

# **The role of variety seeking in consumers' fish consumption: A study in Sri Lanka**

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## Abbreviations and Acronyms

CFA	- Confirmatory Factor Analysis
CFI	- Comparative Fit Index
CSI	- Change Seeker Index
FAO	- Food and Agriculture Organization
FDA	- Food and Drug Administration
GFI	- Goodness of Fit Index
OLS	- Optimum Stimulation Level
PBC	- Perceived Behavioural Control
PUFA	- Poly Unsaturated Fatty Acids
RMSEA	- Root Mean Square Error of Approximation
SD	- Standard Deviation
SEM	- Structural Equation Modeling
USD	- United States Dollars
VS	- Variety Seeking Behaviour
VST	- Variety Seeking Tendency

## Abstract

*Purpose* - The primary purpose of this study was to explore the role of variety seeking behaviour towards fish consumption frequency. Second, it aimed to investigate how personality related factors; variety seeking tendency (related to food and personality) and perceived behavioural control affect the nature of variety seeking behaviour. Third, to investigate how product and motivational related factors; attitudes, health involvement and perceived risk affect the nature of variety seeking behaviour and fish consumption in the Sri Lankan context.

*Theoretical framework* – In line with Hoyer and Ridgway (1984) proposed framework, a conceptual framework was developed with the constructs of variety seeking behaviour, variety seeking tendency (related to food and personality), perceived behavioural control, attitudes, health involvement, perceived risk and fish consumption frequency to achieve the objectives.

*Methodology and sampling* - A questionnaire survey was conducted using a convenience sample of 250 consumers in *Galle* in Sri Lanka. The items used to measure the constructs were either taken or adopted from the previous research studies. Confirmatory factor analysis and Structural Equation Modeling in AMOS 16.0 were employed to analysis the data.

*Findings* - This study found that variety seeking behaviour plays a vital role in fish consumption frequency among consumers. The findings confirmed the theory that variety seeking tendency as a general personality trait positively influences the variety seeking tendency related to food (VST Food) while specific VST Food showing a significant effect on fish consumption frequency. Health involvement was found to be positively significant with fish consumption frequency as well as with the VST Food while having an insignificant relationship with the variety seeking behaviour. Convenience/ availability, price/ value and knowledge were not significant indicators of perceived control. Nevertheless, PBC and perceived risk act as a barrier for variety seeking behaviour. However, the effect of perceived risk on the fish consumption frequency was negligible. Surprisingly, attitudes did not have a significant impact on either fish consumption frequency or variety seeking behaviour. The main reason for this is probably skewness of the data set.

*Managerial and theoretical implications* - Practical implications drawn from this research are that fish marketers should tap the consumers's intrinsic desire for variation through providing different fish species in to the market place. Further, it is suggested that providing information on the most commonly eaten fish species by the government authorities through mass media will reduce the perceived risk and PBC associated with variation of fish and stimulate the health involvement towards variation of fish consumption. This research has contributed to fill the gap in variety seeking behaviour literature in which specifically incorporating effect of both personal related and product/ motivational related factors.

*Limitations* - This research was based on a convenience sample of consumers which did not represent the whole population, thus the results could not generalize to Sri Lanka. Future research should uncover additional individual and product related factors and their interactions which may relevant to explain variety seeking behaviour.

**Keywords:** Variety seeking behaviour, variety seeking tendency, health involvement, PBC, attitudes, perceived risk, fish consumption frequency, Sri Lanka

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**TABLE OF CONTENT**

Abbreviations and Acronyms .....	i
Abstract .....	ii
Acknowledgement .....	iv
Table of content .....	v
List of Appendix .....	vii
List of Figures .....	viii
List of Tables .....	viii
1.0 Introduction.....	1
1.1 Research issue and objectives .....	3
1.2 Method .....	5
1.3 Structure of the thesis.....	5
2.0 Conceptual framework.....	6
2.1 Variety seeking behaviour .....	6
2.1.1 The effect of variety seeking behaviour .....	9
2.2 Variety seeking tendency in a food context.....	10
2.2.1 Variety seeking tendency and variety seeking behaviour.....	11
2.3 Perceived Behavioural Control (PBC).....	13
2.3.1 Perceived behavioural control and variety seeking behaviour .....	14
2.4 Attitudes.....	15
2.4.1 Attitudes, variation and consumption .....	17
2.5 Health involvement.....	18
2.5.1 Health involvement, variety and consumption .....	19
2.6 Perceived risk.....	21
2.6.1 Perceived risk, variety and consumption .....	22
2.7 The proposed conceptual model .....	25
3.0 Methodology.....	26
3.1 Survey design and sample.....	26
3.2 Measurements and constructs .....	27
3.2.1 Variety seeking behaviour .....	27
3.2.2 Variety seeking tendency .....	28
3.2.3 Perceived behavioural control.....	29
3.2.5 Attitudes.....	30

3.2.6 Health involvement.....	30
3.2.7 Perceived risk.....	31
3.2.7 Fish consumption frequency.....	31
3.3 Data analytical procedures.....	32
4.0 Results.....	33
4.1 The confirmatory factor analysis and validation of measures.....	33
4.2 Structural analysis and model testing.....	37
4.2.1 Hypotheses testing.....	38
4.3 Confirmatory factor analysis of attribute's of perceived behavioural control.....	40
4.4 Structural model of attributes related to perceived behavioural control.....	42
5.0 Discussion.....	43
5.1 Theoretical discussion.....	44
5.2 Managerial and theoretical implications.....	48
5.3 Limitations and future research.....	50
References.....	52
Appendix.....	68

## List of Appendix

Appendix 1.0	Measurements of constructs.....	68
Appendix 1.1	General attitudes.....	68
Appendix 1.2	PBC.....	69
Appendix 1.2.1	Convenience and availability.....	70
Appendix 1.2.2	Price and value.....	70
Appendix 1.2.3	Knowledge related to fish.....	71
Appendix 1.3	Variety seeking tendency.....	72
Appendix 1.3.1	Variety seeking tendency as a general personality trait.....	72
Appendix 1.3.2	Variety seeking tendency related to food.....	73
Appendix 1.4	Variety seeking behaviour.....	74
Appendix 1.5	Health involvement.....	75
Appendix 1.6	Perceived risk.....	76
Appendix 1.7	Fish consumption frequency.....	77
Appendix 1.7.1	Fish consumption frequency in general.....	77
Appendix 1.7.2	Fish consumption frequency during last two weeks (Recent frequency)....	77



### List of Figures

Figure 2.1: The general and simplified model of variety seeking behaviour..... 6  
Figure 2.2: The proposed conceptual model and hypothesis.....25  
Figure 4.1: Standardized regression coefficients of proposed model including  
t-values in the parentheses.....37

### List of Tables

Table 3.1: Socio- demographic characteristics of the sample.....27  
Table 4.1: Standardized confirmatory factor analysis coefficients and  
construct reliability.....34  
Table 4.2: Construct mean, standard deviations, and correlations of the constructs.....36  
Table 4.3: Results of hypotheses tests and structural model.....38  
Table 4.4: Standardized confirmatory factor analysis coefficients and reliability of the  
attributes of perceived behavioural control construct.....41  
Table 4.5: Correlation of attributes of perceived behavioural control construct.....42  
Table 4.6 Results of the attributes of Perceived Behavioural Control forming model.....42

## 1.0 Introduction

The staple food of Sri Lankans is rice which is consumed with curries both vegetable and fish based. Fish is considered as a main and preferred source of animal protein in Sri Lanka (Wijeratne and Maldeniya, 2003). Based on Food Balance Sheets data provided by FAO, in 2007 annual per capita consumption of fish and seafood was 21.7 kilograms while per capita consumption of poultry meat, pork and eggs being 5.2 kg, 0.1 kg and 2.2 kg respectively. In line with FAO statistics, when compared to other animal protein sources, fish is the most prominent source of protein among Sri Lankans.

In Sri Lankan water, major caught fish and seafood species are Spanish mackerel (*Scomberomorus commersoni*), trevally (*Caranx ignobilis*), skipjack tuna (*Katsuwonus pelamis*), yellow-fin tuna (*Thunnus albacares*), other tuna species (ex: *Thunnus abesus*), sharks (*Isurus* spp., *Alopias* spp. etc), skates (*Dasyatis* spp. etc), rockfish (ex: *Lathrinus olivaceus*), shore seine species (ex: *Amblygaster sirm*, *Stolephorus* spp), prawns (ex: *Penaeus indicus*, *Penaeus monodon*) and lobsters (ex: *Panulirus homorus*, *Panulirus ornatus*) (FAO, 2004). Sri Lankans are expert in preparing various types of fish dishes using different variety of fish. There are plenty of variations in fish curries across the country. Sri Lankans have their own distinguish style of cooking fish curries. One of the very popular dishes is Southern “*Ambul Thiyal*” or sour fish curry.

In consumer behaviour, variety plays a usual part of food choice behaviour (McAlister and Pessemier, 1982; Hoyer and Ridgway, 1984). When there is a possibility of variation exists, normally people do not eat same food item every day (Koster *et al.*, 2002, p. 165). Authors from different disciplines (Cabanac, 1971; Rolls *et al.*, 1981; Van Trijp, 1994) have shown that the necessity of searching real variation in appreciation of foods by the consumers. Variation in seafood consumption is occurred as a result of different types of food related, personal and situational factors (Rozin and Tuorila, 1993; Olsen, 2004).

Evidences suggest that properties of the food i.e. quality and sensory attributes play a dominant role in seafood product choice and consumption (Leek, Maddock and Foxall, 1998; Dopico, Olsen and Tudoran, 2007). Food choices are greatly influenced by a number of situational factors such as convenience (Candel, 2001; Olsen *et al.*, 2007), availability

(Burger, Stern and Gochfeld, 2005) and variation of life style (Myrland *et al.*, 2000). The food choice behaviour is highly varied with the motivational factors such as health involvement (Olsen, 2004), hedonic liking (Tuorila and Pangborn, 1988; Lahteenmaki and Van Trijp, 1995), preference (Dopico, Olsen and Tudoran, 2007) and personal traits like variety seeking tendency (Lahteenmaki and Van Trijp, 1995; Van Trijp and Steenkamp, 1992; Van Trijp, 1995) and perceived behavioural control (Olsen, 2004; Ahamed, 2009).

The variety seeking intensity in product choice behaviour is determined by both product related and person-related attributes (Hoyer and Ridgway, 1984; Van Trijp, 1994; Van Trijp, 1995). In general speaking, there are two major kinds of factors i.e. personality traits and motivational factors are able to identify under individual difference characteristics (Hoyer and Ridgway, 1984). In line with literature, Hoyer and Ridgway (1984), defines personality as “the consistent response to environmental stimuli”. Personality traits are stable over time (Matthews, Deary and Whiteman, 2003). Winter *et al.*, (1998) refer motives as “conscious intentions and goals”. A set of specific and inter-related motives which are, in turn, a function of different personality traits may linked together and create a general drive of variety seeking (Hoyer and Ridgway, 1984).

Variety seeking tendency is one of personality traits that explains the degree to which a consumer has an intrinsic tendency to deal with variety seeking behaviour in product choice behaviour (Van Trijp, 1995; Van Trijp and Steenkamp, 1992). Perceived behavioural control is a perception which measure the extent to which performance of the behaviour is within one’s control or is considered to be easy- difficult (Conner, Norman and Bell, 2002; Bruijn *et al.*, 2008). Several studies have been reported the importance of perceived behaviour control towards intention to consume or buying fish/seafood (Olsen, 2004; Olsen *et al.*, 2008; Ahamed, 2009; Birch and Lawley, 2010). According to previous research studies, several basic motives have been identified. As cited by Hoyer and Ridgway (1984), the motivational factors are need for change (in terms of need for new and unfamiliar stimuli, need for excitement and thrills, need for arousal and a preference for irregularity), need for uniqueness, curiosity motive and need for risk, danger and thrill.

In exploring the variety seeking behaviour, the product related attributes coming under objective product characteristics and perceived product characteristics are also vital determinants (Hoyer and Ridgway, 1984). The former category includes stable product

characteristics which do not change according to the person such as number of available alternatives and price of the product. However, latter group involves product attributes determined by the consumer perceptions. For examples; degree of involvement with the product and perceived risk of the product class have a mediating effect on variety seeking (*ibid*).

Although, in consumer behaviour research literature, the concept of variety seeking behaviour has been widely used, only a very few studies (such as study of Hoyer and Ridgway in 1984) has been examined the influence of both product related and person-related characteristics in explaining variety seeking behaviour. Therefore, the purpose of this thesis is to develop a conceptual framework including product related and person-related determinants in which to study the role of variety seeking behaviour on consumers' fish consumption in the context of Sri Lanka.

### **1.1 Research issue and objectives**

Sri Lankans have a remarkable appetite for fish. Nevertheless, eating same variety of fish overtime might become boring and consumers may tend to seek different food and fish varieties. Thus, it is interesting to find out whether Sri Lankans have a variety seeking behaviour when selecting fish for consumption. The first objective of this thesis is:

- i. To determine the extent to which the nature of variety seeking behaviour affects fish consumption frequency

Variety seeking behaviour is caused by individual's intrinsic need for variety (McAlister and Pessemier, 1982) in terms of variety seeking tendency. Variety seeking tendency is derived from more generalized personality trait of Optimum Stimulation Level (OLS) (Van Trijp, 1995; Van Trijp and Steenkamp, 1992). It specifically emphasizes the consumers' tendency of engaging in a certain specific exploratory behaviour which is known as variety seeking behaviour in product consumption (Lahteenmaki and Van Trijp, 1995; Van Trijp, 1995) whereas OLS addresses the exploratory tendencies in behaviour in general (Van Trijp, 1995; Steenkamp and Burgess, 2002). Although, consumer possesses an intrinsic desire for variety seeking behaviour, it might influence by the perceived behavioural control due to both internal control factors (i.e. skills, knowledge, confidence, ability, willpower and compulsion)

and external control factors (i.e. time, opportunity, situation and dependence on others) (Ajzen, 1991; Armitage and Conner, 1999). The second objective of the thesis is:

- ii. To investigate how personality related factors; variety seeking tendency and perceived behavioural control affect the nature of variety seeking behaviour of fish consumption

Attitudes towards consuming fish are strongly favourable among consumers due to predominant healthy image about fish (Olsen, 2003; Trondsen *et al.*, 2004). Specially when family consists with pregnant ladies, small kids and children; Sri Lankans are more associated with health involvement and try to provide a balanced diet including fish (personal observation of the researcher). Although, fish is beneficial for human health; on the other hand, it may contaminate with pathogenic micro-organisms and other environmental hazardous chemicals (Sumner and Ross, 2002). In addition to that, in real life; a number of external constraints such as price (Burger, Stern and Gochfeld, 2005; Olsen, 2004) influence the food choices. Sri Lankan consumers are unable to ignore the price of fish due to its high domestic price.

