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Lactose Free Milk and Dairy Product Purchasing Habit Variables of Bangkok Thailand Metropolitan Consumers

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ABSTRACT

With upwards of 90% of Asians unable to ingest milk products, lactose free milk can be a major contributor to a nation's health and wellbeing. Thailand, a country in Southeast Asia with nearly 70 million citizens is a market with almost no commercially available lactose free products for adult consumers with only limited lactose free milk children's milk products currently available. Given the importance of calcium to healthy development and growth, the researchers therefore undertook this study to determine the variables on the consumption and purchase intention of lactose free milk and dairy products within the Bangkok metropolitan area. Quantitative data was obtained from 189 Bangkok consumers over 18 years old and qualitative data from in-depth interviews of 10 nutritional experts, a doctor, marketers and patients while using Partial Least Square (PLS-Graph) software to apply Structural Equation Modeling (SEM) analysis. The results showed that the factor with the greatest influence on lactose free milk purchase intention included milk knowledge about lactose free milk as well as consumer marketing and the packaging and product reputation which have both direct and indirect influencing factors on lactose free milk purchasing and consumption.

Key words: Milk, purchase intention, management, lactose free

INTRODUCTION

According to the inaugural BBMG Conscious Consumer Report, nearly nine in ten Americans say the words "Conscious consumer" describe them well and are more likely to buy from companies that promote health and safety benefits (88%) and commit to environmentally-friendly practices (87%), if products are of equal quality and price (Bemporad and Baranowski, 2007). As such, milk is well known to be a healthy and nutritious natural food with high nutritional value with exceptional health benefits containing the basic nutritional elements of fats, proteins, carbohydrates, vitamins and minerals.

Even an institution as large as the US Department of Defense recognizes the importance of lactose-free milk as milk contains a combination of nutrients, including calcium, potassium, phosphorus, protein, vitamins A, D and B₁₂, riboflavin and niacin. For the lactose-intolerant or milk-averse, DOD is looking to offer a lactose-free milk and soy or almond milk-as long as they are high in calcium and vitamin D (DOD., 2014).

Despite the debates surrounding milk and calcium, one thing is clear: Adequate calcium-both for bone development and for non-bone functions is the key to reducing the risk of osteoporosis.

Maximum-calcium-retention studies which examine the maximum amount of calcium that can be forced into bones, suggest a fairly high requirement. To ensure that 95% of the population gets this much calcium, the US National Academy of Sciences established the following recommended intake levels (Harvard School of Public Health, 2013):

- 1,000 mg day⁻¹ for those age 19-50
- 1,200 mg day⁻¹ for those age 50 or over
- 1,000 mg day⁻¹ for pregnant or lactating adult women

In 2010, the Institute of Medicine (IOM) published new Dietary References Intakes for calcium. These recommendations are based on an analysis of more than 1000 studies and reports and were established to allow the majority of people to achieve and maintain good bone health.

These requirements are however limited by the majority of Asian consumer's inability to ingest milk or milk products without unpleasant side effects which can reach upwards of 90% in some Asian countries (Kretchmer, 1972). This includes milk allergies (Densupsoontorn *et al.*, 2004) which is found in both children and adults. Symptoms in children can include diarrhea and vomiting while adult's symptoms can cause indigestion, flatulence and the inability to digest in the stomach. The symptoms of milk allergy are caused by the body's inability to digest the sugar lactose in milk due to lack of the enzyme lactase needed in the digestive system (Casellas and Malagelada, 2003). Dairy product consumers however can consume lactose free products as an alternative to consumers who are allergic to milk and still achieve the complete nutritional value of the milk (Densupsoontorn *et al.*, 2004).

With estimates that 70-75% of the world's population may be lactose intolerant and with total milk, yogurt and cheese consumption at over 200 million tonnes in 2011, lactose free dairy products represent a substantial opportunity for dairy manufacturers. In a comprehensive study of the lactose free dairy market across 33 countries around the world, leading food and drink consultancy. Zenith International found that the most developed markets include the USA, Scandinavia, Germany and Spain (Food and Drink, 2012).

