# Dietary supplements and consumer behaviour psychology essay



Dietary Supplement is becoming a fast lucrative industry, according to a study published by the Journal of Nutrition. 54 of all American adults took Dietary Supplements in 2006. In a global view, Dietary Supplements increased their combined retail value by 16% in the 2006-2011 year period to reach \$97. 6 billion.

The aim of this literature review is to define and describe all terminologies regarding Dietary Supplements and Consumer Behaviour. We will also look at the different studies and theories regarding consumer buying behaviour. This study will also identify the factors influencing the consumption of Dietary Supplements.

## 3. 1 Dietary Supplements

This section helps in understanding what is a Dietary Supplement, what are the different types of Dietary Supplements available and why people generally consume them. We will also cover the pros and cons of consuming Dietary Supplements.

## 3. 1. 1 Definition of Dietary Supplements

Dietary Supplement is any product which is designed to supplement the diet and that bears one of the following ingredients: a vitamin, a mineral, an herb, an amino acid, or a weight loss supplement (Main et al., 2004).

According to the Dietary Supplements Health and Education Act of 1994 of the United States, Dietary Supplements is defined as a product (other than tobacco) which is ingested and contains a dietary ingredient with the purpose of supplementing the diet. These dietary ingredients include minerals, herbs, botanicals, vitamins, amino acids, and substances such as https://assignbuster.com/dietary-supplements-and-consumer-behaviour-psychology-essay/

enzymes, glandular organ tissues, metabolites, extracts or concentrates (FDA, 1994).

"Dietary Supplements include vitamins, minerals, herbs, meal supplements, sports nutrition products, natural food supplements, and other related products used to boost the nutritional content of the diet" (Anon, 2011).

# 3. 1. 2 Types of Dietary Supplements

There are two main types of nutrient supplements namely Micronutrient and Macronutrient.

Micronutrient is that nutrient which our body needs in low quantity to function properly but

macronutrient is nutrient which is required in a large amount to enable our body to function correctly (Reimer, 2009). Another key difference noted by Reimer (2009), is that macronutrients provide the body with energy whereas micronutrients play an important role in detoxifying the body and warding off harmful diseases. Proteins, carbohydrates, and fats are examples of macronutrients, and vitamins and minerals are examples of micronutrients. Both types of nutrients can be obtained from the diet and supplements.

#### **Micronutrients**

#### **Multivitamins**

Multivitamins are a combination of many different vitamins that are normally found in food and other natural sources (Cerner, 2012). Vitamins are organic substances that the body needs to function properly. Vitamins help the body to develop, grow and stay healthy. They strengthen the immune system, https://assignbuster.com/dietary-supplements-and-consumer-behaviour-

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assist in forming bone and tissue, regulate metabolism, help convert fats and carbohydrates into energy, and protect cells (Rinzler, 2010). Multivitamins are used to provide the body with vitamins that are not taken in through normal diet; multivitamins are also used to treat vitamin deficiencies caused by illness, pregnancy, poor nutrition and digestive disorders (Boyon, 2012). According to Grotto (2009), taking a daily multivitamin with minerals has long been considered as a nutritional "insurance" to cover dietary shortfalls.

#### **Macronutrients**

# Meal Replacements

A meal replacement acts as a substitute for a solid food meal. A meal replacement is a prepared product, such as a bar, shake or powder which can substitute a regular meal. Available in various forms, these products are intended to provide healthy amounts of vitamins, minerals and nutrients to make up for those an individual does not get by eating a normal meal (Zangwill, 2008)

# **Sports Nutrition Supplements**

Sports Nutrition Supplements is a broad category which includes both sports performance and weight loss supplements (Wilborn, 2010). It includes pills, powders, formulas and drinks formulated to enhance physical activity. Some examples are creatine, amino acids, protein formulas, and fat burners.

Creatine supplements are athletic aids used to increase high-intensity athletic performance. (Wikipedia, 2011)

Amino acid is a molecule which is necessary to create protein. An inadequate intake of amino acids can result in extremely serious health consequences (Tresca, 2012).

Protein supplements are large molecules composed of one or more chains of amino acids. Protein is required for the structure, functioning, and regulation of the body's cell. Protein supplements are mostly purchased and consumed by individuals involved in body building (Rogers, 2007).