The third objective of the thesis is:

- iii. To investigate how product and motivational related factors; attitudes, health involvement and perceived risk affect the nature of variety seeking behaviour and fish consumption

Hence, it is important to study the effect of above noted antecedents in case of variety seeking behaviour of fish consumption. The variety seeking behaviour indicates both opportunities and vulnerabilities for marketing people. Therefore, a clear understanding of variety seeking behaviour towards fish consumption is important for marketers in depending or expanding fish market share.

Most of the relevant research studies in explaining food or seafood consumption behaviour have been conducted in developed countries in the Western context. A few studies have been done in the Asian context as well as in other developing countries (Tuu *et al.*, 2008).

Therefore, there is a paucity of literature with respect to empirical investigation that explore the role of variety seeking in fish consumption in less developing countries, to the best of my knowledge, there is no comprehensive analysis carried out in the context of consumers in Sri Lanka regarding this issue.

## **1.2 Method**

A survey was conducted in March 2011 in *Galle* in Sri Lanka, to study the role of variety seeking behaviour in choice of fish consumption and to test the relationships among relevant constructs in the conceptual framework. The sample size was 250 consumers. A questionnaire was designed to assess the consumers' variety seeking tendency, perceived behavioural control, attitudes, health involvement and perceived risk towards variety seeking behaviour in choice of fish consumption. Items to measure the constructs were used or adopted from the previous studies which were found in the literature. To test the reliability, convergent validity and discriminate validity of the measurements, this study applied the confirmatory factor analysis which was conducted using Amos 16.0 software. Thereafter, structural equation modeling (SEM) was employed to test the hypothesized relationships between constructs.

## **1.3 Structure of the thesis**

After this introduction chapter, conceptual framework of the research has discussed. Chapter 2 introduces and discusses the various aspects of the constructs within the framework. Data collection and method are discussed in Chapter 3 focussing on the measurements, techniques for testing reliability and validity, confirmatory factor analysis and structural equation modeling. Chapter 4 presents the results from data analysis and model establishments. At the end, Chapter 5 discusses issues related to the results, practical implications, limitations of the research and suggestions for future research studies.

## 2.0 Conceptual framework

Variety is an important determinant factor in explaining food consumption (Baumgartner, 1998). In marketing literature, boredom with product or need for variation has demonstrated in a choice behaviour model on variety seeking (Van Trijp, 1994; Van Trijp and Steenkamp, 1992; Van Trijp, Hoyer and Inman, 1996). Observable variation on food choice behaviour underlies with a numerous consumer motivations (Van Trijp, 1995). In the analysis of variety seeking behaviour, it is paramount important to recognize these underlying motivations.

In this study, my attempt is to examine the role of variety seeking behaviour on consumers' fish consumption with regards to some product and motivational related factors (perceived risk, attitudes and health involvement) and personality related attributes (variety seeking tendency and perceived behavioural control). The general and simplified model (figure 2.1) can be presented as follows.

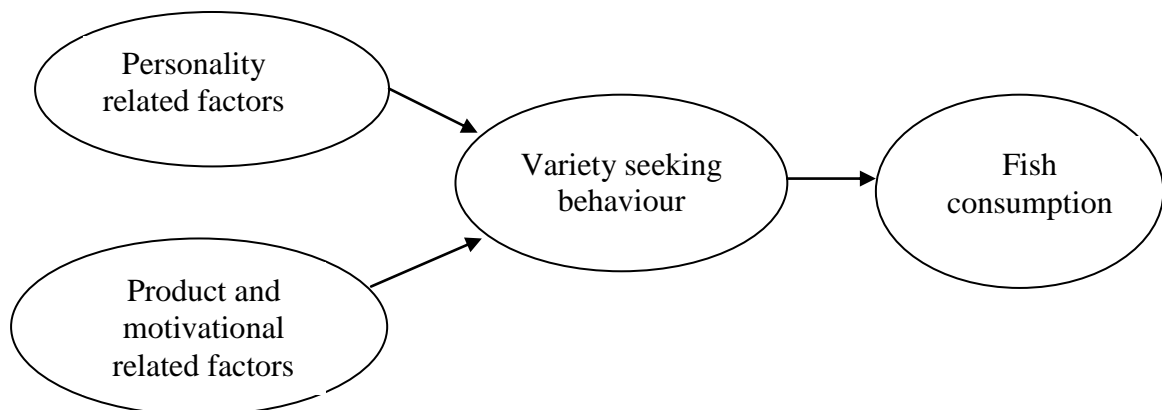


Figure 2.1: The general and simplified model of variety seeking behaviour

### 2.1 Variety seeking behaviour

Researchers have been grappling with the definition of variety seeking behaviour for many years. In 1976, Farquhar and Rao suggested that the variety seeking behaviour is resulted as a consequence of consumer's attempt for searching a balanced product attributes that can optimize his utility. Pessemier (1978) also held the same concept that "variety seeking is an attempt to maintain a balance". Further, he mentioned that it is a manner of achieving a products portfolio for adopting changes in case of uncertainty of future tastes. As cited by Goukens, Dewitte and Anthoens in 2003, Givon (1981) defined variety seeking behaviour "as

individual consumer switching brands (or repeat buying) induced by the utility (or disutility) he or she derives from the change itself, irrespective of the brands he or she switches to or from. So, the motive to seek variety is the utility one gains because of the change per se.” In contrast, Kahn, Kalwani and Morrison (1986), paid less attention about motives while focusing more attention towards behaviour. According to their argument, variety seeking behaviour is occurred as a result of declining the probability of the repeat buying action.

When studying the consumer variety seeking among goods and services, Kahn (1995) defined the variety seeking in purchase behaviour as “the tendency of individuals to seek diversity in their choices of services and goods”. Van Trijp (1995) proposed a definition for variety seeking behaviour as “the biased behavioural response by some decision making unit to a specific item relative to previous responses within the same behavioural category, or to a set of items consumed simultaneously, due to the utility inherent in variation per se, independent of the instrumental or functional value of the alternatives or items, and is a function of psychological processes”.

According to inter-disciplinary review of variety seeking behaviour provided by McAlister and Pessemier (1982), derived motivation and direct motivation are two distinguish psychological explanations for variety seeking behaviour. The direct motivation leads to a varied behaviour as a result of a desire for changing per se because of interpersonal and intrapersonal motives. The derived motivation relates to some other motivations which do not directly relate to a desire for variety but occur due to multiple needs, multiple users or multiple situations or resulting from changes in the feasible set of alternatives.

Both Jeuland (1978) and McAlister (1982) mentioned that when a consumer is satiated with a product’s attributes, finally it would result the variety seeking behaviour. Boredom with the choice task, attribute satiation and curiosity have identified as three underlying psychological processes for variety seeking behaviour in product consumption (Van Trijp, 1995). The consumer may become bored with the attributes repeatedly offered by a certain brand or with the repeated inherent monotonous choice in consumption of the same brand that influence the switching behaviour (Howard, 1989).

Many studies have shown that repeated consumption of a food product, change the consumers’ opinions about that product (Schutz and Pilgrim, 1958; Siegel and Pilgrim, 1958;



Kamen and Peryam, 1961; Rolls and De Waal, 1985; Vickers and Holton, 1998; Porcherot and Issanchou, 1998); in most cases result in a remarkable increase of boredom over longer periods of time (Zandstra, Graaf and Van Trijp, 2000). According to Keon (1980), repetitive buying of same brand may stimulate uncertainty about the other non-selected alternative brands. In this situation, even a consumer with high brand loyalty may also feel uncertain about selecting the best possible alternative brand even though he is already satisfied with a particular brand choice. Variety seeking behaviour can be employed to minimize this type of uncertainty induced curiosity for non-selected product alternatives (Van Trijp, 1995).

According to proposed framework of Hoyer and Ridgway (1984), exploration of product purchase occurs as a function of two important factors i.e. product related characteristics and individual-difference characteristics. They suggested that although an individual person has a variable level of motive that represents the need for variety as a whole, however, the product class that he chooses to satisfy this inherent desire depends on certain product attributes. Further, they argued that “variety seeking is a general drive which is expressed in only a subset of product-specific situations (i.e. an individual x product interaction)”.

When time is considered as a dimension, two types of variety seeking behaviour can be introduced such as temporal variety seeking behaviour and structural variety seeking behaviour. Time plays a central role in the analysis of temporal variety seeking behaviour. Underlying assumption of temporal variety seeking behaviour is that consumers obtain variety by preparing different choices at various situations over time. In contrast, consumers choose a variety of items at any special consumption situation in order to satisfy their desire for variety in case of structural variety seeking behaviour. As time dimension plays a less dominant part in this type of variety seeking behaviour, consumers may stimulate to choose a set of various items rather than a single item at any particular time (Van Trijp, 1995).

Variation in fish consumption can be introduced covering number of aspects including different cooking methods, kinds of fish species consumed, types of meal (breakfast/ lunch/ dinner), various kinds of conservation methods etc. Sri Lankans prefer to consume different fish dishes (i.e. cooked fish using spices adding more chilli or coconut milk, *ambul thiyal*, oil fried, oven baked, soup...etc) using different fish species (skipjack tuna, yellow-fin tuna, Spanish mackerel, Wahoo, sword fish, big - eye tuna, mackerel sharks, trenched sardinella,

rock fish, anchovy...etc). However, types of fish variety selected for consumption depend on the living region (personal observation of the researcher). Although, Sri Lankans have a huge appetite for fresh fish consumption, other forms of conservation methods such as frozen, dried (maldive fish), canned, salted fish are popular among them.

In case of my research purpose, I consider temporal variety seeking behaviour as it is associated with only a single food item; fish. Further, variety seeking behaviour towards fish has explained including the variation of fish species, fish dishes and fish conservation forms. In line with Hoyer and Ridgway's (1984) proposed propositions, I describe variety seeking behaviour as the desire for a new and novel stimulus resulting from product related and person-related attributes.

### **2.1.1 The effect of variety seeking behaviour on fish consumption**

Kahn, Kalwani and Morrison (1986) tested a variety seeking and reinforcement behaviour on five products classes i.e. sandwich bags, wraps, margarine and butter, cereals and soft drinks. Their result offered an interesting finding in which they examined a variety seeking behaviour across all the brands of the cereal category (brands analyzed: Cheerios, Rice Krispies, Kellogg's corn flakes, Shredded wheat and Wheaties). However, Shredded wheat possessed a higher variety seeking parameter. According to suggested possible explanation, this variation appeared due to less-similarity feature of Shredded wheat compared to other cereal types. In case of soft drink product category, for cola drinks (Coca-Cola and Pepsi) some consumers are more loyal to a given brand of cola while some are variety seeking in behaviour. In contrast, non-cola soft drinks (7-Up and Sprite) seem to be variety seeking beverages as those types of soft drinks induce variety seeking behaviour.

In an experimental research related to expressed variety in sandwich choices carried out by Lahteenmaki and Van Trijp (1995), sandwiches with eight different sandwich fillings were supplied to the participants and asked to freely choose from the eight types during six lunch sessions which took place within two weeks. According to their result, variety seeking was not significantly related to the choice variation in sandwich filling. However, there was a high variation within session while showing a poor variation between sessions. In other words, the participants consumed different fillings in one session but did not change their choices from

one session to another. Both within and between sessions, the relationship between consumption variation and total consumption was significantly negative.

My logical reasoning is that, if a consumer has a desire for consuming different fish dishes which prepared in different cooking methods, using different fish species available in different forms of conservation methods; even though, they switch among these varied choices; ultimately it will enhance the fish consumption. Therefore, I propose a hypothesis;

**H 1:** Variety seeking behaviour has a direct positive effect on fish consumption frequency

## **2.2 Variety seeking tendency in a food context**

Variety seeking tendency of a consumer is thought to be a one of the major determinants of variety seeking behaviour (Van Trijp, 1995) which arises due to inherent desire for variety (McAlister and Pessemier, 1982; Raju, 1980). Consumers' variety seeking tendency refers to the personality trait which represents the degree to which a consumer engages in variety seeking behaviour in the product choice due to his or her intrinsic desire for real variation as a way of bringing the actual level of stimulation experienced in life which is closely correspondence with the consumer's Optimum Stimulation Level (Van Trijp, 1995). Variety seeking tendency is closely linked with OSL as it is a derivative of the value kept on removal of boredom, alleviation of attribute satiation and satisfaction of curiosity (*ibid*). Although, variety seeking tendency is suggested as one-dimensional construct, it represents various kinds of exploratory behaviour focused at the control of real level of stimulation in line with the most preferred level (Raju, 1980). "Consumers differ in the extent to which they engage in variety seeking behaviour, partly because they differ in preferred level of stimulation" (Van Trijp, 1995).

Further, Van Trijp (1995) defines the construct of variety seeking tendency with respect to food as "the motivational factor that aims at providing variation in stimulation through varied product consumption, irrespective of the instrumental or functional value of the product alternatives". Variety seeking tendency with respect to food is conceptualized as a domain specific personality trait (*ibid*). For my research purpose, I suggest variety seeking tendency as a consumer specific personality trait of the individual that specifically grasp consumers' intrinsic desire for variety of food consumption.

VARSEEK scale is a valid instrument to assess the consumer's variety seeking tendency with respect to foods in applied settings (Van Trijp and Steenkamp, 1992). Therefore, the VARSEEK scale is a domain-specific tool in the context of food consumption. Van Trijp, Lahteenmaki and Turorila (1992) used this scale successfully to explain some of the diversity reported in cheese consumption among Finish consumers. This study also will measure the variety seeking related to food using the VARSEEK scale.

An individual's Optimum Stimulation Level is a key construct of personality which influences the degree to which an individual deals with exploratory behaviour (Zuckerman, 1979; Steenkamp and Burgess, 2002). In 1964, Garlington and Shimota introduced a tool; known as Change Seeker Index (CSI) to assess Optimum Stimulation Level. A shortened version of Change Seeker Index is developed by Steenkamp and Baumgartner (1995) which can be effectively applied for variety seeking studies. Because it includes a scale of measuring variety seeking tendency with respect to food where foods have been recognized as a major category of product in which variety seeking behaviour is explored (*ibid*). This CSI scale can be used to measure both general traits such as arousal seeking tendency and curiosity trait and more specific traits including variety seeking tendency with respect to food (*ibid*).

