

The Quantitative Consumer Testing Leading to New Product Concept

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This study is quantitative consumer testing. It attempted to test the acceptance of product, patchwork quilt produced by enterprise community in Thailand. The hedonic scale, action rating scale, just about right scale of physical product attributes were used in the measurement of acceptance. The consumers' acceptance were analysed by arithmetic mean. Using the principle component analysis techniques to describe the important components of product that were accepted. The data was collected at Bangkok on 18 - 28 March 2011. The study comprised 1,684 potential Thai people. The data fitted the acceptance model moderately well. Consumers accepted product at high level (mean=3.56, SD=0.482). The important components were core product feature (variance 24.75 %), fabric attributes (variance 19.91 %), and aesthetic of product (variance 13.93 %). Because of its aesthetic has been recognized the least degree, it should be both improved and add value to the product with the application of traditional weave patterns from woven fabrics in the Northeast. The producers' implementation provided in this study.

Field of Research: Marketing, Product Development

1. Introduction

According to the government policy in 2001 encouraged cooperation within community, persuaded a member in the community formed into small entrepreneurs. From 2001 to 2011 was a period of 10 years, the patchwork quilts made in the community of Khon Kaen province has been sold only in the local market. These products were cut and stitched based on the thought of each craftsman. When interviewed on 1 December 2010, Kudkanang Kunthongnoi explained that the patchwork quilts never have acceptance test from consumers, the growth rate of new customer rather low, there was a few distribution channels that cause market growth rate tend to low. She has been the leader of women cooperative group, Agriculture Cooperative Tambon Na Nong Tum Limited, located at Tambon Na Nong Tum, Amphur Chumpare, Khon Kaen Province. Therefore, these products should be tested for market acceptance. This research intended to test the acceptance of the patchwork quilts made in the community of Khon Kaen province. Thus, this study attempted to explore the consumers acceptance toward the sensory characteristics of product. The hedonic scale, action rating scale, just about right scale of physical product attributes were used in the measurement of acceptance. Specifically, the objectives of this study were to:

- (1) Explore the hedonic, action, and just about right of physical product attributes.
- (2) Identify the consumers' acceptance level.
- (3) Explore the important components that influence acceptance.

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Suvachart

The research questions of this study were as following:

- (1) Did the consumers accept this product?
- (2) Which attribute was the most important components that influence acceptance?
- (3) Which attribute was the least important components that influence acceptance?

Its result will be guidelines for improvement the product, discover identity and improve quality that meet the requirement of consumers. The destination objectives of research intend to develop the forthcoming product and stretch market from locality level to the national level in order to raise the price which persuade the buyers. The future price will increase community income. The local craftsman will receive the wage increases, the wage that increase might persuade a member in the community cooperate to produce more and more. This will preserve the art handicraft locality to remain with the community permanently.

2. Literature Review

2.1 Market Testing

Market testing is the stage of the new-product process that involves exposing actual products to prospective consumers under realistic purchase conditions to see if they will buy. Often a product is developed, tested, refined, and the tested again to get consumer reactions through either test marketing or simulated test markets. Test marketing involves offering a product for sale on a limited basis in a defined area. This test is done to determine whether consumers will actually buy the product and to try different ways of marketing it. Kerin et al (2009) agrees that only about a third of the products test marketed do well enough to go on to the next phase. These market tests are usually conducted in cities that are viewed as being representative of consumers in targeted geographical markets. The cities selected often closely match the overall chosen geographical market in terms of demographic variables such as age, income, and education. Other criteria used in selecting test market cities are the ability to make low-cost advertising purchases, cable systems to deliver different ads to different homes, and tracking systems like those of AC Nielsen to measure sales resulting from different advertising campaigns (Neff, 2001.) This gives the company an indication of potential sales volume and market share in the test area. Market tests are also used to check other elements of the marketing mix besides the product itself such as price, level of advertising support, and distribution.

2.2 Simulated Test Markets

Kerin et al (2009) mentioned that Simulated Test Markets (STM) was a technique that simulates a full-scale test market but in a limited fashion. STMs were often run in shopping malls, where consumers were questioned to identify who uses the product class being tested. Willing participants were questioned on usage, reasons for purchase, and important product attributes.