Regular consumption of milk causes continued stimulation of lactase activity by maintaining lactose in the diet and enough expression of lactase level even though the prevalence of primary adult lactose malabsorption is 90-100% in Eastern Asia (Johnson, 1981). The review of Scrimshaw and Murray (1988) and Sahi (1994) demonstrated that the prevalence of lactose maldigestion was above 50% in South America, Africa and Asia, reaching almost 100% in some Asian countries. The typical Thai person is not very tall and Thailand wants taller citizen, with a campaign for the Thais to drink milk. But Thailand's dairy market, much of that milk, is forecast to fall.

The Thai dairy market had total revenues of \$1.6 bn in 2012, representing a compound annual growth rate (CAGR) of 3.3% between 2008 and 2012 (King, 2014). Market consumption volumes increased with a CAGR of 0.3% between 2008-2012, to reach a total of 264.2 million kg in 2012. The performance of the market is forecast to decelerate, with an anticipated CAGR of 2.9% for the five-year period 2012-2017 which is expected to drive the market to a value of \$1.9 billion by the end of 2017.

Thais currently consume 14 L of milk per head annually, far below the south-east Asian average of 60 L and the international average of 103.9 L. A greater problem for Thailand may be the drink that Thais like too much: The average citizen consumes three times as much alcohol as milk, figures from the health ministry show, or about 14.19 L of milk to 44 L of alcohol per person per year (King, 2014).

Lactose intolerance is common among many Thais, however and much of the milk currently sold in Thailand comes in cans as sweetened condensed milk, ubiquitously served in Thai coffees and teas. Those looking for a small carton of milk in shops can be met with raised eyebrows as it is generally regarded as a drink for weaklings, with the word for milk and breast, *nom*, being interchangeable.

According to local press, Thailand is asking citizens of all ages to drink at least one glass of cow's milk a day in an effort to increase their average height by up to 8 cm within the next decade. According to a Thai campaign to drink milk every day, could increase the height of 18 year old Thais by 8 cm from the current 167 cm for boys and 157 cm for girls, as well as extend life expectancy from 74-80 years.

The press reports, the drink milk campaign, comes alongside a larger campaign to encourage women to breastfeed their children for longer, ensuring babies are given breast milk-not infant formula or other substitutes-for their first six months before moving them on to two or three glasses of cow's milk during pre-school. Those already in school would be encouraged to drink two glasses a day and adults at least one according to the head of Thailand's health department (The Guardian, 2013).

A nationwide school milk programme was likely to catch on, said the Thai culture commentator Kaewmala: "Parents want their children to be tall and this has a lot to do with better quality and quantity of diet and certainly milk consumption".

It is therefore, necessary to educate the public and inform them about the benefits of milk without lactose. It is therefore, essential that consumers take into account taste and product style as well as food safety and health benefits (Yiridoe *et al.*, 2005) due to their understanding of the factors affecting the acceptance of new products.

According to study of Wang (2010), consumers will be the key to a successful business to business initiative. Additionally, findings showed there was a significant positive effect of brand preference on purchase intention and brand preference as a mediator between multiple perceived product value and purchase intention. With these factors in mind, the researchers conducted research on 'Lactose free milk and dairy product purchasing habit variables of Bangkok Thailand metropolitan consumers'.

The objective of this study was to study the influence of two factors on the behavior and purchase intentions of lactose free products within the Bangkok metropolitan consumer market. It is believed that the findings can be used to guide the strategic marketing of lactose free dairy products in Thailand while assisting the government's understanding of the importance of lactose free products within the Thai community.

The objectives of the study are:

- To analyze the relationships of the variables that affect the purchasing habits of Bangkok consumers of lactose free dairy products
- To check the consistency of the structural equation model of lactose free dairy consumption by Bangkok consumers through the development of empirical data
- To study the direct and indirect effects and interaction of variables affecting purchasing and consumer consumption in the Bangkok dairy product market

The study has the following hypotheses:

- The structural equation model of consumer purchasing habits in Bangkok that was developed is consistent with the empirical data
- The variables used in this study have a direct effect on purchase intention by Bangkok consumers of lactose free milk products with milk knowledge and education having the single greatest influence

CONCEPTUAL DEVELOPMENT

Purchase intention: The consumer buying decision process is a five-stage purchase decision process which includes problem recognition, information search and evaluation of alternatives, purchase and post-purchase evaluation (Ratpongpon, 2010). These five steps to acquire information and knowledge affect perception which leads to better information and the decision as to the next step, depending on what is perceived as very important as well as what recognition requires more knowledge before making a decision or not.