The theory is that the general tendency influences the specific tendency; thus, the general tendency is less related to specific variety seeking behaviour than the specific tendency related to food (Van Trijp, 1995). However, it can be an empirical question of food tendency influences fish variety behaviour because consumers can vary between food categories as well. However, the general scale should be positively related to both food variety seeking tendency and variety seeking behaviour.

### **2.2.1 Variety seeking tendency and variety seeking behaviour**

In the variety seeking behaviour conceptual model, the construct of variety seeking tendency which is clearly separated from the variety seeking behaviour (Hirschman, 1980) implying the positive intrinsic desire for variety associated with the variety seeking behaviour while other antecedents such as perceived behavioural control, health involvement, perceived risk and attitudes also determine the actual occurring of variety seeking behaviour.

The variety seeking tendency is believed to be related to OSL which implies that consumers try to experience an optimal level of variation through various food choices (Lahteenmaki and Van Trijp, 1995). Variety seeking tendency tries to provide stimulation variation via consumption of various food products (Van Trijp and Steenkamp, 1992). Consumers with a higher variety seeking tendency are more likely to engage in variety seeking behaviour rather than those having a lower variety seeking tendency (Van Trijp, 1995).

A research experiment related to variety seeking tendency and choices were examined in several lunch occasions allowing young consumers to freely chose and eat sandwiches from a range of eight fillings. Contrast to the expectation, from this experiment Lahteenmaki and Van Trijp (1995) found that the variety seeking tendency was not related to expressed variation in choices of sandwich in a positive way. Empirical studies have made comparisons of variety seeking tendency across various product categories (e.g. Kahn, Kalwani and Morrison, 1986; Bawa, 1990; Simonson, 1990; Pessemier and Handelsman, 1984; Raju, 1984 Van Trijp and Hoyer, 1991; Van Trijp, Lahteenmaki and Tuorila, 1992; Lahteenmaki and Van Trijp, 1995) and revealed that there is a substantial difference across product categories. These results strongly emphasize that individuals do not consistently seek variety across all the product categories but some product categories are perceived to be more appropriate for explaining the variety seeking tendency than other product categories (Van Trijp, 1995).

Basically, value derived from variety underlies the variety seeking tendency of the consumer. The consumers high in this personality trait feel positive value from the variety. On the other hand, consumers who are lack of variety seeking tendency do not like gain positive value from the variety. Thus, a general variation tendency (personality) should influence a more specific variation tendency (food). Therefore, based on previous research findings (eg: Van Trijp, 1995) following hypotheses are suggested.

**H 2a:** Variety seeking tendency with respect to food has a direct positive effect on variety seeking behaviour towards fish consumption

**H 2b:** Variety seeking tendency as a general personality trait is positive related to variety seeking tendency related to food

### 2.3 Perceived Behavioural Control (PBC)

Perceived Behavioural Control (PBC) is defined as the person's beliefs as how easy or difficult in performing the behaviour (Ajzen and Madden, 1986; Ajzen, 1991; Olsen, 2004; Bruijn *et al.*, 2008). Beliefs related to resources and opportunities may be indicated as underlying determinants of perceived behavioural control (Ajzen and Madden, 1986). Similarly, Chiou (1998) views PBC as a reflecting variable of beliefs with regard to access of resources and opportunities which needed to perform a certain behaviour. Two main components of this construct has have been identified; the first component indicates the availability of resources required to engage in the behaviour such as access to money, time and other resources while the second component refers the individual's self-confidence in conducting the particular behaviour (Ajzen, 1991: 2001; Mahon, Cowan and McCarthy, 2006). If an individual thinks that s/he has more resources and opportunities with fewer anticipated obstacles or impediments, then, it is assumed to be that s/he has a greater perceived control over the behaviour (Olsen, 2004).

Ajzen (1991) proposed that control factor can be either internal or external to the person. Internal control describes the behaviour which is internally controllable when a person perceives a control over his / her personal resources such as skills, knowledge, confidence, ability, willpower and compulsion (Ajzen, 1991; Armitage and Conner, 1999). Individuals with greater perceived internal control show a greater likelihood of performing a certain behaviour (Kidwell and Jewell, 2003). External control refers the behaviour which is externally controllable when an individual perceives relatively free from external influences which can be act as a barrier towards performing the behaviour (*ibid*). External control factors can be time, opportunity, situation and dependence on others (Ajzen, 1991).

PBC together with behavioural intention is possible to make direct prediction of behavioural achievements; as the PBC influences intention as well as behaviour (Ajzen, 1991). Further, PBC can be served as an independent predictor of behaviour when the behaviour is not fully under the volitional control of the individual (Ajzen, 1991: 2001; Chiou, 1998; Notani, 1998). According to Notani (1998), whenever PBC measure is more accurate, more stable or both, it should act as an important predictor of behaviour.

In the literature, different dimensions of the PBC related to intension and behaviour of fish consumption have been investigated. According to Olsen (2004), price/ cost, convenience/ availability and knowledge are the most important control factors that influence consumers' buying behaviour of seafood. Ahamed (2009) also examined the personal control over eating fish including price/cost, availability and convenience as major determinants of PBC. Fish consumption frequency and purchase intention of Australians are influenced by PBC in terms of habits, past experiences/ familiarity, knowledge and confidence and availability/ variety/ price associated with the fish consumption (Birch and Lawley, 2010).

In this study, PBC construct is defined as an integrated component of internal and external control factors that consumer may perceive its easiness or difficultness in performing variety seeking behaviour in fish consumption. Further, it examines the price/cost, availability and knowledge for variation as major determinants of PBC over variety seeking behaviour in fish consumption in Sri Lankan context.

### **2.3.1 Perceived behavioural control and variety seeking behaviour**

Although, several research studies under Total Planned Behaviour have been demonstrated the influence of perceived behaviour control towards intention to consume or buying fish (e.g. Olsen, 2004; Tuu *et al.*, 2008; Olsen *et al.*, 2008; Ahamed, 2009; Birch and Lawley, 2010), to my knowledge, no study has investigated the relationship between perceived behavioural control and variety seeking behaviour. However, it is possible to argue and propose a relationship in between these two constructs.

If an individual possesses an internal and external control for seeking variety, even though s/he has a true desire for variation, variety seeking behaviour may be controlled. For an example; if fresh fish species are unavailable in the market, consumers are unable to do variety seeking. Fish consumption has been reported to be positively related to the availability of fresh fish (Shepherd and Sparks, 1994; Scholderer and Grunert, 2001). In Sri Lankan context, fish is considered as an expensive food item, price of fish acts as a barrier (Olsen, 2004; Verbeke and Vackier, 2005) for variety seeking behaviour in fish consumption. These types of behavioural controls occur as a result of external control.

Also, internal control factors such as lack of knowledge to prepare various fish dishes may negatively affect the variation of fish consumption. Knowledge is considered as an internal recourse of a person and linked from quality evaluation of fish in the market place to preparing or cooking to a final meal (Olsen, 2004). To prepare delicious fish dishes, consumers should have sound cooking skills (Scholderer and Grunert, 2001; Trondsen *et al.*, 2003). Therefore, based on above argument, PBC of an individual is expected to be negatively influence the variety seeking behaviour.

**H 3(a):** Perceived behavioural control has a direct negative effect on variety seeking behaviour

**H 3(b):** Perceived behavioural control is related to convenience/ availability, price/ value and knowledge

## 2.4 Attitudes

Attitudes are suggested to be the most important driver of food consumption behaviour (Shepherd and Raats, 1996; Shepherd, 1999), including choice and consumption of fish and seafood (Olsen, 2003: 2004; Rortveit and Olsen, 2007; Verbeke and Vackier, 2005; Ahamed, 2009; Jayampathi, 2010; Rajani, 2010; Cong, 2010). Fishbein and Ajzen define attitudes as “A learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object” (1975, p. 10). Most of the attitude theorists well accept that evaluation as one of the fundamental features of attitude (Olson and Zanna, 1993). In the literature, attitude is viewed as a psychological tendency which is indicated by evaluating a particular entity (i.e. a food product) with respect to a certain level of favor/ disfavor, satisfaction/ dissatisfaction, like/ dislike or good/ bad polarity (Eagly and Chaiken, 1993). Ajzen (2001) also describes attitude as a “summary of evaluation of a psychological object captured in such attribute dimensions as good-bad, harmful –beneficial, pleasant-unpleasant, and likable-dislikable”. Although, attitude construct is expressed in different ways, it shares a common term; “object”. In fact, the term “object” is applied in a very expansive sense, covering the aspects of sensory features (colour, odour), concrete objects (fish/seafood, persons), actions (eating, buying, selling), abstract concepts (values) (Olsen, 1999; Honkanen *et al.*, 2004).



Attitudes can be categorized and assessed in two different ways; as a global evaluation and/or based on different beliefs (Aikman and Crites, 2007). Fishbein and Ajzen (1975) stated that global evaluation of an object is produced by salient beliefs. According to Ajzen (2001), salient beliefs should be the key determinants of attitudes, as they are the most frequently represented outcomes in each individual. Steptoe, Pollard and Wardle, (1995) has suggested that taste, distaste (negative affect) and nutrition are the most salient food attributes of forming a general food evaluation while quality and freshness are important food attributes in case of seafood evaluation (Olsen, 1989; Grunert *et al.*, 1996).

Preference is suggested to be a property of attitude (Olsen, 1999: 2003) and often assessed by liking-disliking. When food is explained either positive or negative way, taste preferences appear to be the most remarkable criteria (Shepherd, 1989). Similarly, Steptoe, Pollard and Wardle, (1995) proposed that taste or distaste (negative affect) and being a nutrient food are the most crucial features of forming a general food evaluation. Taste is an issue of preferences (Olsen, 2004). Consumers' taste varies (Rozin, Ebert and Schiller, 1980; Rozin, Ebert and Schull, 1982) with the time. Many empirical evidences reveal that taste is one of the most important criteria in explaining motivation for purchasing and consuming seafood (Gempesaw *et al.*, 1995; Neuman *et al.*, 1995; Bredahl and Grunert, 1997; Olsen, 2001). In contrast, some studies have been found that in most cases, taste and texture play a less prominent role in explaining relationship between consumers and fish products (see Leek Maddock and Foxall, 2000). According to, Dopico, Olsen and Tudoran (2007), one of the responsible principal factors of product rejection is associated with sensory or hedonic dimension; sensory properties of the product, often its taste, appearance (colour, shape, defects, and homogeneity), smell, texture or consistency.

In the literature, nutritional aspects are considered to be the second most important product attribute after sensory aspects and taste (Letarte, Dube, and Troche, 1997; Roininen, Lahteenmaki and Tuorila, 1999). In the US, nutritional value and health consideration are considered to be important determinants of shrimp and cod purchasing (Kinnucan, Nelson and Hiariey, 1993). When determining the quality of fish/ seafood, degree of freshness is the prime determinate (Olsen, 2004). In this respect, frozen fish are considered as non-fresh, bad quality, tasteless, watery and boring (Olsen, 1998). In most countries, consumers indicate the effect of price level when making fish purchasing decision as fish is perceived to be expensive (Brunso, 2003; Olsen, 2004). Being a high valued food product in many parts of

the world, intention of purchasing food/ fish is influenced by the price issue (Olsen, 2004; Pertovici *et al.*, 2004; Verbeke and Vackier, 2005).

According to attitude theory, there are two different forms of definitions and assessments i.e beliefs or attribute evaluation and global evaluation are essential to evaluate the attitudes (e.g. Eagly and Chaiken, 1993; Fishbein and Ajzen, 1980). In this study setting, I define and assess attitudes based on general evaluation of attitudes towards consuming fish in the Sri Lankan context.

#### **2.4.1 Attitudes, variation and consumption**

Changes in taste occur in terms of preferences and it frequently visible in some product classes such as food (Simonson, 1990). Some consumers love to consume some sort of seafood while others do not like. Significant reasons for lack of motivation or poor willingness to consume seafood are present of bones and unpleasant smell (Olsen, 1989; Marshall, 1993; Bredahl and Grunert, 1997; Leek, Maddock, and Foxall, 2000). Generally, compared to meat products, seafood is less preferred and consumed in most countries (Letarte, Dube and Troche, 1997). In contrast, fish is the most preferred and used seafood product in Sri Lanka.

Several studies have proof the positive relationship between attitudes towards eating fish and the consumption frequency of fish (e.g. Olsen, 1999: 2003: 2004). When consumer possesses more positive attitudes towards fish, it will more likely to increase fish consumption frequency. Based on above discussion, following hypothesis is suggested.

**H 4:** Attitude has a direct positive effect on fish consumption frequency

Goukens *et al.*, (2007) reveals that increased attractiveness of soft drinks is highly responsible for the increase in variety seeking. According to the experiment of Lahteenmaki and Van Trijp (1995), in case of expressed variety in sandwich choices, respondents showed a favour for the best-liked sandwich choices while ignoring the least-liked choices depending on their hedonic responses experienced from the last session. Further, their result revealed that repeated experience with the several choice options has increased the consumers'

evaluation ability on liking based on their previous experience due to pure hedonic responses to the choices. Additionally, they suggested that when a consumer allowed to do a free choice in the absence of external constraints, they seem to express their expected hedonic pleasure which is arisen from the choices.

Previous studies regarding fish consumption, attitude has been exhibited to be the variable which mostly contributes to variation in consumption (Olsen, 2003; Olsen *et al.*, 2007; Verbeke and Vackier, 1995; Rortveit and Olsen, 2007). Based on these findings, we can argue that eating a certain variety of fish for a longer time period, leads to a situation where individuals change his or her attitudes derive from the food attributes. It may create a desire for tasting new varieties. Therefore, in my study following hypothesis is proposed.

**H 5:** Attitude has a direct positive effect on variety seeking behaviour

## 2.5 Health involvement

The concept of involvement has been widely used in the research literature of consumer behaviour. Zaichkowsky (1985) defined the involvement as “a person’s perceived relevance of the object based on their inherent needs, values and interests”. When explaining consumers’ buying behaviour and consumption decisions, involvement has been proof its significant effect in general (Zaichkowsky, 1985; Beharrell and Denison, 1995; Marshall and Bell, 2004; Verbeke and Vackier, 2004) and fish consumption in particular (Juhl and Poulsen, 2000; Olsen, 2001). Beldona, Moreo and Mundhara (2010) have recently tested the relationship between involvement and variety seeking.

Xuan (2009) defined the health involvement as an important and personally related involvement which is attached to health issues depends on personal inherent values, needs and interests. Based on Zaichkowsky’s definition and Xuan’s definition, for my study purpose, health involvement is defined as perceived personal relevance and importance attached to the health matters, based on the consumers’ inherent needs, values and interests towards a healthy and nutritious life.