2.3 Quantity Acceptance Test

This research related to the concepts of quantity acceptance test. According to the product development literature and related models of product acceptance, one profound the quantity analysis related to consumers' acceptance of product involves

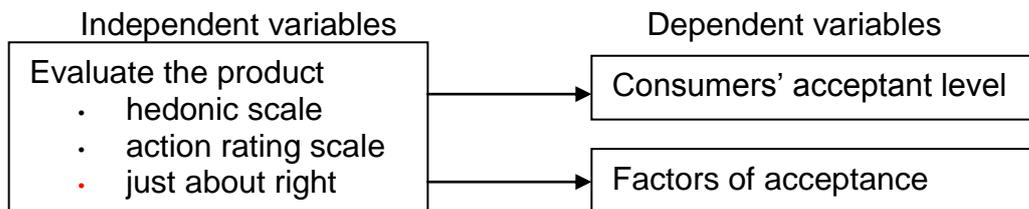
Suvachart

the concept of sensory characteristics of product (The Committee of Product Development in the Agro-industry Department 2007, pp.94-104). This conceptual model explains that consumers test is the reaction study of the sensory characteristics of products. It may be product concepts testing, or actual product testing which in the process of new product development. The acceptance test composes hedonic scaling, action rating scaling, and just about right scaling (Pongsawatmanit 2007, p. 93).

3. Methodology

The conceptual model of this study was as following (figure 1).

Figure 1: The conceptual model



The study instruments consisted of the existing products (testers) and questionnaire. The questionnaire composed two sections. The first part involved basic demographic and background data on the respondents. The second part comprised a twelve-item indicated attitude of subjects which included hedonic scale (3 items), action rating scale (2 items), and just about right scale (7 items). The questionnaire was reviewed the content validity by three peer reviews at Khon Kaen University. The questionnaire was checked the reliability with accordance measurement within the 12 items of the 1,684 measuring instruments by Cronbach's Alpha. When calculate by a statistics package program, Cronbach's Alpha value = .9353. This valuable get close to 1. It showed that this questionnaire had high reliability (Suwan, P. 2005.). This research used non-probability sampling and calculated the amount of appropriable sample by

the formula (Siljaru, T. 2005 p.48)

$$n = \frac{P(1-P)(Z)^2}{e^2}$$

represent in the formula as follow

$$n = \frac{(.70)(.30)(3.8416)}{.0025} = 323$$

The result of appropriable sample were 323 subjects. For the accuracy, data was collected from 1,684 potential Thai people, explore at Bangkok on 18 - 28 March 2011. Respondents were asked to state the extent of their sensory agreement with each characteristics of product that are commonly attributed to acceptance level on a semantic differential scales. This section presented statement such as "How do you feel with this fabric?" The semantic differential scales were "very bad= 1" to "excellence = 5". A personal survey was used to collect the data in this study. Those who consented were given a self-administered questionnaire, which was collected upon completion. In total, 1,684 usable questionnaires were collected from respondents over the course of two months. A key component of the study was to refine characteristics of patchwork quilt which was based on consumers' acceptance of product involves the sensory characteristics of product. Twelve questions about hedonic, action, and just about right (for example, feel with product, feel with fabric,

Suvachart

feel with stitch, benefit, usage frequency, decoration, colour, price, thickness, size, weight, and softness) were used to create the attitude of respondents. The criterion of classify the acceptance level, the result in arithmetic mean score of 4.2 – 5 indicated respondents' acceptance at the highest level. The mean score 4.1 – 3.4 indicated the high level, 3.3-2.6 indicated medium level, 2.5-1.8 indicated low level, and 1.7-1.0 indicated no acceptance. Statistical evaluation of this study such as descriptive statistics, the arithmetic mean, factor analysis, were run, using the Statistical Package for the Social Sciences (SPSS 11.5) computer program. For all analyses the minimum level of significance was set to 0.05

4. Findings

A total 1,684 individuals were asked to participate in the survey. Approximate 50.4% of the respondents were male and 49.6 were female. Most (70.2%) respondents were between the ages of 18 and 37, employee 48.2%, business owner 25.4%, student 20.4% and housewife 2.4% , reported of personal average household incomes was less than 10,000 Baht 50% (Table 1).

Table 1: Sociodemographic profile of respondents

Sociodemographic variable		Quantity	Percentage
Gender	Male	849	50.4
	Female	835	49.6
Age	18-22	379	22.5
	23-27	367	21.8
	28-32	246	14.6
	33-37	190	11.3
	38-42	121	7.2
	43-47	108	6.4
	48-52	126	7.5
	53-57	83	4.9
	More than 58	64	3.8
Occupation	Business owner	428	25.4
	Student	344	20.4
	Daily payment employee	293	17.4
	Company employee	285	16.9
	Government officer	202	12.0
	State Enterprise employee	72	4.3
	Financial Institute employee	19	1.1
	Other	41	2.4
income(Baht)	Less than10,000	842	50.0
	10,000 - 20,000	582	34.6
	20,000 - 30,000	162	9.6
	30,000 - 40,000	43	2.6
	40,000 - 50,000	32	1.9
	More than 50,000	23	1.4

The measurement of acceptance

From the research questions 1, the result indicated that the consumers accepted this product at high level (mean=3.56, SD=.482).