Gilbert (1991) explained that purchase intention has 6 common points: (1) It perceives consumer behavior to be a constant decision making process, (2) Behavior of individual consumer is emphasized, (3) Behavior is treated as a functional (or utilitarian) concept that can be explained, (4) A buyer is viewed as an individual who searches, evaluates and stores information, (5) Buyers narrow down the range of information in time and choose from the alternatives they developed during the decision process and (6) Feedback from the final purchase is included in the models to emphasize the effect of the decision on future purchases.

This is consistent with the research of Chen (2007) who found that consumers are willing to buy when there is consumer awareness but the reverse is true when there is no product recognition hindering purchase intention. This is linked to consumer behavior, because consumer behavior is composed of acquiring, using and disposing of products, services, ideas or experiences of consumers which is both individual or as a group (Amould *et al.*, 2005).

Kotler and Amstrong (2001) described that there are two types of factors that helps in determining and encouraging consumer purchase intention including both personal and stimulating factors. They stated that among the consumer decision making process, understanding consumers' sources of information for the product is crucial because it is the early phase of consumer behavior and it may influence the rest of the consumer decision making process. Personal factors include consumer personality in respect to demand, incentive, attitude, access of information and adaptability.

Stimulating factors, on the other hand, can be used for planning how to catch consumers' attention and encourage their purchase intentions. This includes colors and sizes, product comparisons with other products or services, product positioning (such as shelf location) and originality. Meanwhile, service characteristics, price perception and service selection behavior have direct effects on re-purchase intention (Ferrand *et al.*, 2010).

Kotler (2000) said apart from cultural factors other factors such as social, personal and psychological factors have influence on consumer's behavior.

- Cultural factors have to do with the culture, subculture or social class in which a consumer identifies his/her self with
- Social factors have to do with the consumer's family, reference groups and the consumer's role and status

- Personal factors are the lifecycle status and age of consumers. Also, the economic situation, occupation, self-concept and consumers personality contribute as well
- Psychological factors include perception, motivation, learning, attitude and belief of the consumers

Milk knowledge: Zhou and Wang (2011) noted that each consumer has a different level of knowledge influencing the buying decision so manufacturers need to educate the buyers as to the value of their purchase. Safety of the consumer is the duty of the government and it must disseminate knowledge to the public (Klockner and Ohms, 2009) which advocates the use of various media and communication tools which are properly mixed.

Other forms of corporate communication channels include television, newspapers, magazines, billboards, post office, video, telephone or the Internet all help with the identification of the product packaging and the identification of milk's components. This helps the consumer become more aware of the differences and added health value by consuming milk products. These strategies help to continuously expand the consumer base and are a major impetus for milk product's market growth. Consumer self-confidence is a consumer's belief in their abilities, a mental attitude of trusting or relying on oneself to make the right purchase decision and a feeling of freedom from doubt (Barber *et al.*, 2008). Price is the cue that has been researched most extensively and many studies have found price used as a risk reduction strategy in high involvement situations (Aqueveque, 2006; Barber *et al.*, 2007; Quester and Smart, 1998).

In the key findings for the Australian and New Zealand government on 'Raw Milk Consumer behaviour and attitudes' (Bruce, 2009), it was discovered that there are a number of triggers to the consumption of raw milk. These are:

- Obtaining information about raw milk
- A family member obtaining information about raw milk
- Being told about it by someone else, including being recommended by a health 'consultant'
- A health problem-either as an adult or of an infant or child
- A wider lifestyle change
- Becoming aware of a viable source of raw milk

The likelihood of a trigger point actually resulting in an individual starting to consume raw milk appears to be increased by the presence of one or more catalysts. Observed catalysts were:

- Previous experience with raw milk, especially as a child
- Living or working in rural areas where consuming raw milk is the norm, especially in the dairy industry
- A pre-disposition to organic food and "Healthy lifestyles"
- A pre-disposition to 'alternative' lifestyle and belief systems

Another vital challenge for manufacturers looking to enter underdeveloped markets is education. Consumers need to be educated about what lactose intolerance is, how lactose free dairy products can help them manage their condition and to overcome the misconception that lactose free milk is not real milk. Education of health professionals is also important, so, they are encouraged

to advise those who are lactose intolerant to avoid cutting dairy products from their diets and use lactose free products as a way of continuing to consume dairy without experiencing discomfort (Food and Drink, 2012).