In several research studies have been shown that nutritional dimensions are the second most important feature of the food product after taste and other sensory aspects (Letarte *et al.*,

1997; Roininen *et al.*, 1999). Fish is an important source of nutrient which is rich in protein, retinol, minerals (iodine, selenium, calcium and iron etc.), vitamins (vitamin A, B, D and E) and essential long-chain polyunsaturated fatty acids such as omega-3. Omega-3 fatty acids receive from fish consumption reduce cholesterol level and minimize the occasions of getting heart stroke, heart diseases and preterm delivery (Anderson and Wiener, 1995; Daviglus, Sheeshka and Murkin, 2002; Patterson, 2002). Nutrition is a paramount important food attribute in combination with health involvement and healthy eating (Olsen, 2004).

Literature shows that motivational aspects such as health concerned or the importance of healthy eating are more suitable factors than belief i.e. fish is healthy in explaining fish consumption (Gempesaw *et al.*, 1995; Olsen, 2001). Elderly people are more health concern than younger generation and involved in healthy eating (Roininen *et al.*, 1999; Olsen, 2003). However, Foxall, Leek and Maddock (1998) found that involvement in healthy eating is not the most important reason for buying fish as a healthy diet can be prepared using various food items but not including fish (Gempesaw *et al.*, 1995; Olsen, 2001) due to some other reasons such as disliking or because of allergic reaction to fish or seafood (Brunso *et al.*, 2007).

### **2.5.1 Health involvement, variety and consumption**

Perceived health importance accomplished with fish products does not describe the variation in fish consumption as almost every consumer has a belief on health benefit of fish consumption (Olsen, 2001; Bredahl and Grunert, 1997). Consumers who consume more fish and even consumers with low consumption of fish possess the same perception when evaluating fish as a healthy food irrespective to their consumption level (Olsen, 2003). Therefore, although the consumers' image towards fish is predominantly healthy (Olsen, 2003; Trondsen *et al.*, 2004), health involvement does not always act as a stimulator to purchase and consume fish or seafood (Pieniak *et al.*, 2008).

Nevertheless, several studies have been reported that frequency of product usage in case of fish is positively influenced by product involvement (Foxall, Leek and Maddock, 1998; Juhl and Poulsen, 2000). Additionally, when explaining frequency of fish consumption and intention to consume fish, food involvement or perceived importance combined with food has been reported as one of the significant determinants of consumer behaviour (Verbeke and Vackier, 2004: 2005). Impact of health involvement towards consumption of seafood has

been shown a positive relationship (Olsen, 2001 and 2003). Furthermore, Olsen (2004) found that when compared with other food items, seafood consumption is highly driven by health involvement. According to his findings, consumers' demand for healthy meals with variation in foods can be served by seafood consumption. When the consumer is more health concern and engage in health involvement, they prefer to eat fish. Therefore, based on above discussion following hypothesis is proposed.

**H 6:** Health involvement has a direct positive effect on fish consumption frequency

Some studies have shown the necessity of focusing the relationship between the health involvement and different fish species (Pieniak *et al.*, 2008). Although, the relationship between health involvement and fish consumption has been reported previously in several research studies, to my knowledge, no study has investigated the linkage between health involvement and variety seeking tendency or variety seeking behaviour in case of fish consumption. However, according to research experimental work of Roosen *et al.*, (2007), it has shown that after revealing of health information about sardines as a healthier product which contains more omega-3 fatty acids and less amount of methyl-mercury, consumers showed their favour towards sardine who were earlier endowed with tuna consumption.

A large body of scientific evidence suggests that diets high in total fat, saturated fat and cholesterol and low in fibre and complex carbohydrates are related with certain diseases such as coronary artery disease, stroke, diabetes and certain types of cancers (Healthy people, 2000 as cited by Kennedy *et al.*, 1995). As a result, dietary guidelines have been emerged in order to improve public health in terms of improving nutritional status and improving dietary patterns. Therefore, it is clear that people make variation in food consumption (Baumgartner, 1998) as dietary variety is essential to maintain a sufficient intake of macro and micro nutrients (Kant, 1996; Krebs *et al.*, 1987 as cited by Kennedy *et al.*, 1995). Hence, people try to balance their diet throughout the day and across meals over time (Meiselman, 2000). Kennedy *et al.*, (1995) introduced a Healthy Eating Index related to diet quality incorporating nutrient needs and dietary guidelines which helps to monitor the changes of consumption patterns. When consumers are more health concern, they may exhibit variety seeking tendency with respect to food and try to gain a balanced, nutritious diet as a result of food variety seeking. In line with these logical reasoning and experimental evidences, I would like to suggest following hypotheses.

**H 7 (a):** Health involvement has a positive direct effect on variety seeking behaviour

**H7 (b):** Health involvement has a positive direct effect on variety seeking tendency related to food

## 2.6 Perceived risk

The concept of risk plays an important role, when consumers make choices (Hoover, Green and Saegert, 1978; Grewal, Gotlieb and Marmorstein, 1994; Mitchell, 1999). Further, Conchar, Zinkhan, and Peters (2004) mentioned that the concept of risk as one of the main propositions in consumer behaviour studies. Decisions related to risk are often associated with choices among alternatives because each choice is varied due to different attributes including the risk associated with the product (Fischhoff, Watson and Hope, 1990).

Risk is defined as “a combination of the probability, or frequency of occurrence of a defined hazard and the magnitude of the consequences of the occurrence” (HMSO, (1995) as cited by Angulo and Gil, 2007). The risk is being considered as a multidimensional construct (Yuksel and Yuksel, 2007). Although, risk is being defined in different ways, in the marketing literature, it is conceptualized into two distinct components as uncertainty and consequences (Cunningham, 1967; Cox, 1967; Jacoby and Kaplan, 1972; Hansen, 1976; Dowling and Staelin, 1994). In the literature, five types of risk which a buyer must contend have been proposed. These risk types were technical risk, financial risk, delivery risk, service risk and risk related to supplier or customer long-term relationship. In addition to this classification, different forms of risks exist in the literature such as functional, social, financial, performance and psychological risks (Mitchell, 1999; Tsiros and Heilman, 2005; McCathy and Henson, 2005).

The concept of perceived risk emerged in the field of marketing which was originally introduced by Bauer (1960). The definition of perceived risk varies across disciplines with the study context (Dowling, 1986; Fischhoff *et al.*, 1990; Mitchell, 1999). In the modern research area of consumer behaviour, perceived risk has been often taken as an explanatory variable (Srinivasan and Ratchford, 1991). Literature review of perceived risk provides a various conceptualizations of the perceived risk antecedent (Ross, 1975; Gemunden, 1985;

Dowling, 1986). In the field of consumer behaviour, there is no widely accepted definition of perceived risk (Conchar, Zinkhan, and Peters, 2004); being a multidisciplinary concept. However, often researchers of consumer behaviour define the concept of perceived risk as consumer's perceptions of the uncertainty and adverse consequences of purchasing a product (or service).

Overall perceived risk is a combination of two components as product category risk and product specific risk (Dowling and Staelin, 1994). The product category risk is the person's perception of the risk of purchasing "an average product" in the product class. The product specific risk is the perceived risk of the specific alternative being considered. Within such a framework, risk should be associated to a category of products or a particular product. In line with this definition, Tuu and Olsen (2009) also refer the perceived risk as an overall perceived risk of consuming a product category; fish in particular.

Ahamed (2009) also discusses five facets of perceived risk i.e. financial, functional, performance, psychological, social and physical risk in case of fish consumption. For my research study, I define perceived risk as a health risk and financial risk determined by the consumer perception which is associated with the uncertainty of getting harmful micro-organisms and contaminants and advanced consequences arising due to these health hazards; food poisoning and wasting money because of fish consumption.

### **2.6.1 Perceived risk, variety and consumption**

In the recent past, some research work conducted to examine the possibility of achieving recommended dietary level of consuming two portions of fish weekly, including one as a fatty fish, but maintaining the tolerable receiving of chemical contaminants into the body (Smith and Sahyoun, 2005 ; Mozaffarian and Rimm, 2006; Sioen *et al.*, 2008 as cited by Pieniak *et al.*, 2008). According to their findings, potential risks that can be occurred due to eating fish are significantly less when compared with gained health benefits.

In recent years, consumers have been experienced food safety issues such as genetically modified organisms, BSE crisis, avian influenza or methyl mercury contamination in fish (Pieniak *et al.*, 2008). These confronted experiences make anxious feeling about health issues

among consumers (*ibid*). Because of BSE crisis in year 2000, beef consumption was drastically reduced in Europe. According to Yeung and Morris (2006), likelihood of chicken purchase was negatively influenced by perceived risk.

When making rational choice decisions regarding whether to eat fish or not and if fish is selected to consume, then the consumer confronts a matter of what type of fish to eat (Burger, Stern and Gochfeld, 2005). The consumers consider health benefits as well as risk of consuming fish when making consumption choices (Egeland and Middaugh, 1997; Ponce *et al.*, 2000; Knuth *et al.*, 2003). Their choice is not only influenced by their own personal situation (for example: getting pregnant or not) but also relied on availability of different kinds of fish and shellfish and price; in case of many Americans (Burger, Stern and Gochfeld, 2005). Therefore, when consumers feel risk perception (including health risk and financial risk) towards certain choices, it may reduce the frequency of fish consumption. In line with this logical reasoning, I present a hypothesis as following way.

**H 8:** Perceived risk has a direct negative effect on fish consumption frequency

If consumers make a decision to do variety seeking among familiar items, it indirectly says that they would prefer to take a risk which is associated with the uncertainty of having adverse consequences due to consumption of those choices (Chuang, Kung and Sun, 2008). Further, their findings indicate that risk taking is a significant predictor of variety seeking behaviour.

Although fish is beneficial for human health, all fish contain methyl mercury (MeHg) (Myers, Davidson and Strain, 2007). Rice *et al.*, (2000) reported that fish consumption is the only remarkable source of intake of methyl mercury for the general public. The available amount of this contaminant in fish differs greatly and relies on age and dietary habits behaviour of the fish (Myers, Davidson and Strain, 2007). Sharks, marlin and swordfish like larger predatory fish generally contain more MeHg level (Myers, Davidson and Strain, 2007; Mozaffarian and Rimm, 2006). In some fish varieties, certain contaminants are substantially high in amount and cause advanced health impact on consumers when they eat in large portions (Hightower and Moore, 2003; Hites et al, 2004). As cited by Burger, Stern and Gochfeld (2005), in the recent past the United States Food and Drug Administration (FDA, 2001 and 2004) presented



a consumption advisory series in which pregnant ladies and women in childbearing age with the possibility of getting pregnant were advised to limit their fish consumption in case of four types of marine fish varieties i.e. shark, swordfish, king mackerel and tilefish at the same time asking them to reduce their weekly consumption of all other types of low mercury fish up to 12 ounces.

In 1972, some tuberculosis patients in general hospital in Kandy in Sri Lanka, repeatedly developed some food poisoning symptoms which was very similar to histamine poisoning. Doctor Urugoda and doctor Kottegoda investigated this incidence and found that this distressing complex of symptoms occurred after ingestion of skipjack fish. Therefore, medical superintendent of the hospital was advised to supply an alternative variety of fish for the patients who suffered from the tuberculosis (Urugoda and Kottegoda, 1977).

It is interesting to notice that, although several empirical settings have been examined the fish consumption as a function of fish quality, seasonal availability of fish, education level and consumers' income (Bose and Brown, 2000; Trondsen *et al*, 2003), it is very rare to find studies related to price of fish as an exploratory variable for selecting fish varieties for consumption. One such study was carried out by Burger, Stern and Gochfeld (2005) examining the mercury level in commercial fish in the context of New Jersey considering the effect of availability and price of fish. Result of the experiment of Leek, Maddock and Foxall (1998) has shown that although consumers buy polyunsaturated fatty acids (PUFA) fish because of the health involvement associated with fish, other factors such as price needs to be satisfied in order to develop a clear intention to purchase.

Consumers value the money in the expense of seeking varieties and search for fish varieties which can buy at a cheaper price. As there is a risk of wasting money and fear of getting health risk, consumers are reluctant to buy fish varieties which they do not familiar and do not eat regularly (Leek, Maddock and Foxall, 1998). Drawing on result of consumer behaviour literature associated with financial risk and health risk associated with fish consumption, I develop my hypothesis in the following manner.

**H 9:** Perceived risk has a direct negative effect on variety seeking behaviour

**2.7 The proposed conceptual model**

In this chapter, I have discussed and defined each antecedent present in the conceptual model. Overall, the formation of the variety seeking behaviour and how it relates to choice in fish consumption is the main purpose and focus of this thesis; therefore, the most of the discussion has focused on how and why the different constructs are related to the variety seeking behaviour. However, several other relationships are possible. This study has only given a brief discussion of very few of those which is the most important according to the previous studies: health involvement (Olsen, 2001: 2003), attitudes (Olsen, 1999: 2003: 2004) and perceived risk (Mozaffarian and Rimm, 2006; Sioen *et al.*, 2008; Pieniak *et al.*, 2008). The overview of the conceptual model with hypotheses is illustrated in figure 2. 2.