Suvachart

Table 2: The Arithmetic Mean Score of Each Attribute Variable

Measure	Mean	SD	Items	Mean	SD	Acceptance
Hedonic	3.60	.672	Feel with product	3.79	.815	high level
			Feel with fabric	3.67	.801	high level
			Feel with stitch	3.58	.799	high level
Benefit	3.78	.776	Functions	3.82	.740	high level
			Usage frequency	3.71	.893	high level
Just about right	3.23	.430	Pattern	3.30	.775	medium level
			Color	3.29	.763	medium level
			Price	3.31	.684	medium level
			Thickness	3.20	.669	medium level
			Weight	3.14	.683	medium level
			Softness	3.18	.670	medium level
N=1684	3.56	.482	high level			

Table 2 presents the arithmetic mean score of attitudes toward sensory of physical product attributes. Results showed that respondents valued the benefits of product, the mean score (mean=3.78, SD=.776) was higher than score of favorable them (mean=3.60, SD=.672). They assessed the just about right scale at least (mean=3.23, SD=.430). Generally, the product was accepted at high level (mean=3.56, SD=.482).

Factor analysis with principal component and varimax rotation

For the answer of research questions, which attribute was the most important and the least components that influence acceptance, used Factor analysis with principal component and varimax rotation, calculated the result by SPSS. First of all, the product attribute items were factor analyzed to assess their psychometric properties. As far as scale-based attribute items are concerned, factor analysis was performed to identify the extent to which questions seem to be capturing the same variables and the degree to which they could be reduced to a smaller set of attributes. As a result of factor analysis three underlying components were identified by extraction of factors with eigenvalue more than 1.286 using Principal Components as the extraction method. The results obtained from this test indicate a high level of internal consistency. Seven items of the final communalities are higher than .60, indicating a strong correlation between the indicators and the associated factors. Table 3 shows that the cumulative percentage of variance of the factors was 58.60%, with Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy of 0.787 and the Barlett's test of sphericity was 5759.965 ($p= 0.000$). The results confirmed the existence of three factors that have no-cross construct loading above 0.50, indicating good discriminant validity. Barlett's test of sphericity and calculation of statistics indicated if data appeared to be suitable for the identification of orthogonal factor dimensions. A total of 12 items from the factor analysis resulted in three factor groupings and explained 58.60% of the total variance (Table 3).

Suvachart

Table 3: Factor Analysis

Scale items	Factor loadings	Eigenvalue	%of variance	Cumulative%
Core product feature		2.970	24.75	24.75
Texture of fabric	.816			
Function	.764			
Stitch	.746			
Quilt feature	.746			
Usage frequency	.725			
Fabric attributes		2.390	19.92	44.67
Weight	.789			
Size	.762			
Softness	.752			
Thickness	.708			
Aesthetic feature		1.672	13.93	58.60
Color	.809			
Pattern	.760			
Price	.576			

The final results of the factor analysis indicated three different principal factors, accounting for 58.60% of the variance explained. The results are presented in Table 3. These factors were named, “Core product feature”, “Fabric attributes”, and “Aesthetic feature”. The first factor loads items to texture of fabric, function of product, stitch, quilt feature, and usage frequency. The second factor loads items to weight, size, softness, and thickness. The third factor loads items to color, pattern, and price.

5. Conclusion

Results of this study demonstrated the product was accepted at high level (mean=6.56, SD=.482). Based on findings of the study, a number of salient implications can be derived. Core product feature (variance 24.75 %) influence from texture of fabric, function of product, stitch, quilt feature, and usage frequency was to be an important factor influencing the consumer’s acceptance. The aesthetic of product (variance 13.93 %) was to be the least factor. Because of its aesthetic was recognized the least degree, it should be both improved pattern and search for identity pattern, add value to the product that meet the requirement of consumers.

The suggestions of product development are as following.

5.1 The producer should apply the traditional weave patterns from woven fabric in the Northeast to product. This will be both identity of patchwork quilt from this community and increase worth to product with art and northeast cultural

5.2 The color of product should imitate natural hand-dyed Thai silk color such as blue indigo, yellow, red, pink/rouge/rose, brown, grey, black, green, purple, orange, and red-orange.

5.3 The product should have a few colours mix within a patchwork quilt.

5.4 The product should not very bright and colourful.

The destination objectives of research intend to develop the forthcoming product and stretch market from locality level to the national level in order to raise the price which persuades the buyers. The new price will impact on increase community income. The

Suvachart

local craftsman will receive the wage increases, the wage that increase might persuade a member in the community cooperate to produce more and more. This will preserve the art handicraft locality to remain with the community permanently.

Endnotes

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