Consumer behavior: Chung and Lee (2003) found that perceived consumer risk shows a negative relationship with the repurchase intention and all the other variables-product perceptions, customer service, perceived ease of use, site image, promotion, communications environments-are positively related with the repurchase intention.

Zagata (2012) found that organic consumers share beliefs about positive health effects, environmentally friendly production and better taste of organic food. Firstly, the Theory of Planned Behavior (ToPB) model (Fig. 1) was tested and secondly, belief-based factors that influence the decisions and behavior of consumers were explored. The theory proved able to predict and explain the behavior of Czech organic consumers. The best predictors of the intention to purchase organic food are attitudes towards the behavior and subjective norms. Decisive positions in consumers' beliefs have product and process-based qualities.

Research applying the Theory of Reasoned Action (TRA) (Fishbein and Ajzen, 1975; Ajzen and Fishbein, 1980) and the Theory of Planned Behavior (TPB) (Ajzen and Madden, 1986) has been used to explain a variety of behaviors. The original model's limitations in dealing with behaviors over which people have incomplete volitional control were expanded to a more robust theory that is depicted in Fig. 1 which depicts the theory in the form of a structural diagram. As in the original theory of reasoned action, a central factor in the theory of planned behavior is the individual's intention to perform a given behavior. Intentions are assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, of how much of an effort they are planning to exert, in order to perform the behavior. As a general rule, the stronger the intention to engage in a behavior, the more likely should be its performance (Ajzen, 1991).

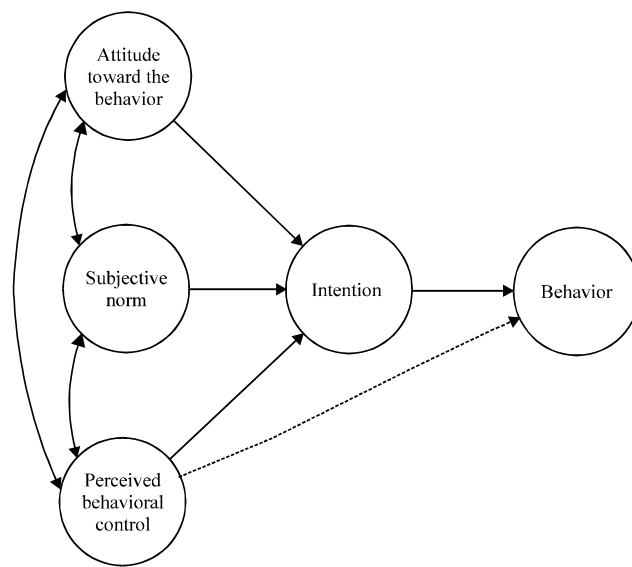


Fig. 1: Theory of planned behavior (Ajzen, 1991)

From research conducted in Turkey (Demirbas *et al.*, 2008) about MCCs (Milk Collection Centers), it was found that milk is generally obtained from small-scale family farms and does not have the desired quality from a food safety and food quality perspective. Additionally, it was discovered that quality control analysis of raw milk cannot be carried out because there is a lack of qualified specialists and equipment inadequacies. The most general test applied on milk delivery is based on the monitoring of the sensory properties of the milk and an effective organizational and educational structure must be established to monitor food safety and related practices in MCCs.

Tamalia and Charlebois (2007) pointed out that Canadian marketing boards lack managerial savvy to make them more efficient and responsive to market changes with logistical and supply chain management approaches seeming to be lacking. A failure to respond to markets has resulted in lost market opportunities, both domestically and abroad. Governments must also provide consumers with safe milk that meets personal needs with the creation of consumer and social acceptance mechanisms (Assael, 1998).

From the above conceptual review and development, the researchers have developed the following hypotheses for the present study:

- **Hypothesis 1 (H1):** Milk knowledge influences consumer behavior
- **Hypothesis 2 (H2):** Milk knowledge influences purchase intention
- **Hypothesis 3 (H3):** Customer behavior influences purchase intention

MATERIALS AND METHODS

The theme of this study is both quantitative and qualitative research, using a population or unit of analysis of a group of Bangkok Thailand consumers over the age of 18 years old that have knowledge about lactose free dairy and milk products.