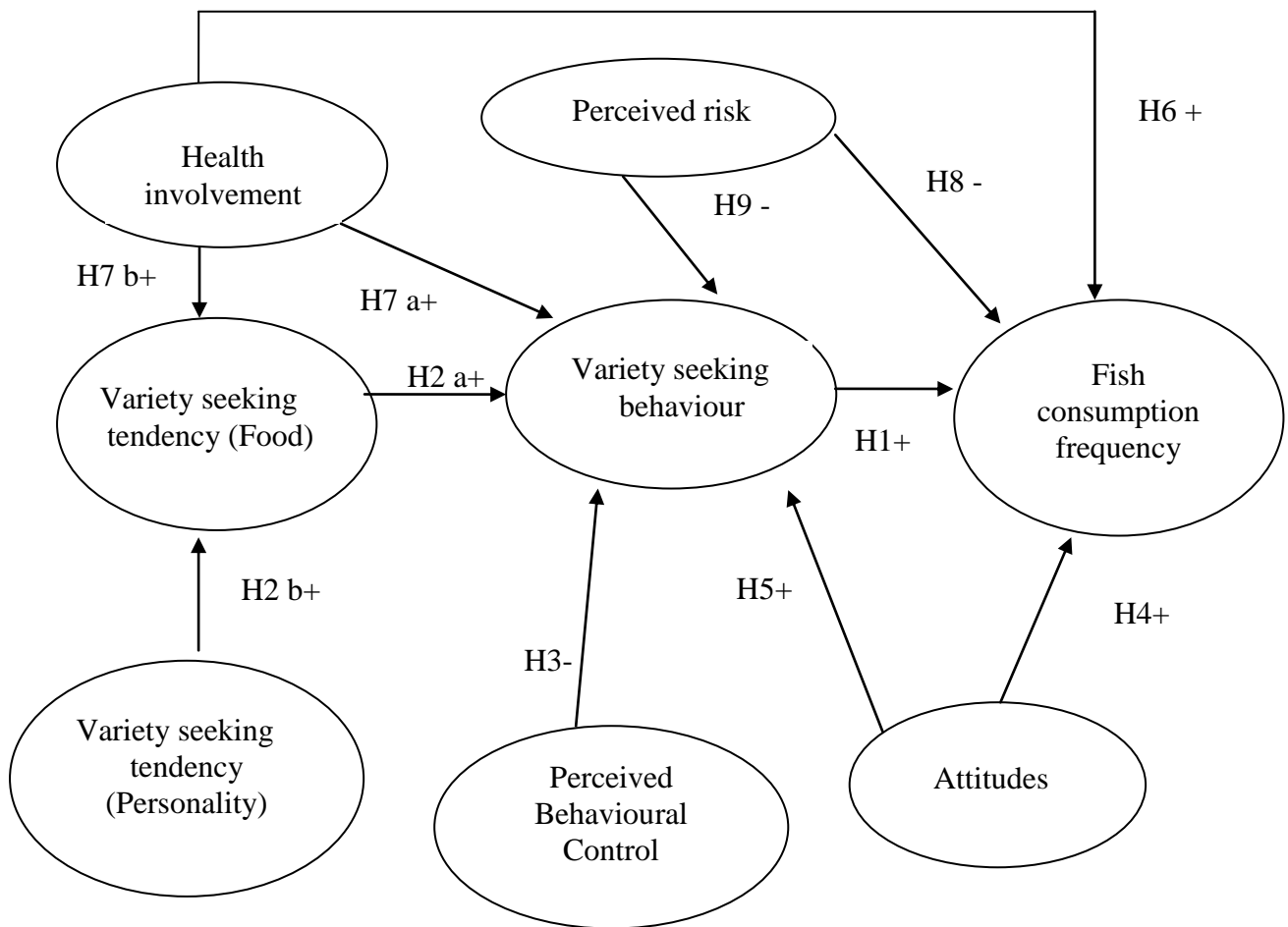


Figure 2.2: The proposed conceptual model and hypothesis

The methodology applied to reach the objectives discusses in the next chapter.

### 3.0 Methodology

The process of data collection, questionnaires and analysis methods are discussed in this chapter. In this session, main emphasis was given for designing items to measure the constructs. Factor analysis, testing for the reliability of constructs and structural equation modeling are the main methods discussed in this chapter.

#### 3.1 Survey design and sample

Sampling methods classify into two broad categories i.e. probability sampling and convenience sampling. The probability sampling design is further classified as Random, Stratified, Cluster and Multistage sampling. Convenience sampling is a non- probability method, ease of access allows this method to use in the research activities (Yu and Cooper, 1983). In this study also the convenience sampling method was used as survey design considering the easy of access to the respondents. In this study, considering the easy of access to the respondents, convenience sampling method was used as survey design.

The consumer survey was conducted in Sri Lanka in March 2011. First of all, the English version of the questionnaire was developed. Then, the English version was directly translated into a Sri Lankan version. In order to identify potential problems with the original translation, the Sri Lankan version was back-translated into English by a different translator. Then, the Sri-Lankan version of final questionnaire was pre-tested using convenience sample of approximately 10 employees of the Ruhuna University in Sri Lanka. After pre-testing, the questionnaire was modified with the given feedbacks and personally delivered the questionnaire to the consumers at their residence or work place. Questionnaires were collected from them at agreed upon time. A convenience sample of 250 respondents was selected from *Galle* district in Sri Lanka and after questionnaire screening, 207 usable questionnaires was obtained from the survey.

The sample of population was mainly focused considering gender, married status, age, education, family size and average income of family per month. In the sample, majority of the respondents were female (84%) as foods are prepared by the female in almost all Sri Lankan families. Seventy three percent respondents were married and the average household size was 4.6 persons. In the sample, average age of the respondents was 33 years while

majority of respondents (82.2%) were less than or at the middle age (45 years). The average family income of the sample was 17 500 Rupees per month (1USD = 110 Rupees). Majority of the respondents in the sample (81.3%) have education level more than high school. The detailed demographic characteristics of the sample is presented in table 3.1.

Table 3.1: Socio- demographic characteristics of the sample (% of respondents, n=207)

Gender	Male	16.0	Family size	1-3 persons	12.6
	Female	84.0		4-5 persons	65.3
				≥ 5 persons	22.1
Education	≤ High school	18.7	Family income Rupees/ month	< 15000	38.6
	> High school	81.3		15000-18000	41.4
				> 30000	20.0
Age	18-30 years	15.0	Marital status	Single	17.0
	31-45 years	67.2		Married	73.0
	> 45 years	17.8			

### 3.2 Measurements and constructs

Measurements items used in this study were either adopted or taken from previous researches in the literature. Seven point Likert scale and semantic differential scale were applied to measure the items of the constructs. The Likert scale requires the respondent to mention that to what extent he or she agrees or disagrees with each of a series of statements about the objects (Malhotra, 2006). The semantic differential scale uses to measure respondents' reactions to stimulus words having bipolar labels with semantic meaning (Malhotra, 2006).

#### 3.2.1 Variety seeking behaviour

In this study, variety seeking behaviour was planned to access in terms of number of fish species, fish dishes consumed and number of conservation forms used to consume. Therefore, variety seeking behaviour was measured using three items; “How many different kinds of fish species have you been eating during the last month? (Tuna, herrings, Yellow fin tuna, etc...)”, “How many different kind of fish dishes have you been eating during the last month?”

(cooked with coconut milk, oil fried ,soup, grilled, etc...)” based on a fifteen point numerical scale and “How many different kinds of conservation forms of fish have you been eating during the last month? (Fresh, frozen, salted, canned, dried, etc...)” using a ten point numerical scale.

### **3.2.2 Variety seeking tendency**

In this study, variety seeking tendency related to food and variety seeking tendency related to personality were considered. Variety seeking tendency related to food was measured using items adopted by the VERSEEK scale (Van Trijp and Steenkamp, 1992) and the study of Kim Anh (2010). The items were assessed on a seven-point Likert scale anchored from ‘Strongly disagree’ (1) to ‘Strongly agree’ (7). The used items were: “When I eat out, I like to try the most unusual food items, even if I am not sure I would like them”, “While preparing foods or snacks, I like to try out new recipes”, “I am eager to know what kinds of foods people from other countries eat”, “Food items on the menu that I am unfamiliar with make me curious”, “I am curious about food products I am not familiar with”, “I find myself eating many of the same foods day after day”, “Most people do not eat as many different foods as I do”, “I do not usually change the food in my diet much from day to day”, “My diet is higher in variety than most people I know”, and “I vary with food, but only with few kinds of food”.

Steenkamp and Baumgartner (1995) introduced short-version of Change Seeker Index (CSI) was employed to measure the construct of variety seeking tendency related to personality. This construct was measured on a seven-point Likert scale ranging from ‘Strongly disagree’ (1) to ‘Strongly agree’ (7) on following items: “I like to continue doing the same old thing rather than trying new and different thing (recoded)”, “I like to experience novelty and change in my daily routine”, “I like a job that offers change, variety and travel, even if it involves some danger”, “I am continually seeking new ideas and experiences”, “I like continually changing activities”, “When things get boring, I like to find some new and unfamiliar experiences” and “I prefer a routine way of life to an unpredictable one full of change (recoded)”. These items have been used in several previous researches such as: Candel (2001), Kahn, Kalwani, and Morrison (1986), Van Trijp and Steenkamp (1992).

### 3.2.3 Perceived behavioural control

Perceived behavioural control is a perception of an individual regarding the difficulties or easiness to perform behavioural intention and engage the behaviour (in this case; variety seeking behaviour of fish consumption) (Ajzen, 1991). This study measured both internal and external control factors that can be inferred from the performance of the act of consumption behaviour. The respondents were asked three questions to measure PBC as : (a) “How much personal control you feel you have over eating fish?”, ranging from No control (1) to Complete control (7)”, (b) “For me to eat fish is”: ranging from Very difficult (1) to Very easy (7)”, and (c) “If I want, I can easily eat fish tomorrow” with endpoints from Very unlikely (1) to Very likely (7). The combination of these types of items are used frequently to measure the perceived behavioural control within domain of consumer psychology and/or social psychology (Tuu *et al.*, 2008) and food or nutrition behaviour (Olsen, 2007; Tuu *et al.*, 2008).

#### *Control belief*

Olsen (2004) found the most important control factors including price/cost, convenience/availability and knowledge that influence consumers’ seafood buying decision. For more detailed investigation of the PBC construct in this study; price/cost, availability/convenience, and knowledge (product knowledge and procedural knowledge) were assumed as the major determinants. The items of availability and convenience constructs “Difficult to buy different fish species” vs “Easy to buy different fish species”, “Difficult to cook in many different ways” vs “Easy to cook in many different ways”, “Different fish species are unavailable” vs “Different fish species are available”, “Not suitable to cooking delicious fish dishes” vs “Suitable to cooking delicious fish dishes”, “Not suitable to prepare many fish dishes” vs “Suitable to prepare many fish dishes” were presented in a seven- points bipolar scale ranging from very bad to very good pole. These items have been used in previous studies (e.g. Ahamed, 2009).

Adopting from Steptoe *et al.*, (1995), this research used four items to measure the attributes of price and cost related to perceived value of fish variation behaviour. The items are “Fish is very expensive”, “I choose to eat fish because it is economical”, “Eating fish is good value of money” and “Eating fish is suitable for my budget”. These items were measured using a

seven - point rating scale anchored from 1: 'Strongly disagree' to 7: 'Strongly agree' while 4 indicates neutral estimation.

As analogous to previous studies (e.g. Chen and Li, 2007), both procedural and product knowledge were used to assess the knowledge which is related to PBC construct. The items used for procedural knowledge are "It is a problem for me to prepare fish" (recoded), "I find it easy to prepare delicious and tasty meals with fish", and "I can prepare many different dishes from fish" while using "I know what kind of fish which is good to eat, and bad to eat", "I know what kind of fish is safe and unsafe to eat", "I know what kind of fish is healthy and unhealthy to eat", "I know that fish I normally purchase are free from chemical preservatives and additives", "I have a lot of knowledge about how to evaluate the quality of fish" and "I have good knowledge about what kind of nutrition fish contains" as items of measuring product knowledge. The respondents were asked to indicate their responses on a Likert scale ranging from 1 = 'Strongly disagree', 4 = 'Neither agree nor disagree' and 7 = 'Strongly agree'.

### **3.2.5 Attitudes**

Globally, attitudes are defined and assessed as a general evaluation, and/ or based on different beliefs (Aikman and Crites, 2007). This study measured only general attitudes associated with fish consumption. As analogous to previous research studies (Olsen, 2003; Verbeke and Vackier, 2005; Tuu *et al.*, 2008; Jayampathi, 2009), the respondents were asked to score the statement "When I eat fish, I feel" on a seven-point semantic differential scale with bipolar adjectives varying from 1 (negative feeling such as Bad/ Unsatisfied/ Unpleasant/ Dull/ Negative) to 7 (positive feeling such as Good/ Satisfied/ Pleasant/ Exiting/ Positive). The semantic differential scales are the most commonly applied instrument to assess the attitudes (Ajzen, 2002; Ajzen and Madden, 1986).

### **3.2.6 Health involvement**

Involvement is often measured by in terms of importance, relevance, caring, concern or interests combined with the attitude object, issue or action (O'Cass, 2000). Often health is considered as an attitude object, therefore health involvement was measured by using three items; "Health is very important to me", "Health means a lot to me" and "I care a lot about

health” (Pieniak *et al.*, 2008) which were developed based on Zaichkowsky’s (1985) involvement scale.

In this study, health involvement was measured with a scale consisted of five items which were used by Honkanen and Olsen (2009) and Jayampathi (2010). In this setting, the used items are “It means a lot to me to have good health”, “Good health is important to me”, “I often think about my health”, “I think of myself as a person who is concerned about healthy food” and “I am very concerned about the health related consequences of what I eat”. These items were measured on a seven-point Likert scale anchored by ‘Strongly disagree’ (1), ‘Neither agree nor disagree’ (4), ‘Strongly agree’ (7).

### **3.2.7 Perceived risk**

This study have defined and measured the risk perception in terms of health risk and financial risk associated with fish consumption. Measurements of the health risk are parallel with the study of Pieniak *et al.*, (2008). Based on their study, three statements were chosen to assess the health risk related to fish consumption. The used items are “I do not want to eat fish too often because I am afraid of food poisoning from chemical contamination”, “I do not want to eat fish too often because I am afraid from food poisoning from bacterial contamination (*salmonella, campylobacter, listeria, botulism*)” and “I am very concerned about the possibility of getting ill from eating fish”. These items respectively measure the chemical contamination, bacterial contamination and possible food contamination in general. In order to measure the financial risk, items were taken from the study of Ahamed (2009). The used items were “If I were to purchase fish I would worry about loosing or wasting money”, I do not think, eating fish is too expensive for my budget” and “I do not think eating fish is good value for money”. A seven-point Likert scale ranging from ‘Strongly disagree’ (1) to ‘Strongly disagree’ (7) was used for all items.

### **3.2.7 Fish consumption frequency**

Fish consumption behaviour was measured as a self-reported frequency of consumption of past behaviour. The measurement of this construct was in line with some of the previous studies (e.g. Honkanen and Olsen, 2009; Jayampathi, 2010 and Olsen, 2002). One of the measures of behaviour frequency is ‘general frequency’ within one year time frame which



was measured by a nine-point scale of the form, “How often do you eat fish as your main meal /course at home or away from your home ...?” ranging from Daily or almost every day (1) to Never (9). Recent frequency was measured by a fifteen-point scale of the form: “Could you please estimate how many times during last 14 days you have eaten fish for the lunch at home or away from your home...?: 0, 1, 2, 3,.....14 times or more”. In order to minimize measurement biases or survey errors (Sudman,, Bradburn and Schwarz, 1996), I used both general frequency and recent frequency as two different items in developing the measurements of fish consumption behaviour frequency.

