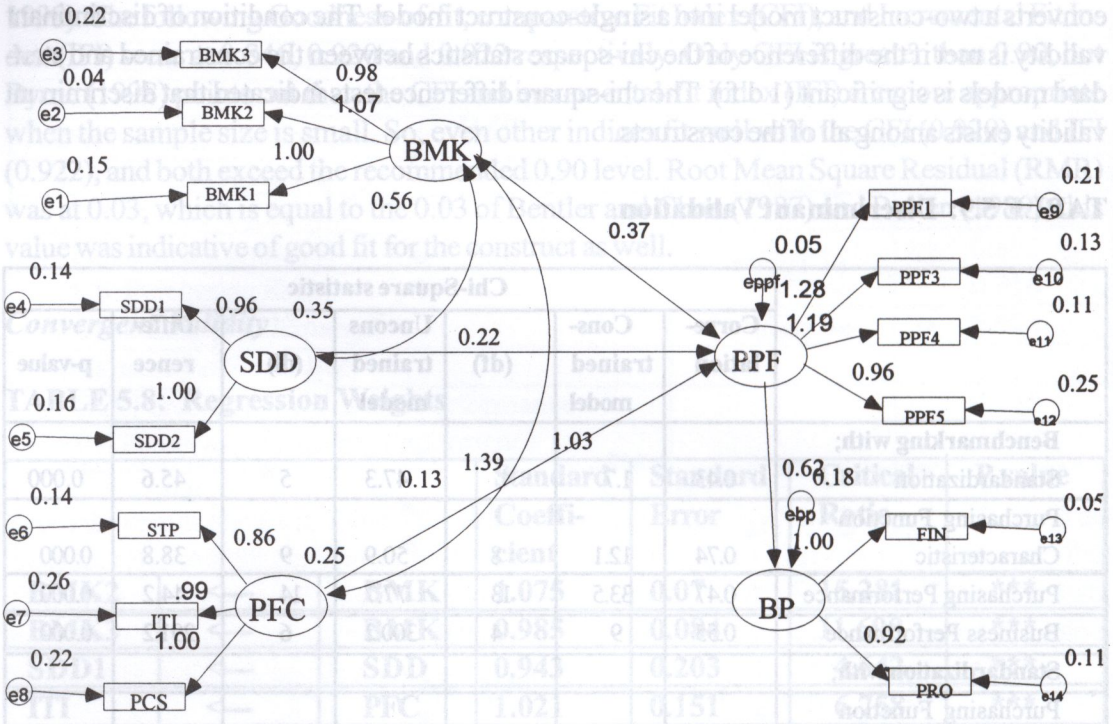
Discriminant validity among the latent variables and their associated measurement variables can be assessed by fixing (i.e. constraining) the correlation between pairs of constructs to 1.0, then re-estimating the modified model (Segars and Grover, 1993). This procedure essentially converts a two-construct model into a single-construct model. The condition of discriminant validity is met if the difference of the chi-square statistics between the constrained and standard models is significant (1 d.f.). The chi-square difference tests indicated that discriminant validity exists among all of the constructs.

TABLE 5.9: Discriminant Validation

	Chi-Square statistic						
	Correlation	**Constrained model**	**(df)**	**Unconstrained model**	**(df)**	**Difference**	**p-value**
Benchmarking with;							
Standardization	0.43	1.7	4	47.3	5	45.6	0.000
Purchasing Function Characteristic	0.74	12.1	8	50.9	9	38.8	0.000
Purchasing Performance	0.47	33.5	13	77.7	14	44.2	0.000
Business Performance	0.55	9	4	300.2	6	291.2	0.000
Standardization with;							
Purchasing Function Characteristic	0.42	7.5	4	58.7		51.2	0.000
Purchasing Performance	0.26	11.1	8	85.2	9	74.1	0.000
Business Performance	0.23	14.9	8	294.7	7	279.8	0.000
Purchasing Function Characteristic with;							
Purchasing Performance	0.87	18.2	13	58.3	14	40.1	0.000
Business Performance	0.70	12.2	4	184.6	6	172.4	0.000
Purchasing Performance with;							
Business Performance	0.64	7.9	8	298.7	5	290.8	0.000

Analysis of Structural Equation Model and Hypotheses

FIGURE 5.2: Framework Analysis



Fit Measure	Recommended Values		Output
x2/df	>3.00	Chau (1997)	2.25
GFI	>0.9	Byrne (1998)	0.831
NFI	>0.9	Byrne (1998)	0.855
CFI	>0.9	Byrne (1998)	0.912
RMR	>0.03	Bentler and Chou (1987), Bollen (1989)	0.039
IFI	>0.9	Byrne (1998)	0.914