Data collection: A sample is a set drawn from the population (Keller, 2009). As the non-probability sampling is applied, there is no specific method in determining sample size. But it is not practical to collect data from the entire target population, so the researcher uses a sample instead (Field, 2005). A minimum sample size of 100-200 is often recommended (Comrey, 1973, 1978; Gorsuch, 1983; Guildford, 1954; Hair *et al.*, 1979; Lindeman *et al.*, 1980; Loo, 1983). The recommendation for a minimum sample size of 100-200 observations is probably based on the argument that a correlation coefficient becomes an adequate estimator of the population correlation coefficient when sample sizes reach this level (Guadagnoli and Velicer, 1988).

As this study was to employ factor analysis and multiple regressions, the sample size was based on obtaining the minimum requirement for those techniques. "As general rule, for factor analysis, the minimum is to have five times as many observations as there are variables to be analyzed" (Hair *et al.*, 1998). Although, a minimum ratio is 5-1 for multiple regression, the desired level is between 15-0 observations for each independent variable while 200 is considered optimal (Hair *et al.*, 1998). The final sample size obtained was comprised of 189 focus group members who had knowledge about lactose free milk.

Questionnaire was constructed to be a tool to measure concept definition and practice. The instrument or questionnaire used the 5-Point Likert Scale (Likert, 1972) as the measurement scale and the conceptual framework for determining the internal consistency measured by coefficient alpha. (α -coefficient) of Akron BAC (Cronbach) to calculate the average value of the correlation coefficient was found that alpha coefficients ranged from 0.826-0.853 which is considered highly reliable. All values lower than 0.50 were eliminated from the measurement.

Quantitative measurement

Dependent variable

Purchase intention: The analytical measuring tool or questionnaire used a 5 points Likert Scale as a measuring tool (Likert, 1972) to measure consumer’s Requirements, Intention and Recommendations (Table 1) (Ratpongporn, 2010; Gilbert, 1991; Chen, 2007; Kotler and Armstrong, 2001; Amould *et al.*, 2005).

Independent variables

Milk knowledge: The analytical measuring tool or questionnaire used a 5-Point Likert Scale as a measuring tool (Likert, 1972) to measure Consumer’s Knowledge, Public Relations, Packaging and Reputation (Zhou and Wang, 2011; Bruce, 2009; Klockner and Ohms, 2009).

Consumer behavior: The analytical measuring tool or questionnaire used a 5-Point Likert Scale as a measuring tool (Likert, 1972) to measure Purchase Ease and Price Acceptance (Ajzen, 1991; Chung and Lee, 2003; Zagata, 2012; Demirbas *et al.*, 2008; Assael, 1998; Tamilia and Charlebois, 2007).

For qualitative research, the researchers conducted 10 in-depth interviews with experts such as doctors, nurses, nutritionists and marketers.

RESULTS

Quantitative research was conducted by using the Partial Least Squares (PLS) statistical method and hypothesis testing with PLS-Graph software (Chin, 2001) which analyzes the display and model structure associated with the observed manifest variables with latent variables.

Verification of the accuracy and reliability of the measurements multi-item measures were developed based on Cronbach’s alpha. This study then calculated Cronbach’s alphas for each construct. As shown, the reliability measured ranged from 0.859-0.891 which is considered to have high reliability.

Reflective model structures were created for this research and tested for convergent validity and discriminant validity. The criteria for convergent validity are as follows: the loading value must be positive, the indicator loading values must be over 0.707 with a statistical significance of ($|t| \geq 1.96$)

Table 1: Statistic values presenting convergent validity of reflective scales of latent variables

Construct item	Loading	t-stat
Milk knowledge		
Consumer knowledge	0.7912	19.8796
Public perception	0.7367	8.9128
Packaging	0.7663	13.6325
Manufacturer’s reputation	0.7431	9.9134
Customer behavior		
Price acceptance	0.8357	14.5574
Milk properties	0.8916	33.1358
Purchase intention		
Requirement	0.9092	35.6191
Intention	0.8811	33.1130
Recommendation	0.7709	12.5988

for all values with the study using a loading value from 0.707 and a significant level of confidence at 95% (t-stat>1.96), showing which factors affect organizational performance (Lauro *et al.*, 2005; Henseler and Fassott, 2010). The results are shown in Table 1.