### 3.3 Data analytical procedures

The first goal was to confirm that each latent measure taps the facets of intended construct (convergent validity) and that the constructs are distinct from each other (discriminate validity). The second goal of the analysis was to test appropriate constructs in the proposed conceptual model and causal relations as illustrated in figure 2.2. These analyses were carried out using maximum likelihood in Amos 16.0. Structural equation modeling can apply correlation or variance matrix as its key in constructing the model (Hair *et al.*, 1995). Several indexes such as the Chi-square ( $\chi^2$ ), Goodness of Fit Index (GFI), Comparative Fit Index (CFI), and Root Mean Square Error of Approximation (RMSEA) were employed to measure overall model fit (measurements and construct model). Chi-square ( $\chi^2$ ) is a traditional test exact fit which has been identified as inappropriate for large sample size. Hence, it is appropriate to take statistical tests of close fit such as RMSEA. In order to have a close fit, RMSEA value should be less than 0.05 and having RMSEA figure less than 0.08 indicates reasonable fit (Browne and Cudeck, 1992). The GFI measures how much better the model fits when compared to no model at all (Joreskog and Sorbom, 1989). Anderson and Gerbing (1988) found that GFI is sensitive to the sample size while CFI is essentially independent from sample size. Acceptable model fits are represented by GFI and CFI values above 0.9. This study has used the value of Chi-square ( $\chi^2$ ), RMSEA, GFI and CFI value as criteria to examine the model fit. Significance of estimated coefficients in the structural model was evaluated using the test of p-value.

The next chapter of the thesis presents the result of data analysis.

## 4.0 Results

The aim of this chapter is to report the results received from data analysis. The Amos 16.0 software was employed as a powerful statistical analysis tool for data analysis. The result has presented under major two sections: (1) The result of the confirmatory factor analysis; (2) The Structural Equation Modeling which is used to test the suggested conceptual model with its causal relations.

### 4.1 The confirmatory factor analysis and validation of measures

Confirmatory factor analysis of the eight latent constructs was performed to determine the convergent and discriminant validity of the constructs. Initially, exploratory factor analysis was done in order to identify the most appropriate items for each construct. Then, first confirmatory analysis proved several modifications, which result in modifications until the final solution reached. The final factor analysis confirmed that 20 items in the measurement model reflects the eight theoretical constructs with a satisfactory fit statistics (e.g., RMSEA = .065). The factor loadings ( $\lambda$ 's) on the latent constructs were all highly significant ( $p < .000$ ) and ranged from 0.62 to 0.95 with t-values from 8.98 to 15.88 (Table 4.1) and significant at probability value 0.000. This satisfied the criteria for convergent validity of eight internal constructs (Bagozzi, Li and Phillips, 1991).

Reliability of the multi-item scales were measured by computing Joreskog's composite reliability coefficient for each constructs (Anderson and Gerbing, 1988). This method of reliability calculation is similar to Cronbach's alpha. However, Joreskog's composite reliability coefficient method weights the items by their respective factor loading while Cronbach's alpha assumes that each item processes equal weight. Fornell and Larcker (1981) emphasised the importance of examining the composite reliability and variance extracted as bench mark for construct reliability. Further, they have been suggested that composite reliability should be greater than or equal to 0.60 and variance extracted should be greater than or equal to 0.50.

In this study, composite reliability and variance extracted measure were equal or greater than 0.79 and 0.55 respectively which have exceeded the recommended minimum standards proposed by Fornell and Larcker (1981).

The standardized confirmatory factor analysis coefficients and construct reliability for the measurement model are indicated in the Table 4.1.

Table 4.1: Standardized confirmatory factor analysis coefficients and construct reliability

<b>Constructs and indicators</b>	<b>St. factor loadings</b>	<b>t-value</b>	<b>Composite reliability</b>	<b>Variance Extracted</b>
<b>Variety Seeking Behaviour</b>			<b>1.0</b>	<b>1.0</b>
How many different kinds of fish species have you been eating during the last month? (Tuna, Yellow-fin tuna, herrings....etc)	1.00	20.30		
<b>Variety Seeking Tendency (Food)</b>			<b>0.90</b>	<b>0.76</b>
When I eat out, I like to try the most unusual food items, even if I am not sure I would like them	.87	15.12		
While preparing foods or snacks, I like to try out new recipes	.86	15.06		
My diet is higher in variety than most people I know	.88	15.42		
<b>Variety Seeking Tendency (Personality)</b>			<b>0.79</b>	<b>0.55</b>
I like to experience novelty and change in my daily routine	.62	8.98		
I am continually seeking new ideas and experiences	.79	11.58		
I like continually changing activities	.81	11.91		
<b>Perceived Behavioural Control</b>			<b>0.90</b>	<b>0.75</b>
How much personal control you feel you have over eating fish	.85	14.67		
For me to eat fish is	.88	15.32		
If I want, I can easily eat fish tomorrow	.87	15.27		

<b>Attitude</b>			<b>0.79</b>	<b>0.56</b>
Satisfied/ Unsatisfied	.73	10.84		
Pleasant/ Unpleasant	.83	12.54		
Positive/ Negative	.68	9.95		
<b>Health involvement</b>			<b>0.84</b>	<b>0.64</b>
I often think about my health	.71	10.94		
I think of myself as a person who is concerned about healthy food	.95	15.88		
I am very concerned about the health related consequences of what I eat	.72	11.10		
<b>Perceived risk</b>			<b>0.85</b>	<b>0.66</b>
I am very concerned about the possibility of getting ill from eating fish	.72	11.16		
If I were to purchase fish I would worry about loosing or wasting money	.91	15.05		
I do not think, eating fish is good value for money	.79	12.53		
<b>Fish consumption frequency</b>			<b>1.00</b>	<b>1.00</b>
Please estimate how many times during last 14 days you have eaten fish for the lunch at home?	1.00	20.30		

**Note:** Chi - Square = 270.171, df = 144, p-value = .000; RMSEA = .065; GFI = .90;  
CFI = .933; N = 207

The measurement model is in a reasonable fit with a Chi-Square value of = 270.171 (df = 144, p-value = .000); RMSEA = .065; GFI = .90 and CFI = .933. The RMSEA (0.065) for the measurement model was below the critical value of 0.08 (Browne and Cudeck, 1992) while other goodness of fit measures; GFI and CFI were on or above of acceptable value of 0.90.

The measures of attitudes, perceived behavioural control, variety seeking tendency, variety seeking behaviour, health involvement, perceived risk and fish consumption frequency were

tested to confirm the discriminate validity. If the average variance extracted from two constructs is higher than the square of the correlation between the two constructs, discriminant validity exists (Fornell and Larcker, 1981).

Table 4.2 reports the inter-correlations between the factors proposed in the model. The squared correlation between each of the construct was lower than the average variance extracted from each pair of constructs which makes the discriminant validity. These analyses have been confirmed that the measurement model of this study maintains both validity and reliability.

Table 4.2: Construct mean, standard deviations, and correlations of the constructs

	Mean	SD	1	2	3	4	5	6	7	8
1. Variety Seeking Behaviour	5.28	1.70	1.00							
2. Variety Seeking Tendency (Food)	4.93	1.46	.11*	1.00						
3. Variety Seeking Tendency (Personality)	5.24	1.33	-.06	.32***	1.00					
4. Perceived Behavioural Control	5.10	1.77	-.21***	.07	.23***	1.00				
5. Attitude	6.12	0.70	-.13*	.25***	.07	.23***	1.00			
6. Health involvement	5.90	1.05	-.07	.27***	.19**	.18**	.34***	1.00		
7. Perceived risk	3.98	1.61	-.11*	.04	.16**	.00	-.09	-.16**	1.00	
8. Fish consumption frequency	5.31	2.56	.13*	-.09	-.05	.10	-.07	.10*	.00	1.00

**Note:** Chi - Square = 270.171, df = 144, p-value = .000; RMSEA = .065; GFI = .90; CFI = .933; N = 207

\* p < .1, \*\* p < .05, \*\*\* p < .001, ns = non significant

Some of the correlation in this model was not in accordance with the expectations, something that will be discussed in the next session. It is a problem that attitude are very positively skewed with a mean of 6.12 (on a scale from 1-7) and a low standard derivation. The fact that most all consumers have a very positive attitude toward fish is a “problem” for some of the Hypotheses.

#### 4.2 Structural analysis and model testing

My theoretical model illustrated in figure 2.2 was tested using structural equation analysis. The result of standardized regression coefficients from the estimation of the proposed model have presented in figure 4.1 including the t-values associated with the coefficient in the parenthesis. The  $\chi^2$  for the model was 270.173 with 150 degrees of freedom ( $p = 0.000$ ).

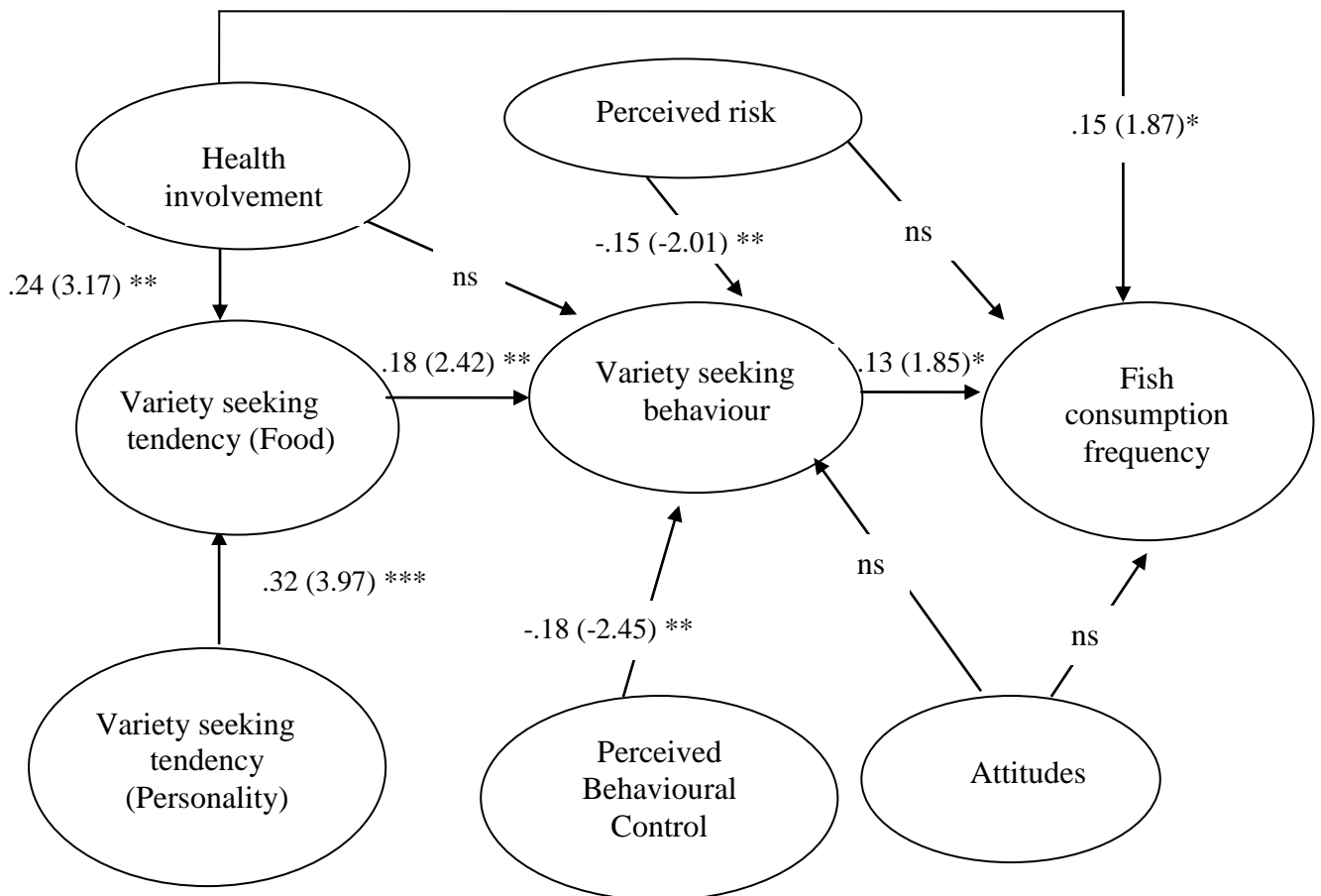


Figure 4.1: Standardized regression coefficients of proposed model including t-values in the parentheses

**Note:** Significant at \* $p < .10$ , \*\* $p < .05$ , \*\*\* $p < .000$ ; ns = non significant

The appropriate measure of model fit for the data set is RMSEA which was .062 in this case. This RMSEA figure exists within the level of reasonable fit (less than 0.08) (Browne and Cudeck, 1992). The other goodness of fit indices; GFI and CFI were .90 and .936 respectively which satisfied the recommended level of 0.90 (Bollen, 1989). Therefore, the structural model was in a Good-Fit with the data from several fit indices.

#### 4.2.1 Hypotheses testing

When testing hypothesis with SEM, seven out of eleven hypotheses were significant. Result of structural equation analysis of proposed conceptual model has displayed in Table 4.3.

Table 4.3: Results of hypotheses tests and structural model

Hypothesized paths	Hypothesis	Estimate	t-value	Support/Not support
VSB → Fish consumption frequency	<b>H 1</b>	.13	1.85*	Support
VST Food → VSB	<b>H 2 (a)</b>	.18	2.42**	Support
VST Personality → VST Food	<b>H 2 (b)</b>	.32	3.97***	Support
PBC → VSB	<b>H 3</b>	-.18	-2.45**	Support
Attitude → Fish consumption frequency	<b>H 4</b>	-.10	-1.17 n/s	Not Support
Attitude → VSB	<b>H 5</b>	-.12	-1.47 n/s	Not Support
Health involvement → Fish consumption frequency	<b>H 6</b>	.15	1.87*	Support
Health involvement → VSB	<b>H 7 (a)</b>	-.08	-.98 n/s	Not Support
Health involvement → VST Food	<b>H 7 (b)</b>	.24	3.17**	Support
Perceived risk → Fish consumption frequency	<b>H 8</b>	.04	.56 n/s	Not Support
Perceived risk → VSB	<b>H 9</b>	-.15	-2.01**	Support

**Note:** \*  $p < .10$ ; \*\*  $p < .05$ ; \*\*\*  $p < .000$ ; ns = non-significant

Chi-Square = 270.173, d.f = 150, p-value = .000, RMSEA = .062, GFI = .90, CFI = .936, Variety seeking behaviour ( $R^2 = .096$ ), Variety seeking tendency related to food ( $R^2 = .16$ ), Fish consumption frequency ( $R^2 = .09$ )

The main hypothesis H1 was proposed concerning the positive impact of variety seeking behaviour and fish consumption frequency. The variety seeking behaviour had a path coefficient of 0.13 ( $t = 1.85$ ;  $p = .065$ ) in explaining fish consumption frequency revealing a significant positive relationship between variety seeking behaviour and fish consumption frequency. Therefore result of the SEM supported the hypothesis H1.