→ Direct Effect

- - - → Indirect Effectmediated be PPF

As shown in Figure 5.2, the model's chi-square statistic was significant, the x^2 of 157.5 (degree of freedom = 70) is significant at p = 0.000, and x^2 / df was 2.25, less than 3.0 (Chau, 1997), suggesting the model fits the sample data well. Other fit indices examined in this research included Goodness of Fit Index (GFI), Comparative Fit Index (CFI), and Incremental Fit Index (IFI), which were 0.855, 0.912, 0.914 respectively, and greater than 0.90 except GFI = 0.855 (Byrne, 1998). But Byrne (1998) points out that, the CFI and incremental-fit index (IFI) are more appropriate when the sample size is small. So, even the other indices fit well, with the CFI (0.912) and IFI (0.914) both exceeding the recommended 0.90 level, suggesting a good model fit as recommended by Byne (1998). Root Mean Square Residual (RMR) was 0.03; which was equal to 0.030, indicating a good fit (Bentler and Chou, 1987, Bollen, 1989).

As recommended by Byrne, 1998, when the sample size is small, CFI and IFI are recommended to be greater than 0.90, which was obtained with CFI = 0.912 and IFI = 0.914. Thus, the researcher concludes that the model fits well.

Hypotheses Testing

TABLE 5.10: Summation of Hypotheses Results

Hypotheses				Estimate Regression Weight	Standard Error	Critical Ratio	P- Value	Result
H1	Benchmarking	--->	Purchasing Performance	0.367	0.084	4.388	***	Support at p<0.05
H2	Benchmarking	Mediated by PPF	Business Performance	0.228	0.008	5.339	***	Support at p<0.05
H3	Purchasing Performance	--->	Business Performance	0.622	0.099	6.289	***	Support at p<0.05
H4	Standardization	--->	Purchasing Performance	0.221	0.122	1.815	0.07	Support at p<0.07
H5	Standardization	Mediated by PPF	Business Performance	0.137	0.012	4.052	0.07	Support at p<0.07
H6	Purchasing Function Characteristic	--->	Purchasing Performance	1.033	0.161	6.409	***	Support at p<0.05
H7	Purchasing Function Characteristic	Mediated by PPF	Business Performance	0.642	0.02	6.350	***	Support at p<0.05

Let us examine each hypothesis in Table 5.10 in more detail.

H_1 ***Benchmarking has a positive impact on purchasing performance***

The structural model expressed the relationship between *Benchmarking* (BMK) and *purchasing performance* (PPF) such that the value of Critical Ratio (C.R) is at 4.388, the p-value is 0.000 (Support at $p<0.05$). It implies that Benchmarking has a positive impact on purchasing performance. This result suggests that purchasing managers who invest resources in establishing a formal procedure to benchmark the purchasing process and purchasing performance achieve higher levels of purchasing performance than firms with lower levels of investment.

H_2 ***Benchmarking has a positive indirect impact (mediated by purchasing performance) on business performance***

The structural model expressed the relationship between Benchmarking (BMK) and indirect impact (mediated by purchasing performance) on business performance (BP) with a path coefficient ($\gamma \cdot \beta = 0.37*0.62$) of 0.228, Critical Ratio (C.R) of 5.339; and p-value of 0.000 which support a $p< 0.05$ confidence level. It implies that Benchmarking has positive indirect impact (mediated by purchasing performance) on business performance. In the long term, implementation of benchmarked practices should result in an improvement of the company's corporate performance.

H_3 ***Purchasing performance has a positive impact on the firm's business performance***

The structural model expressed the relationship between *Purchasing performance* (PPF) and *the firm's business performance* (BP) such that the value of Critical Ratio (C.R) is 6.289, and the p-value is equal to 0.000; which is less than 0.05 confidence level. Hence H3 was supported. This result implies that when purchasing performance levels increase, there is also improvement in business performance indicators of perceived production performance (product quality, delivery quality, delivery reliability and flexibility of production) and perceived financial performance (return on investment, return on sales, profit growth and return on total assets.