Fat burners are supplements which help to burn calories by increasing the rate of the body's metabolism. People who are under diet often use fat burners to reduce their body fat more quickly (Stoppani, 2012).

# 3. 1. 3 Reasons for Consuming Dietary Supplements

The main reasons highlighted for consuming Dietary Supplements are:

# **Health Purposes**

Taking supplements can provide additional nutrients when one's diet is lacking or when certain health conditions cause the body to develop an insufficiency or deficiency. In most cases, multivitamin supplements provide all the basic micronutrients (vitamins and minerals) the body needs (Jegtvig, 2013). Dietary Supplement is perceived as a prevention and as a protection against future health issues (Peters et al. 2003). According to (Sadovsky et a/ 2008)., American consumers often cited that they purchased Dietary Supplements because of health promotion.

#### **Improving Athletic Performance**

Athletes often purchase supplements in an attempt to meet or exceed the nutritional demands of sports competition (Antonio, 2010). Dietary Supplements are very popular among professional and recreational athletes, body builders and fitness enthusiasts; they do so mainly for sports nutrition and to seek better performance (Samadi, 2011). Often protein is required to increase the building or repair process of muscle in the human body. The use of high-protein diets has a long history in the sport field; it was reportedly popular with athletes in the Olympics of ancient Greece. According to (Tarnopolsky, 2007) protein intake of strength athletes or bodybuilders should be around 50% to 100% higher than the average population. According to Maughan (2007), knowledge about the composition of foods among athletes is not generally good, which result in a restricted choice of food and Hawley (2006) on the other hand stated that most sporties think they are achieving their protein intake goals. Protein supplement offers athletes the possibility to achieve an adequate level of protein intake without changing too much their eating habits. Protein supplement are easy and guick to take, they can be taken before or after training (Tipton et al., 2006).

## **Improving Personal Appearance**

According to (Berens, 2008), modern high-fat, high caloric diets combined with physical inactivity have contributed to the epidemic of overweight and obesity in America. In a study conducted by Ogden (2012), it has been found that 57% of the general population of New York were considered overweight or obese. Studies carried out revealed that many consumers purchase and use Dietary Supplements to help them lose weight (Blanck et al., 2008). A

large number of Dietary Supplements' manufacturers have seen an opportunity and have created weight loss Dietary Supplements to help to combat obesity. Weight loss supplement varies from calcium, fibre, conjugated linoleic acid (CLA), green teen extract, meal replacement and Orlistat, an over-the-counter weight loss drug (Parker, 2011). A nationally representative survey found that 33. 9% of people who were making a serious weight loss attempt admitted to have used Dietary Supplements (Pillitteri et al., 2008). Some nutritional studies have revealed that people who use Dietary Supplements generally have a higher nutrient intake from food. According to Mehdi (2007), nutritional Supplements (protein and amino acids) play an important role in the muscle building, hence improving the appearance of the body (muscular body)

#### **Avoiding Pharmaceuticals**

Individual nutrients such as vitamins may be used to treat a simple deficiency, such as an iron deficiency, but sometimes they are used therapeutically to treat specific health conditions or risk factors. Studies have shown that Dietary Supplements is common among people with chronic or recurrent condition (Jacques, 2009). Other factors for use are financial. During the recession, the rise in unemployment and subsequent loss of health has led consumers to turn to Dietary Supplements in an attempt to avoid expensive insurance coverage and minimise cost with dollars and drugs (Mintel, 2009).

# **Main Survey Findings about Dietary Supplements**

The FSA (2005) research found that:

Women are more likely to purchase Dietary Supplements than men.

Older people and people caring for their health benefit are more likely to consume Dietary Supplements.

The market for dietary is not only exclusive for Adult, 51% of the consumers are children.

# 3. 1. 4 Pros and Cons of Consuming Dietary Supplements

According to Duran (2011), the following are pros and cons associated with Dietary Supplements:

#### **PROS**

#### **Correction of Nutrient Deficiencies**

Nutrient deficiencies can lead to serious medical problems, such as anemia, bone fragility, poor immune system function and nervous system abnormalities. Dietary Supplements can help correct the deficiencies and reverse the medical abnormalities associated with the condition.

#### **Disease Prevention**

Specific types of dietary supplements can help reduce the risk for certain types of diseases and medical conditions.