The hypothesis H2 (a) concerned that variety seeking tendency related to food has a significant positive impact on variety seeking behaviour towards fish. As expected in hypothesis H2 (a), this study found a significant positive relationship between variety seeking tendency related to food and variety seeking behaviour towards fish. Thus, hypothesis H2 (a) was supported ( $\beta = .18$ ,  $t = 2.52$ ;  $p = .002$ ).

The hypothesis H2 (b) proposed that variety seeking tendency as a general personality trait has a significant positive effect on variety seeking tendency related to food. As hypothesized in H2 (b), the variety seeking tendency related to personality had a great positive path coefficient of 0.32 while showing a highly significant effect on variety seeking tendency related to food ( $t = 3.97$ ;  $p = .000$ ) thereby supporting the hypothesis H2 (b).

As mentioned in H3 (a), this study expected a significant negative relationship between perceived behavioural control and variety seeking behaviour. The SEM result led to accept the hypothesis H3 (a) as it revealed that perceived behavioural control has a significant negative relationship with the variety seeking behaviour ( $\beta = -.18$ ,  $t = -2.45$ ;  $p = .014$ ).

The hypothesis H4 proposed that attitude is positively related to the fish consumption frequency was not statistically confirmed ( $\beta = -.10$ ,  $t = -1.17$ , ns). Similarly, direct relationship between attitudes and variety seeking behaviour was not confirmed in this study ( $\beta = -.12$ ,  $t = -1.47$ , ns), thereby not supporting the hypothesis H5.

It was observed a positive path coefficient of 0.15; between health involvement and the fish consumption frequency, thus the hypothesis H6 was accepted since the relationship between these two constructs was significant ( $t = 1.862$ ,  $p = .061$ ). This study expected that health involvement is positively related to variety seeking behaviour (H 7a) and variety seeking tendency related to food (H 7b). However, relationship between health involvement and variety seeking behaviour (H 7a) was not significantly confirmed ( $\beta = -0.08$ ,  $t = -0.98$ , ns)



thereby not supporting the hypothesis H7 (a). However, as expected health involvement had a highly positive effect on variety seeking tendency related to food as it has a positive path coefficient of 0.28 ( $t = 3.64$ ,  $p < .000$ ); thereby supporting the hypothesis H 7(b).

As suggested by hypothesis H8, perceived risk was not significantly related to fish consumption frequency ( $\beta = .04$ ,  $t = .56$ , ns). Nevertheless, perceived risk showed a negative and significant effect on variety seeking behaviour ( $\beta = -.15$ ,  $t = -2.01$ ;  $t = .045$ ); thus supporting the hypothesis H9.

At last, the variables of the model explain 09 percent of the variation in fish consumption frequency ( $R^2 = .092$ ). Further, it has explained the variety seeking behaviour by 10 percent ( $R^2 = .096$ ) while explaining the variation of variety seeking tendency related to food by 16 percent ( $R^2 = .160$ ).

#### **4.3 Confirmatory factor analysis of attribute's of perceived behavioural control**

Specific model for perceived behavioural control was tested to identify the forming factors of perceived behavioural control in terms of convenience/ availability, price/value and knowledge. In the same way as in the previous study, an exploratory factor analysis and several confirmatory modifications are done in order to improve the fit of the measurement model.

The final confirmatory factor analysis consisted with 2 items for convenience/ availability; 3 items for price/ value and 3 items for knowledge which resulted a good fit for the data (Chi - Square = 77.02,  $df = 38$ ,  $p$ -value = .000; RMSEA = .071; GFI = .938; CFI = .954). Table 4.4 exhibits the different measures of reliability computed from the confirmatory factor analysis. Factor loading and  $t$ -values associated with confirmatory factor analysis were observed ( $p < .000$ ). This satisfied the criteria for convergent validity of the constructs (Bagozzi, Li and Phillips, 1991).

In this specific model, composite reliability of all constructs exceeded the minimum recommended level of 0.6 ranging from 0.64 to 0.90 (see Table 4.4). However, variance extracted measures were achieved the recommended minimum standards of 0.5 proposed by Fornell and Larcker (1981) expect for price and value construct. Even this variance extracted

measure did not satisfy the recommended level, this construct was selected to keep in the model since the attributes of price/ value related to perceived behavioural control has been shown an influence on selection of seafood or fish in other countries (Olsen, 2004; Birch and Lawley, 2010).

Table 4.4: Standardized confirmatory factor analysis coefficients and reliability of the attributes of perceived behavioural control construct

<b>Constructs and indicators</b>	<b>St. factor loadings</b>	<b>t-value</b>	<b>Composite reliability</b>	<b>Variance Extracted</b>
<b>Perceived Behavioural Control</b>			<b>.90</b>	<b>.75</b>
How much personal control you feel you have over eating fish	.86	14.77		
For me to eat fish is	.88	15.40		
If I want, I can easily eat fish tomorrow	.87	15.02		
<b>Convenience and availability</b>			<b>.80</b>	<b>.67</b>
Difficult to buy different fish species/ Easy to buy different fish species	.81	10.29		
Different fish species are unavailable/ Different fish species are available	.83	10.52		
<b>Price and value</b>			<b>.64</b>	<b>.40</b>
I choose to eat fish because it is economical	.57	6.84		
Eating fish is good value of money	.58	7.01		
Eating fish is suitable for my budget	.69	7.94		
<b>Knowledge related to fish</b>			<b>.79</b>	<b>.56</b>
I know what kind of fish which is good to eat and bad to eat	.67	9.81		
I know what kind of fish is safe and unsafe to eat	.81	12.07		
I know what kind of fish is healthy and unhealthy to eat	.75	11.16		

**Note:** Chi - Square = 77.02, df = 38, p-value = .000; RMSEA = .071; GFI = .938; CFI = .954; N = 207

In this model, all the correlations were significant at p value of 0.05. According to Fornell and Larcker (1981), the discriminant validity was performed by examining the average variance extracted scores of two constructs and the square of the correlation between the same constructs. This, process result that average variance extracted for pairs of constructs are all greater than square of the correlation between them. Thus, the discriminant validity of the constructs used in the model was confirmed (Table 4.5).

Table 4.5: Correlation of attributes of perceived behavioural control construct

	1	2	3	4
1. Perceived behavioural control	1.00			
2. Convenience and availability	.21 *	1.00		
3. Price and value	.17 *	.34 **	1.00	
4. Knowledge	.22 *	.47 **	.28 *	1.00

**Note:** Chi - Square = 77.02, df = 38, p-value = .000; RMSEA = .071; GFI = .938; CFI = .954

\* p < .05; \*\* p < .000

#### 4.4 Structural model of attributes related to perceived behavioural control

Structural model for three underlying forming factors of perceived behavioural control was tested. The Goodness of Fit Indices of the structural model was statically significant (Chi - Square = 77.02, df = 38, p-value = .000; RMSEA = .071; GFI = .938; CFI = .954).

Table 4.6 Results of the attributes of Perceived Behavioural Control forming model

Regression paths	Estimate	t-value
Convenience and availability → PBC	.12	1.19 n/s
Price and value → PBC	.09	.88 n/s
Knowledge → PBC	.14	1.40 n/s

**Note:** Chi - Square = 77.02, df = 38, p-value = .000; RMSEA = .071; GFI = .938; CFI = .954

ns= non significant

In this study, the regression coefficient of convenience/ availability, price/ value and knowledge did not have a significant impact with the perceived behavioural control (see Table 4.6). Therefore, above mentioned factors do not have a significant influence on perceived behaviour control towards variation of fish consumption in the Sri Lankan context.

## 05. Discussion

The objectives of this study were threefold: first, to explore the role of variety seeking behaviour towards fish consumption frequency. Second objective was to investigate how personality related factors; variety seeking tendency (related to food and personality) and perceived behavioural control affect the nature of variety seeking behaviour of fish consumption. Third, to investigate how product and motivational related factors; attitudes, health involvement and perceived risk affect the nature of variety seeking behaviour and fish consumption in the Sri Lankan context. To achieve these objectives a conceptual framework was developed. The items used to measure the constructs were either taken or adopted from the previous research studies. The survey was carried out using a convenience sample of 250 consumers in *Galle* in Sri Lanka. Confirmatory factor analysis and Structural Equation Modeling in AMOS 16.0 were employed to analysis the data.

In this study, it was found that variety seeking behaviour has a significant positive effect on fish consumption frequency among Sri Lankans. Also, the study revealed a positive and significant relationship between variety seeking tendency related to food and variety seeking behaviour. As expected, variety seeking tendency as a general personality trait showed a highly positive significant impact on variety seeking tendency related to food. Health involvement antecedent was found to be positively significant with fish consumption frequency as well as with the variety seeking tendency related to food while having an insignificant relationship with the variety seeking behaviour. Further, perceived behavioural control resulted a significant negative effect on variety seeking behaviour as proposed in this study. However, contrary to expectation of this study, convenience/ availability, price/ value, and knowledge did not act as a significant predictors of PBC construct. When concerning the perceived risk construct in the Sri Lankan context, it was observed a negative significant effect of perceived risk on variety seeking behaviour. However, the effect of perceive risk on the fish consumption frequency was negligible. Surprisingly, both relationships; relationship between attitudes and fish consumption frequency and relationship between attitudes and variety seeking behaviour were not statically confirmed in this research. The next session has explained and discussed the findings of this study.

## 5.1 Theoretical discussion

An important goal of this study was to determine the extent to which the nature of variety seeking behaviour affects fish consumption frequency. To my knowledge, this relationship is not discussed in earlier variety seeking studies. In the Sri Lankan context, variety seeking behaviour had a significantly positive effect on fish consumption frequency. The study used three items to estimate the construct of variety seeking behaviour. It was found that number of fish species selected to consume had a significant impact on variety seeking behaviour ( $\beta = 1.00$ ,  $t = 20.298$ ). This finding indicates that although in general life Sri Lankans are expert in preparing various fish dishes (i.e. cooked fish using spices adding more chilli or coconut milk, *ambul thiyal*, oil fried, oven baked, soup...etc), in real life they show a variety seeking behaviour associated with variation of fish species. Variation of fish species is absolutely possible as Sri Lankan water have more than 60 species of fish types (Statistic unit of Ministry of Fishery of Aquatic Resources, 2004). My finding suggests that variety seeking behaviour towards different fish species enhances the fish consumption frequency in Sri Lanka.

The findings of this study indicate that variety seeking tendency related to food and fish consumption frequency has a significant positive relationship. This finding was accordance with the previous findings in the literature which explained the significant relationship between variety seeking tendency with food consumption (e.g. Van Trijp and Steenkamp, 1992; Van Trijp and Hoyer, 1991). For an example; my finding is consistent with prior research conducted by Van Trijp, Lahteenmaki and Tuorila (1992) regarding reported variation in use of cheese which was strongly related to variety seeking tendency related to food. In line with previous findings in the literature (Van Trijp and Steenkamp, 1992; Van Trijp, 1995), this study also identified consumers' variety seeking tendency (intrinsic desire for variety) as an important characteristic of food choice behaviour in case of variety seeking behaviour of fish consumption. Result of empirical studies regarding variety seeking tendency across various product categories (e.g. Kahn, Kalwani and Morrison, 1986; Bawa, 1990; Simonson, 1990; Pessemier and Handelsman, 1984; Raju, 1984; Lahteenmaki and Van Trijp, 1995) have been revealed that individuals do not seek variety across all the product categories consistently. Nevertheless, some product categories are perceived to be more suitable for explaining the variety seeking tendency than other product categories (Van Trijp,

1995). This finding is supported by my study as fish is more appropriate as a food category which is positively associated with variety seeking tendency related to food.

This study explored the relationship between variety seeking tendency as a general personality trait and variety seeking specific tendency related to food (Van Trijp, 1995). The theory says that the general tendency influences the specific tendency (*ibid*); thus, the general tendency is more related to the specific tendency (food) than specific variety seeking behaviour (Van Trijp and Steenkamp, 1992; Lahteenmaki and Van Trijp, 1995; Van Trijp, 1995). As expected, in this setting variety seeking tendency as a general personality trait showed a highly significant positive impact on variety seeking tendency related to food. This result may explain that people who are higher in general personality trait have a higher positive impact on tendency of seeking food variations.

This study supported the proposed hypothesis that perceived behavioural control has a significant negative effect on variety seeking behaviour ( $\beta = -.177$ ,  $t = -2.325$ ). To my knowledge, the present study was the first one which tried to establish a relationship between perceived behavioural control and variety seeking behaviour. When the behaviour is not fully under the volitional control of the individual, PBC can be served as an independent predictor of behaviour (Ajzen, 1991: 2001; Chiou, 1998; Notani, 1998). Consumers with greater perceived internal control show a greater likelihood of controlling their behaviour (Kidwell and Jewell, 2003) in case of making variation of fish consumption.

According to the Theory of Planned Behaviour proposed by Ajzen (1991), PBC is determined by control beliefs. Further, Olsen (2004) reported that price/ cost, convenience/ availability and knowledge as most important control factors of influencing consumers' buying behaviour of seafood. However, this study found that control beliefs such as price/ value, convenience/ availability and knowledge although indicated a higher positive effect on perceived control, it has a negligible impact of forming PBC. Ahamed (2009) also did not find that attributes such as price/ perceived value as a significant indicator of perceived control. In this study, it may explain that although fish is being considered as an expensive food item in Sri Lanka, the respondents may react quite differently when perceiving the price in their real shopping environments. This is a common problem in an attitudinal consumer survey; because respondents may tend to be biased towards the behaviour that is more socially prestigious and desirable (Sudman, Bradburn and Schwarz, 1996).

According to findings of Leek, Maddock and Foxall (2000), convenience measured as “fish is readily available in the shops” did not act as a significant factor of predicting fish purchase behaviour among UK consumers. Similarly, in this study even though availability of different fish species found to be positively influence the perceived behavioural control, the impact was not significant. The reason for this result may be that majority of the consumers who took part in this survey live nearby coastal areas where fish are readily available when compared to up country people.

Even though, it was observed a positive effect of knowledge on perceived behavioural control, the impact was statically very low. It may explain that 85 percent of the sample was consisted with elderly consumers who have probably acquired more knowledge and skills over time (Gofton, 1995) and do not perceive knowledge as a barrier. On the other way round, consumers may think that they are expert in knowledge in terms of identifying ‘what kind of fish which is good to eat, and bad to eat’, ‘what kind of fish is safe and unsafe to eat’ and ‘what kind of fish is healthy and unhealthy to eat’ but it may not significantly influence real shopping situation with familiar fish species.