H_4 ***Standardization in purchasing has a positive impact on purchasing performance***

The structural model expressed the relationship between *Standardization in purchasing* (SDD) and *purchasing performance* (PPF) such that the value of Critical Ratio (C.R) is 1.815, and the p-value is equal to 0.070; which is equal to a 0.07 confidence level. It implies that Standardization in purchasing has a positive impact on purchasing performance with a 93% confidence level. This is not highly significant; the cause might be a lack of attention to the role of standardization in some Thailand firms. It was mentioned in the literature review that some firms who do not pay much attention to standardization in the purchasing function might not

enjoy higher performance.

H_5 ***Standardization in purchasing has a positive indirect impact (mediated by purchasing performance) on business performance***

The structural model expressed the relationship between *Standardization in purchasing* (SDD) having a positive indirect impact (*mediated by purchasing performance*) on *business performance* (BP) with a p-value higher than 0.070 confidence level, the path coefficient ($\gamma * \beta$ = 0.22*0.62) is 0.137, and the Critical Ratio (C.R) is 4.052. It implies that Standardization has positive indirect impact (mediated by purchasing performance) on business performance, at a 93% confidence level. This is similar to H4 in that some firms might not emphasize standardization in the purchasing function.

H_6 ***Purchasing Function's characteristics have a positive impact on purchasing performance***

The structural model expressed the relationship between *Purchasing Function's characteristics* (PFC) and *purchasing performance* (PPF) such that the value of Critical Ratio (C.R) is 6.409, and the p-value is equal to 0.000; which less than a 0.05 confidence level. It implies that the Purchasing Function's characteristics have a positive impact on purchasing performance. That means that in the eyes of top management in Thailand, they see that the purchasing function has the major role to drive the overall firm's performance (as mentioned in the literature review).

H' ***Purchasing Function's characteristics have a positive indirect impact (mediated by purchasing performance) on business performance***

The structural model expressed the relationship between *Purchasing Function's characteristics* (PFC) having a positive indirect impact (*mediated by purchasing performance*) *on business performance* (BP) by a path coefficient ($\gamma * \beta$ = 1.03*0.62) of 0.642, with Critical Ratio (C.R) of 6.350, and p-value of 0.000 which is less than a 0.05 confidence level. It implies that Purchasing Function's characteristics have a positive indirect impact (mediated by purchasing performance) on business performance.

CONCLUSION AND IMPICATIONS

We attempted to answer the research question: '***How can firms enjoy higher purchasing and business performance by focusing on three main factors which include benchmarking in the purchasing function, standardization in the purchasing function and purchasing function characteristics?***' in the Thailand Food and Beverage in-

dustry. The study showed that, benchmarking in the purchasing function has a significant positive impact on purchasing performance. The research also confirmed the notion that firms with high levels of purchasing performance also achieve high levels of business performance. Accordingly, the results of structural equation model testing indicated that there is a positive indirect effect of benchmarking on business performance.

The implications for purchasing managers are clear; implementation of benchmarking improves performance. More specifically, benchmarking the purchasing process and the purchasing performance assures high levels of quality of incoming materials, on-time delivery of purchase orders, achievement of inventory goals, timely response to internal customer inquiries, and overall internal customer satisfaction. This result will in turn improve business performance.

As a result of this study we have a better understanding of how standardization in purchasing, operationalized as standardization of materials and purchasing procedures, can impact a firm's purchasing and business performance. The results of this research indicate that standardization in purchasing has a significant positive effect on both purchasing and business performance but with a confidence level of only 93 %. Thus, some organization in Thailand Food and Beverage industry might not recognize the important of standardization in the purchasing function. But in future studies, researchers should test other categories in the Thai FMCG industry or expand to a broader sample size.

Obviously the standardizing of materials and purchasing procedures is important and may help firms to meet their materials expenditure targets, and increase the quality of materials, on-time delivery from suppliers, and inventory performance. Potentially, the most important finding of this research is that standardization in purchasing has an indirect effect on business performance.

For purchasing characteristics, the study showed that purchasing function characteristics of purchasers in Thailand firms have a significant positive impact on purchasing performance, and it implies that it has an indirect effect on business performance. In the analysis, the researcher dropped one item, purchasing status, so as to get a model fit. So, the strategic purchaser will have a positive effect on the overall firm's performance by participating in the strategic planning process itself. Developing and fostering cross-functional integration can also play a key strategic role in the integration of the internal organization and the customer. Then the integration ability of the purchaser can help the firm's overall performance by proactively seek efficient linkage or integration among its various internal functions.