# **CONS**

# Not a Replacement for Food

Dietary supplements are not a replacement for food. Food contains a complex constellation of nutrients, including substances called phytochemicals, which biomedical researchers believe provide health

benefits. Getting nutrients from wholesome foods is more healthful than relying on Dietary Supplements to meet nutrient needs.

## **Potential for Toxicity**

When it comes to Dietary Supplements, more is not necessarily better. The fat-soluble vitamins A, D and E can accumulate to toxic levels in the body if taken in doses that significantly exceed the recommended daily allowance. Additionally, certain herbs and botanicals may prove toxic if one is having underlying medical problems, such as chronic kidney or liver disease.

#### Side Effects and Interactions

As with any medicinal product, Dietary Supplements sometimes cause side effects and may interact with prescription medications. Serious and potentially life-threatening supplement / drug interactions can also occur.

#### 3. 2 Consumer Behaviour

This section brushes the main definitions and theories pertaining to consumer behaviour. It also covers the main factors influencing consumer behaviour.

## 3. 2. 1 Definition of Consumer Behaviour

Consumer behaviour is a complex, dynamic, multidimensional process and all marketing decisions are based on assumption about consumer behaviour (Khan, 2010). A number of different approaches have been brought forward in the study of consumer behaviour. The five approaches are namely Economic Man, Psychodynamic, Behaviourist, Cognitive and Humanistic Approach.

# 3. 2. 2 Approaches to Consumer Behaviour

Consumer behaviour has been the subject of analysis by economists, psychologists, and management expert. Economists have taken up the study of consumer behaviour in the nineteenth century, while psychologists and management experts are late entrants (Intriligator 1985). Each stream of thought and approach differs from other in view point, contents and thrust of analysis.

# 3. 2. 2. 1 Economic man Approach

According to (Richarme, 2007), work in this area began around 300 years ago, the early research considered man as an entirely rational individual, making decisions based upon the ability to maximise utility whilst doing the minimum effort. In order to behave rationally, the consumer must be aware of all the available consumption options, must be capable of correctly rating each alternative and be able to select the best option (Kanuk, 2007).

According to (Simon, 1997) customers rarely have the sufficient information, motivation or time to make the best decision and often make decisions based on influences such as social relationship and values.

# 3. 2. 2. 2 Psychodynamic Approach

This approach was first developed by Sigmund Freud. The psychodynamic approach suggests that behaviour is subject to biological influence through instinctive forces or drives which acts outside the conscious thought (Robertson et al, 1991). The main point in this approach is that behaviour is determined by biological drives, rather than individual cognition or environmental stimuli.

## 3. 2. 2. 3 Behaviourist Approach

Behaviourists regard all behaviour as a response to a stimulus (Sammons, 2005). In other words, they assume that the action of an individual is determined by his environment he is in, which provide a stimuli to which he responds. According to Sammons (2005), the behaviourist approach can be much effective due to the methods it uses, which are the insistence on objectivity, control over variables and precise measurement; thus meaning that the studies carried out tend to be quite reliable. However, Sammons in his article explained that the scientific method used by psychologists must be studied under artificial conditions that often do not reflect the real-world contexts.

# 3. 2. 2. 4 Cognitive Approach

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The term cognitive psychology came into use with the publication of the book Cognitive Psychology by Ulric Neisser in 1967. Cognitive Psychology revolves around the notion that if we want to know what makes people tick then we need to understand the internal processes of their mind (McLeod, 2007). He also added that the cognitive approach focuses on the way humans process information, looking at how we treat information that comes in to the person (what behaviourists would call stimuli), and how this treatment leads to responses.

There are two main types of Cognitive models namely analytical models which provide a framework to explain the behaviour of consumers. These models identify a number of influencing factors and their relationship in the consumer decision making process. These models follow five step classification namely outlining problem recognition, information search, https://assignbuster.com/dietary-supplements-and-consumer-behaviour-

alternative evaluation, choice and outcome evaluation in the consumer decision process (Schiffman and Kanuk, 2007). The two most common known analytical models are the consumer decision model (Blackwell et al, 2001) and the theory of buyer behaviour (Howard and Sheth 1969).

The second Cognitive model is the prescriptive model. According to (Moitial, 2007) prescriptive models provide guidelines or frameworks to organise how consumer behaviour is structured. The most widely known models are theory of Reasoned Action who was developed by Fishbein and Ajzen in 1975 and the Theory of Planned Behaviour which was developed by Ajzen in 1985. In the next chapter of this literature review, we will look at the planned behaviour in more details.