Convergent validity refers to where the results acquired from one scale are correlated with those of a different measure of the same variable and if the results are high, convergent validity has been achieved. Conversely, discriminate validity involved correlating the results of a measure to a different variable and in this case a low result indicates discriminant validity (Hair, 2003).

Milk Knowledge factors consisting of Consumer Knowledge, Public Perception, Packaging and Manufacturer's Reputation had the loading values of 0.7912, 0.7367 0.7663 and 0.7431 with a statistical significance of 95 (t-stat>1.96) which indicate that a particular factor had influence over the dependent variable purchase intention.

Consumer Behavior factors consisting of Price Acceptance and Milk properties had the loading values of 0.8357 and 0.8916 with a statistical significance of 95 (t-stat>1.96) which indicate that a particular factor had influence over the dependent variable purchase intention.

Purchase Intention factors consisting of Requirement, Intention and Recommendations had the loading values of 0.9092 0.8811 and 0.7709 with a statistical significance of 95 (t-stat>1.96), having an effect on purchase intention.

Discriminant validity: Discriminant validity has been tested on scale reliability, including Composite Reliability (CR) which should not be lower than 0.60, Average Variance Extract (AVE) should not be lower than 0.50 R² should not be lower than 0.20 and in the diagonal data should have a value higher than cross construct correlation of all values in the same column. The data validates that there was discriminant validity for each construct, without exception (Lauro *et al.*, 2005; Henseler and Fassott, 2010). Testing results of discriminate validity of this research was in accordance with all conditions shown in Table 2. Therefore the scales of this research have been the scales with discriminant validity and reliability.

Figure 2 shows the study framework and the structural model of independent variables that influence the dependent variable of Purchase Intention. Independent variables included Milk

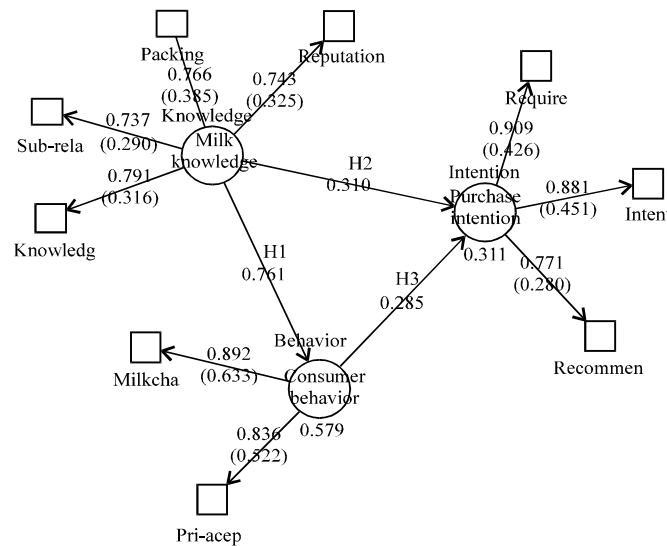


Fig. 2: Final model of lactose free milk and dairy products purchase intention

Table 2: Results of Confirmatory Factor Analysis (CFA) for measurement model showing the statistical discriminant validity

Construct	CR	R ²	AVE	Cross construct correlation		
				Milk knowledge	Consumer behavior	Purchase intention
Milk knowledge	0.845		0.577	0.760		
Consumer behavior	0.855	0.579	0.747	0.751	0.862	
Purchase intention	0.891	0.311	0.732	0.526	0.520	0.856

Statistical significance level is at 0.05 and diagonal figures mean \sqrt{AVE} . CR: Composite reliability, AVE: Average variance extracted, R²: Square of the correlation, Analysis results of the lactose free milk and dairy product purchasing habit variables of Bangkok Thailand Metropolitan consumers are shown in Fig. 2

Table 3: Research hypotheses test results

Hypotheses	Coefficients	t-stat	Results
H1: Milk knowledge influences consumer behavior	0.761	16.6662	Supported
H2: Milk knowledge influences purchase intention	0.310	2.0669	Supported
H3: Customer behavior influences purchase intention	0.285	2.0710	Supported

Table 4: Variable influences summarization

Influence type	Milk knowledge	Consumer behavior
Direct effects	0.310	0.285
Indirect effects	0.217	-
Combined influence	0.527	0.285

Knowledge and Consumer Behavior and their influence on Purchase Intention of 189 surveyed consumers. The samples were analyzed to answer the research hypotheses criteria of the following three assumptions (Table 3). Furthermore, the structural analysis model framework was used to research the t-test coefficients and their relationship of each path of the t-test hypothesis with significance greater than 1.96. This explains the results obtained from analysis as shown in Table 2 and 3 as well as the test results presented in Table 4.