The implications of this study are also important because the results suggest that firms can improve their purchasing performance through an increased emphasis in benchmarking the purchasing process and performance. And they should pay more attention to standardization to gain higher purchasing and business performance. The researcher found that the Purchasing

Characteristics have a positive effect onto the purchasing and business performance, and therefore the findings are useful for practitioners seeking to improve the performance and standing of the purchasing function through identification of the characteristics.

Purchasing will have to become a regular player on the team, rather than a provider of 'support'. Key suppliers will also have to join the team. The growing reliance on suppliers to provide goods and services formerly sourced internally is placing new demands on effective supply management. The purchasing manager should become a manager of the supply chain, integrating the organization's internal and external operations, rather than keeping them separate.

Also, from a manager's perspective there are benefits associated with elevating the purchasing function from non-strategic to a strategic function. For Thailand Food and Beverage firms, these benefits include increased opportunities for the purchasing function to contribute to the long term profitability of the firm. Leading-edge firms seek to have purchasing functions that are strategic. The researcher was seeking to have a better understanding of the purchasing function in the Thailand context which the researcher believed would be different from other contexts or environments.

LIMITATIONS AND FUTURE RESEARCH

The theories used in this research are from the context of Europe and America. There might be some variation in the Thailand context. Very little research is available that has been done in the Thailand context about supply chains. Also, the sample was drawn from a particular industry, so it might not be representative of all industries in Thailand.

Also, in the data collection, the respondents were not familiar with research regarding the purchasing topic, there being a lack of studies available on the purchasing function in Thailand's industries. Therefore, most respondents did not realize the benefit of completing the questionnaire. With limited time, the researcher was able only to secure a limited number of respondents.

Future research should be expanded to other industries in Thailand, possibly starting with other respondents in the FMCG industry before moving on to test other industries. The framework may be need to be changed or adapted to be suitable for the target industry. Purchasing studies will lead researchers and managers to find better way of purchasing improvement.

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APPENDIX

Variables Used to Assess the Constructs

Construct / item
BMK: Benchmarking
BMK1: We gather information about prices and level of quality of purchases of other companies in our industry
BMK2: We analyze the purchasing process of other companies to improve our own purchasing process
BMK3: There is a formal procedure to compare our performance with the purchasing performance of other companies
SDD: Standardization in the Purchasing Function
SDD1: We make intensive use of standardization of raw materials and parts.
SDD2: We make intensive use of standardization in purchasing procedures.
STP: Strategic Planning
STP1: Purchasing is included in the firm's longterm strategic planning process
STP2: Purchasing performance is measured in terms of its contributions to the firm's success

STP3: Purchasing professionals' development focuses on the elements of the competitive strategy
STP4: Purchasing focus is on longer term issues that involve risk and uncertainty
STP5: The purchasing function has a formally written long range plan
PCS: Purchasing Status
PS1: Top management is supportive of our efforts to improve the purchasing department
PS2: In this company, purchasing is considered a vital part of our company strategy
PS3: Purchasing views are considered important in most top managers' eyes
ITI: Internal Integration
ITI1: Purchasing regularly attends strategy meetings
ITI2: Purchasing recommends and initiates changes in end products and inputs, based on supply market analysis
ITI3: A high proportion of purchasing personnel spend time on market and price/cost analysis
ITI4: Purchasing participates in new product design
ITI5: Purchasing participates in process design and improvement
ITI6: Purchasing is measured on strategic contributions to the company (e.g. new products technologies), versus cost and efficiency contributions
PCS: Purchasing Skills
PCS1: Purchasing professionals have the necessary skills to monitor and interpret changes in the supplier market/product base
PCS2: Purchasing professionals have the technical capabilities to help our suppliers improve their processes and products
PCS3: Purchasing professionals have the necessary skills to improve the firm's total cost of doing business with the firm's suppliers
PCS4: Purchasing professionals demonstrate perseverance, imagination, decisiveness and interpersonal skills
PPF: Purchasing Performance
PPF1: Most raw materials and parts received are in conformance with specifications
PPF2: All raw materials and parts arrive within the delivery date
PPF3: The quantity of materials purchased in inventory meets the company's quantity performance goals
PPF4: Purchasing meets its materials' target cost (standard cost or budgeted cost).
PPF5: Customer departments are satisfied with the level of attention and commitment shown by purchasing when there is a problem
Business performance
PRO: Perceived - Production Performance
PRO1: Product quality
PRO2: Delivery speed
PRO3: Delivery reliability
PRO4: Flexibility of production

FIN: Perceived - Financial Performance
FIN1: Return on investment
FIN2: Return on sales
FIN3: Profit growth
FIN4: Return on total assets