## 3. 2. 2. 5 Humanistic Approach

There are a growing number of marketers who believe that the cognitive approach has some major limitations. According to Nataraajan & Bagozzi (1999) the first limitation of the cognitive model is that it neglects the role of emotion in decision making.

'There is a pressing need in the field to balance the rational, cognitive side of marketing thought and practice with new ideas and research on the emotional facets of marketing behaviour' (Nataraajan and Bagozzi 1999 p. 637)

The second limitation of the cognitive model is that it does not take into consideration the concept of volition (Rey, 2011). According to the Oxford Dictionary, volition can be defined as the process by which different kinds of living organisms are thought to have developed and diversified from earlier https://assignbuster.com/dietary-supplements-and-consumer-behaviour-psychology-essay/

forms or a gradual development. The third limitation is that the cognitive model does not take into consideration egoism; there is a lack of research that has examined the influence of altruistic motives on any consumer behaviour. Humanistic Approach priority is to understand people's subjectivity, try to put oneself in the mind of the individual. As a result, it rejects the objective scientific method as a way of studying people (Sammons, 2011)

# 3. 2. 3 Theory of Planned Behaviour

The Theory of Planned Behaviour (TPB; Ajzen 1991) is one of the mainly used cognitive models. The Theory of Planned Behaviour has been introduced by Ajzen in 1991 due to the rising limitation of the previous cognitive model; the Theory of Reasoned; which was developed by Ajzen and Fishbein in 1975.

The Theory of Planned Behaviour is based on the assumption that the human being normally behave in a reasonable and sensible manner, when making a decision or undertaking an action; an individual would seek for available information and the implication in doing such action. According to this theory developed by Ajzen, a person's intention to perform or not to perform a behaviour is the most immediate determinant of that action.

According to the Theory of Planned Behaviour, intention and behaviour are a function of three determinants; one personal in nature, one reflecting social influence and the third dealing with control (Ajzen, Pg 117). The first determinant that is personal factor is simply the individual's attitude (positive or negative) towards a particular behaviour of interest. The second determinant is the person's social pressure to perform or not to perform such

behaviour. It is generally referred to subjective norm (Ajzen, 2002). The third determinant is the sense of self- efficacy or the ability of the individual to perform such behaviour which has been termed by Ajzen as "Perceived Behavioural Control".

The main difference between the Theory of Reason and the Theory of Planned Behaviour is the control component of the Theory of Planned Behaviour (Conner & Spark, 2005). As it was mentioned in the previous paragraph, the Theory of Reason assumes that human social behaviour model is under volitional control and thus it can be predicted from the intention only. Ajzen (1985) found that often, the individual does not have complete control, hence the Perceived Behavioural Control was added to the Theory of Reason. Ajzen named it the Theory of Planned Behaviour where Perceived Behavioural Control could be used to predict the non-volitional behaviours. Perceived Behaviour Control is when a person expecting that the performance of the behaviour is within his/her control and has the confidence that he/she can perform the behaviour (Coner, 2010). This is similar to the concept of self-efficacy developed by (Bandura, 1997).

The theory of Theory of Planned Behaviour has been largely tested and has also been successfully applied to understand the different types of behaviour (Conner and Sparks, 2005). Armintage and Corner (2001) reported that, across 154 applications; attitudes, subjective norms and Perceived Behavioural Control accounted to 39% of the variance intention. Perceived Behavioural Control accounted for 27% of the variance in behaviour across 63 applications.

Figure 3. 1: The Theory of Planned Behaviour, adapted from Ajzen (1991).

# 3. 2. 3. 1 Limitations of Theory of Planned Behaviour

According to the Theory of Planned Behaviour, intention is determined by three classes of behavioural beliefs (normal norms, subjective norm and perceived behaviour control), however these assumptions are highly debatable. Generally the combination of attitudes, social norms and perceived behavioural control leads to a reasonable prediction of behavioural intention. However, (Schwenk and Moser, 2009) reported that:

"Although the inferred correlation (between intention and behaviour) is substantial, one should not expect to be able to explain a third of the variation observable in environment behaviour. This indicates that the strong causal of the Ajzen Model is not met in reality....."