After considering both the direct and indirect factors which influence purchase intention, it was determined that Milk Knowledge was the most influential factor as depicted in Table 4.

DISCUSSION

Research results of 'Lactose free milk and dairy product purchasing habit variables of Bangkok Thailand metropolitan consumers' discovered some of the following information.

Research suggests that the Purchase Intention of lactose-free milk was based on indicators consisting of Requirement, Intention and Recommendations. All three indicators are the product and service outcome that can meet consumer need or create consumer satisfaction. All three factors are the results of a 5-step decision-making process ending in the realization of problem recognition that there is a solution for consumers who normally cannot have lactose based milk or related products.

This therefore, enables consumers to seek information which helps the consumer discover that milk is right for them allowing them to evaluate the choices and make informed decisions as consumers. This also includes the after sales evaluation which helps the consumer determine if it is appropriate and beneficial for them, therefore creating a repeat purchase demand as well as word of mouth referrals to others (Ratpongporn, 2010).

Milk knowledge analysis found that factors influencing the decision to purchase milk products are based on consumer knowledge. These factors include knowledge about milk, publicity, packaging and manufacturer's reputation. The results of this study were consistent with other research stating that each consumer has different levels of knowledge which makes each person's purchasing decision different (Zhou and Wang, 2011). So, companies need to communicate the value to consumers about the advantages of lactose free products by using communications channels such as broadcasting, information and news sources.

These strategies help to continuously expand the consumer base and are a major impetus for milk product's market growth. In addition, the manufacturer's reputation or the reputation of the product is also a factor in building confidence with the consumer. This is something that adds value to the product which is in addition to the functional benefits (Farquhar, 1990) giving consumers the confidence to consume milk without lactose.

Consumer behavior analysis showed that factors included the price acceptance and milk properties. These components were important to consumers and helped in determining whether they had a positive attitude towards the product and its purchase. Confidence also was obtained by knowing the features of the product which enhanced the overall confidence of the consumer and gave value to the real needs of the purchaser (Demirbas *et al.*, 2008) or have better features than the preceding product. It is also important that a product has standard features (Chung and Lee, 2003).

Another factor affecting consumer choice behavior is the price as there are many manufacturers, so there is price competition which helps determine the manufacturer's price which is acceptable to consumers. And if the production is based on prices, it has to be innovative and truly meet the needs of the consumer (Tamilia and Charlebois, 2007).

CONCLUSION

This study on 'Lactose free milk and dairy product purchasing habit variables of Bangkok Thailand metropolitan consumers' was undertaken to explore the dilemma of how to solve the problem of when you don't get enough calcium, you increase the risk of developing diseases such as osteoporosis and calcium deficiency disease. With upto 90% of Asians, including Thailand, having a problem with the ingestion and consumption, alternative ways were explored to better the health and wellbeing of the nation's citizens. As such, it was found that Milk knowledge is the major factor influencing the intention to purchase lactose free milk. This is because manufacturers have created products and marketing tools helping consumers with the selection, purchase and value of the product. When consumers see the value the product benefits, this will ultimately lead to the 'Theory of Planned Behavior' (TPB) which states that the best predictors of the intention to purchase food are attitudes towards the behavior and subjective norms as well as the decisive positions in consumers' beliefs about product and process based qualities. There are also opportunities in more developed lactose free dairy markets to broaden the range of lactose free dairy products available and to drive consumption in non-retail channels. Given the higher price points that lactose free dairy products often command, there is great potential to help manufacturers drive value growth despite the current challenging market conditions. It is recommended therefore that both existing dairy enterprises and entrepreneurs examine this research and develop products and marketing methods to help with the consumer's knowledge of the problem of dairy and milk products with Asian and Thai consumers. Along with this, there are unlimited opportunities for

product expansion and market capture by those willing to see the problem and probe the market. Additionally, it is hoped this research finds its way into the hands of ASEAN and Thai officials who might also be lacking the knowledge concerning the 600 million consumer and worker economy.

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