Ogden (2003) noted that the Theory of Planned Behaviour is a conceptual based model and discussed several limitations of Ajzen's theory. Based on literature review, Ogden observed that some of the studies carried out under the Theory of Planned Behaviour reported no role for subjective norms; others showed no predictive role for perceived behavioural control and some shows no roles for attitudes.

Several suggestions have been put forward within Attitude Theory to understand, explain and reduce the attitude-behaviour gap. A general approach is the extension of the Theory of Planned Behaviour with additional explanatory constructs. The main additional approach which was brought forward was the "perceived availability" and the "importance of price".

Ajzen (2002) reported that the perceived behavioural control could be divided into two subclasses namely perceived self efficacy, which refers to the ease or difficulty of performing the behaviour and perceived controllability which refers to the extent to which performance depends on the individual. Perceived controllability deals with consumers' external control to buy; the perceived self efficacy deals with consumers' internal control to buy (Conner & Armitage, 1998).

Regarding the importance of prices, higher prices may be an obstacle, especially for low income group consumers to make a purchase (Tarkiainen & Sundqvist, 2005)

# 3. 2. 4 Factors Influencing Buying Behaviour

The stimulus-response method is based on the work of classical psychologists such as Pavlov and Watson (1870), who found that all organisms have psychological drives directly related to their need for survival. According to Hisrich (2000) drives can be divided into primary and secondary drives whereby primary drives refers to the need to avoid pain and the need for belonging whereas secondary drive refers to guilt, pride and acquisitiveness in attempt to satisfy primary drives.

As you can see below in the stimulus diagram, Marketing and Environmental stimuli enter the buyer's consciousness. The buyer's characteristics and decision process will lead to a purchase decision. For my study I will concentrate only on the buyer's characteristic to understand how these characteristic affect the decision to purchase or not to purchase a product.

# 3. 2. 4. 1 Buyers' Characteristics

Consumer Behaviour can be influenced by buyers' characteristics. These characteristics are cultural, social, personal and psychological factors. Those factors exert a certain influence in the mind of customers when buying a particular product according to Kotler (2001)

#### **Cultural Factors**

Cultural factors can be classified into culture, subculture and social class.

Those factors are particularly important in understanding the buying behaviour of customers. The factors represent a hierarchy of social influences, ranging from broad, general effects on consumption behaviour such as those imposed by the culture we live in to more specific influences that directly affect a consumer's choice of a particular product or brand (Boyd et al, 1998)

#### Culture

According to Kotler (2001), culture is the most fundamental determinant of a person's wants and behaviour. Culture is the total way of life of a society, passed from generation to generation, deriving from a group of people sharing and transmitting beliefs, values, attitudes and forms of behaviour that are common to that society and considered worthy of retention (Chisnall, 1985). Kotler reported that "a growing child acquires a set of values, perceptions, preferences and behaviours through his or her family and other key institution. Riley (2012) reported that a "cultural shift" is an important opportunity for marketers. He also argues that a shift towards greater concern about health and fitness has resulted in more industries

servicing customers with low calorie foods, health related products, exercise equipment or Dietary Supplements.

#### **Subculture**

Each culture contains subculture, according to Kotler (2001), he defines subculture as nationalities, religions, racial groups and geographical regions. According to Schouten and Mc Alexender (1995), subculture is a distinctive subgroup of society that self-selects on the basis of shared commitment to a particular product class, brand or consumption activity. According to Jim Riley (2001) the young culture has quite distinct values and buyer buying characteristics comp-are to the older generation. Nevertheless, subculture is usually identified through race, nationality, religion, geographical region and age (Hawkins et al, 1989).

#### **Social Class**

According to an article published by the Princeton University (2010) a social class is a group of people who have the same social, economic, or educational status in society. According to Kotler (2001), social classes differ in dress speech patterns, recreational preferences and among others. He reported that there are four main types of characteristics which define a social group.

Those within each social class tend to behave more alike than persons from two different social classes.

Persons are perceived as occupying inferior or superior positions according to social class.

Social class is indicated by a cluster of variables (occupation, income, wealth, social class)

Individual can move from one social class to another one (up or down).

#### **Social Factors**

Apart from cultural factors, consumer behaviour is also influenced by social factors such as reference groups, opinion leaders and family

# **Reference Groups**

Kotler (2001) defines reference groups as all the groups that have a direct (face-to-face) or indirect influence on an individual's attitude or behaviour. Another definition of reference groups is those groups the consumer identifies himself with and wants to join.

# **Opinion leaders**

Opinion leaders are people with expertise in certain areas. According to Bergstrom (2008), an opinion leader is anyone who has an active voice in a community; it is somebody who speaks out and who is often asked for advice. Brenna (2013) reported that health and fitness movement is now influencing many industries including food, travel, clothing, footwear, entertainment and among others. OptiMyz Magazine (Sport and Nutrition Magazine, 2013) revealed that their readers are educated, affluent and focused; they tend to be opinion leaders in their social groups. Readers would recommend their siblings to use the supplements advertised in the magazine.

#### **Family**

According to Kotler (2001), the family is the most important consumer-buying organisation in society. The individual members who make up the family unit exercise an influence over each other's behaviour and therefore the activities which form part of consumer decision-making (Cox, 1975). Kotler (2001) stated that in countries where parents live with their grown children, their influence can be substantial. In the United States, the husband-wife involvement has traditionally varied widely by product category.

# **Psychological Factors**

Even if two consumers have equal involvement with a product, they often purchase different brands for different reasons. The information they collect, the way they process and interpret it and their evaluation of alternative brands are influenced by psychological variables. Those variables are motivation, perception, learning and belief and attitudes (Boyd et al., 1998).

#### **Motivation**

Motivation is the force, which energises behaviour, gives direction to it and underlines the tendency to persist (Barton et al, 1996). According to recent studies carried out, it has been proved that motivation may affect reasoning through reliance on a biased set of cognitive process (Eagly & Chaiken, 1993). Therefore understanding motivation is very important.

# Learning

Learning is to "gain knowledge, understanding or skill by study, instruction or experience" (Arbib et al., 2005). Osselear and Alba (1999) further laid

down that consumers learn the relationship between product attributes and quality and they will differentiate among brands that possess different attributes and treat as commodities those brands that share the same attributes.

#### **Personal Factors**

A buyer's decisions are also influenced by personal characteristics. These include the buyer's age and stage in the life cycle, occupation and economic circumstances, lifestyle and personality.

# Age and Stage in the Life Cycle

Age has an impact on consumers' buying decision. The type of leisure activities they participate in, the likelihood of their being in education or at work, their need for health care and their preferences for style and fashions will change them. (Crown, 2009)

# **Occupation and Economic Circumstances**

People who function in higher status occupations have characteristics personalities, motives and values that set them apart from those in less prestigious positions (Kohn & Schoenbach, 1983; Kohn et al. 1990).

## Lifestyle

Lifestyle is defined as a pattern in which people spend time and money.

People from the same culture, social class and occupation may have very different lifestyles, expressed in their own activities, interests and opinions. Lifestyle as such influences the consumer in his purchase of products (Chellum & Esson, 1999).

# 3. 2. 5 Buyer's Decision Process

In this model, the consumer passes through five stages: problem recognition, information search, evaluation and selection of alternatives, decision implementation, and post-purchase evaluation.

The diagram below depicts the process which goes in the mind of a buyer when deciding to effectuate a purchase.

Figure 3. 2: The Consumer Information Processing Model

Source: Adopted from Kotler (1997)

# **Problem Recognition**

The consumer buying process begins when the buyer recognises a problem or need (Ken Matsuno, 2007). Typically, researchers seek to identify consumer problems by analysing the factors that widen the gap between the actual and the desired state. The desired state of the consumer is inspired by their aspirations and circumstances. Culture, sub-culture, reference group and lifestyle trends can cause people to change their desired state.

#### **Information Search**

When a consumer discovers a problem, he/she is likely to engage in internal and external information searches. It has been recognised that information search often precedes brand preference formation and that search behaviours may vary according to individual characteristics (Block et al., 1896). Usually educated people are more likely to engage in more meaningful search for information, thereby contributing to a higher level of search (Kiel and Layton, 1981; Marvel, 1996; Newman & Staelin, 1971)

## **Evaluation of Alternatives**

Consumers may apply a variety of criteria in evaluating purchase alternatives, which will vary in importance of influence in shaping alternative evaluation and selection (Black et al, 2001). According to Matsuno (2007), by gathering information, the