Previous research findings (e.g. Olsen, 1999: 2003: 2004) revealed a significant positive relationship between attitudes towards eating fish and fish consumption frequency. Those results seem to be common in several countries such as Vietnam (Tuu *et al.*, 2008), Belgium (Olsen *et al.*, 2007) and in other European countries (Armitage and Conner, 2001; Eagly *et al.*, 2001). Contrary to expectation of this study, no significant relationship was found between attitudes and fish consumption frequency among the consumers. Since the global attitude associated with fish consumption is highly positively skewed as almost all consumers marked their response that they all like fish very much, it may fail to provide much of the variability in the relationship between attitudes and fish consumption frequency. Attitudes toward fish in other studies (Olsen, 1999: 2003: 2004; Tuu *et al.*, 2008; Olsen *et al.*, 2007) are not as skewed as in my data.

Further, this study expected a positively significant relationship between attitudes and variety seeking behaviour. However, the result indicated that this relationship is insignificant in the Sri Lankan context. In the other words, attitudes do not have a positive significant impact on variety seeking behaviour in terms of number of fish species selected to consume. It may be

due to having a strongly positive skewed distribution of attitude construct which was unable to show a satisfactory level of variability in the relationship between attitudes and variety seeking behaviour.

The study confirmed several earlier studies of a strong positive effect between health involvement and fish consumption frequency (Olsen, 2001, 2003 and 2004). My findings indicate that Sri Lankans are very involved with their health and very concerned about health. This result is analogous with the literature which has shown that in explaining fish consumption, motivational aspects such as health concerned or the importance of healthy eating are more suitable factors than belief i.e. fish is healthy (Gempesaw *et al.*, 1995; Olsen, 2001).

However, present study did not find a significant positive relationship between health involvement and variety seeking behaviour towards fish. Because of the fact that almost all consumers know that fish is healthy, the perceived health importance associated with fish products does not seem to show the variation in fish consumption (Olsen, 1989; 2001; Bredahl and Grunert, 1997). The other reason is that a healthy diet can be prepared using an immense number of combinations of various foodstuffs (Gempesaw *et al.*, 1995; Olsen, 2001) which may or may not include different types of fish.

One important finding of this study is the evidence of significant positive relationship between health involvement and variety seeking tendency related to food. As shown in many empirical research that nutritional/ health dimensions are the most second important factor of food product choice after the sensory aspects (Letarte *et al.*, 1997; Roininen *et al.*, 1999), health concerned consumers may tend to have a tendency to seek food variation in order to satisfy their health and nutritional aspects of the life.

The study tested the relationship between perceived risk and fish consumption frequency. This relationship has been reported in the literature which was more specifically associated with beef (Verbeke, Viaene, and Guiot, 1999; Verbeke *et al.*, 1999) and poultry (Yeung and Morris, 2006) rather than for fish. Although previous studies (Pieniak *et al.*, 2008; Ahamad, 2009) showed a significant negative effect between perceived risk and fish consumption behaviour, the findings of this study revealed that perceived risk did not have a significant



effect on fish consumption frequency among Sri Lankans. Neither financial risk nor health risk influence the fish consumption frequency. This result may be linked with buying pattern of consumers. Usually, consumers who live nearby coastal areas often buy and eat fresh, quality fish instead of processed or frozen fish product hence they may not perceive health risk when consuming fish. In Sri Lankan fish markets, different fish species are available at different price levels and some consumers are used to buy fish species which they can afford; may result less financial risk when consuming fish.

The result of the structural model analysis confirmed the importance of perceived risk in the variety seeking behaviour modeling. As expected, both facets of risk perception i.e. health risk and financial risk have integrated together to form the perceived risk in this setting. In the Sri Lankan context, consumers neither feel a health risk arising from food poisoning due to chemical contamination of fish nor bacterial contamination. According to Sri Lankan Food Act No. 26 of 1980, since it is prohibited to sell commodities which are unfit for human consumption, consumers generally believe that products are safe in the food market. Therefore, in case of variety seeking behaviour towards different fish species, they may only feel general health risk of getting ill from eating different fish species. Being an expensive food product; higher prices of fish lead to higher perceived risk (Roselius, 1971; Akaah and Korgaonkar, 1988) in terms of financial risk. When the consumer wants to buy high value of fish species such as Spanish mackerel, Trevallies, Skipjack Tuna, Sail fish...etc they need much money and sometimes they may think that it is a way of wasting money when the fish price does not match with their budget. In the Sri Lankan context, consumers feel more financial risk rather than health risk.

## **5.2 Managerial and theoretical implications**

This study has significantly proved that variety seeking behaviour towards fish has a positive effect on fish consumption frequency in the Sri Lankan context. Insight into the variety seeking behaviour of consumers associated with fish consumption may serve as an important criterion for supporting the fishery industry in adopting its marketing strategies more effectively to meet the customers' needs. The study has shown that number of fish species selected to consume has a significant impact on variety seeking behaviour towards fish. It creates opportunities for marketing people as they can expand fish market share by providing different fish species.

The variety seeking tendency level of consumers has several implications for the development of marketing with respect to food items (Wind, 1977). The findings of this research suggest that consumers' variety seeking tendency related to food can be effectively used to enhance the variety seeking behaviour of fish consumption. This may be an important finding for fish marketers in the super market and they should try to tap the intrinsic desire of consumer for variety of food consumption through providing different fish species as a means of bringing the actual level of stimulation closer into the Optimum Level of Stimulation.

In food marketing literature, it is argued that higher degree of perceived risk associated with food products tends to reduce the consumer's propensity to buy the product (Klerck and Sweeney, 2007). This research also has found that perceived risk is negatively influenced the variety seeking behaviour. Therefore, supplying different kinds of fish species is in vain if proper strategies do not implement to reduce the perceived risk associated with variation of fish. When the consumer tends to perceive a risk perception, they are ready to seek information (*ibid*). Therefore, it is a duty of fishery related authorities to provide trustworthy information for the consumers.

In this study, health involvement found to be a significant predictor of fish consumption frequency while showing a negligible impact on variation of fish consumption. It seems to be that although consumers are knowledgeable about health benefits of fish consumption and may possess a poor knowledge about the different nutritional and health benefits of different fish species. Providing information on the most commonly eaten fish species will help consumers to make decisions (Burger, Stern and Gochfeld, 2005) regarding variation of fish types in consumption. Therefore, the findings suggest that using mass media and public health promotional campaigns, government health authorities should make people aware about the health and nutritional information associated with various fish species and stimulate them to consume different fish species.

Findings of this study revealed that although price/ value, convenience/ availability and knowledge did not act as significant determinants of perceived control, PBC performed as a barrier for variation of fish consumption. Therefore, future research should essentially identify underlying predictors of PBC as there are several other factors i.e. habits, past experiences/ familiarity, confidence...etc. which associate with the PBC in case of fish

consumption (Birch and Lawley, 2010). Then, taking mitigation measures accordingly in order to reduce the impact of PBC on variety seeking behaviour towards fish is suggested.

In the marketing literature, one approach towards the study of variety seeking behaviour is based upon understanding the product related and personal related factors that lead to the need of variety (Hoyer and Ridgway in 1984; Van Trijp, 1995). This research contributes to the variety seeking behaviour literature in that it specifically incorporates effect of both product and motivational related factors (perceived risk, attitudes and health involvement) and personality related attributes (variety seeking tendency and perceived behavioural control). In theoretical aspects, academics and researchers can make use these findings for their empirical studies.

### **5.3 Limitations and future research**

Although, research studies in variety seeking behaviour have been extensive, gaps still exist. One of the most critical issues of this study was associated with lack of secondary data relevant to variety seeking behaviour towards fish consumption in the Asian context. As a consequence, it was difficult to present conclusive comparison of the results.

It is worthy to note that the findings of this research did not result from the direct questioning. It had created a difficult situation for respondents when understanding certain items on the questionnaire for example; some items used to measure variety seeking tendency related to personality and attributes of perceived behavioural control forming factors. This has brought the disadvantage of proving causality between perceived behavioural control and PBC forming factors. Future research studies can avoid this situation by either conducting focus group discussion prior to questionnaire filling or personally interviewing the respondents.

Another limitation was pertained to sample size and sampling method. This research was based on a convenience sample of consumers in *Galle* district in Sri Lanka. The sample did not represent the whole population, thus the results could not generalize to Sri Lanka. Therefore, future studies should try to include a more representative sample of Sri Lankan consumers in order to portrait the real picture of variety seeking behaviour of fish consumption in Sri Lanka.

One of the major problems confronts with this study was to dealing with a skewed data set in case of attitudes. Future research should try to handle the skewed data more efficient way in order to minimize unexpected relationships. One way to do this could be to frame the questions differently (e.g., combining Likert scale and semantic scale) or extending the semantic scale to several options (e.g., 1-100) or using more extreme end points (e.g., extremely negative – positive).

This study propose a conceptual framework which attempts to integrated both product related and personal related factors that drive the variety seeking behaviour among the Sri Lankan consumers. In this setting, I used variety seeking tendency (related to food and personality) and perceived behavioural control as personality related attributes while taking perceived risk, attitudes and health involvement antecedents as product and motivational related factors to explore the role of variety seeking behaviour towards fish consumption. Future research should uncover additional individual and product related factors which may relevant to explain variety seeking behaviour. Further, in light of my conceptual framework, new research is needed to examine not only the extent to which each of other relevant specific individual personal characteristics and product related characteristics influences the variety seeking behaviour but also the extent to which these factors interact with each other to form variety seeking behaviour.

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## Appendix 1.0 Measurements of constructs

### Construct 01: Attitude

#### Appendix 1.1 General attitudes

In the following we would like you to think about how you feel when you eat fish as a meal. Please indicate for each row which word best describes your feeling. If, for example, you feel very bad, tick off the box ☒ under 1. If you feel very good, tick off the box under 7, or somewhere in between if you have another perception. (Mark one box ☒ per line)

When I eat fish, I feel								
	1	2	3	4	5	6	7	
Bad	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Good
Unsatisfied	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Satisfied
Unpleasant	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Pleasant
Dull	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Exciting
Negative	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Positive

**Construct 02: Perceived Behavioural Control**

**Appendix 1.2 Perceived Behavioural Control (PBC)**

There can be several reasons for not eating fish as a meal: availability of fresh fish species, lack of knowledge of how to prepare various fish dishes, high price of the fish price... etc. will some examples. Below, we would like you to present some assertions about eating fish in your meal. For each assertion, we want you to state how much you disagree or agree. If, for example, you strongly disagree, tick off the box ☒ under 1. If you strongly agree, tick off the box under 7, or somewhere in between if you have another perception

(Mark one box ☒ per line)

	No control						Complete control
	1	2	3	4	5	6	7
How much personal control you feel you have over eating fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very difficult						Very easy
	1	2	3	4	5	6	7
For me to eat fish is	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	Very unlikely						Very likely
	1	2	3	4	5	6	7
If I want, I can easily eat fish tomorrow	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix 1.2.1 Convenience and availability**

Please indicate how you would evaluate fish as a meal along several different attributes. If, for example, you feel very bad, tick off the box ☒ under 1. If you feel very good, tick off the box under 7, or somewhere in between if you have another perception. (Mark one box ☒ per line)

	Very bad						Very good	
	1	2	3	4	5	6	7	
Difficult to buy different fish species	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Easy to buy different fish species
Difficult to cook in many different ways	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Easy to cook in many different ways
Different fish species are unavailable	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Different fish species are available
Not suitable to cook delicious fish dishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suitable to cook delicious fish dishes
Not suitable to prepare many fish dishes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Suitable to prepare many fish dishes

**Appendix 1.2.2 Price and value**

We are now suggesting several properties related to price and value. For every proposition please indicate your agreement or disagreement. For example, if you feel strongly disagree, tick off the box ☒ under 1. If you feel strongly agree, tick off the box under 7, or somewhere in between if you have another perception. (Mark one box ☒ per line)

	Strongly disagree			Neither disagree nor agree			Strongly agree
	1	2	3	4	5	6	7
Fish is very expensive	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I choose to eat fish because it is economical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eating fish is good value of money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Eating fish is suitable for my budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix 1.2.3 Knowledge related to fish**

We are now suggesting several properties related to your knowledge upon buying fish. For every proposition please indicate your agreement or disagreement (Product knowledge and Procedure knowledge). If, for example, you feel strongly disagree, tick off the box ☐ under 1. If you feel strongly agree, tick off the box under 7, or somewhere in between if you have another perception. (Mark one box ☐ per line)

	Strongly disagree		Neither disagree nor agree			Strongly agree	
	1	2	3	4	5	6	7
I know what kind of fish which is good to eat, and bad to eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what kind of fish is safe and unsafe to eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know what kind of fish is healthy and unhealthy to eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I know that fish I normally purchase are free from chemical preservatives and additives	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have a lot of knowledge about how to evaluate the quality of fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I have good knowledge about what kind of nutrition fish contains	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
It is a problem for me to prepare fish (recoded)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find it easy to prepare delicious and tasty meals with fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I can prepare many different dishes from fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>



**Construct 03: Variety Seeking Tendency***Appendix 1.3 Variety seeking tendency**Appendix 1.3.1 Variety seeking tendency as a general personality trait*

In the following we would like you to think about how your personality towards seeking changes in general. Please indicate for each row which word best describes your feeling. If, for example, you feel strongly disagree, tick off the box  under 1. If you feel strongly agree, tick off the box under 7 or somewhere in between if you have another perception. (Mark one box  per line)

	Strongly disagree		Neither disagree nor agree			Strongly agree	
	1	2	3	4	5	6	7
I like to continue doing the same old thing rather than trying new and different thing (recoded)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like to experience novelty and change in my daily routine	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like a job that offers change, variety and travel, even if it involves some danger	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am continually seeking new ideas and experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I like continually changing activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
When things get boring, I like to find some new and unfamiliar experiences	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I prefer a routine way of life to an unpredictable one full of change (recoded)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix 1.3.2 Variety seeking tendency related to food**

In the following we would like you to think about how do you feel tendency towards seeking food variation. Please indicate for each row which word best describes your feeling. If, for example, you feel strongly disagree, tick off the box  under 1. If you feel strongly agree, tick off the box under 7 or somewhere in between if you have another perception. (Mark one box  per line)

	Strongly disagree			Neither disagree nor agree			Strongly agree
	1	2	3	4	5	6	7
When I eat out, I like to try the most unusual food items, even if I am not sure I would like them	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
While preparing foods or snacks, I like to try out new recipes	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am eager to know what kinds of foods people from other countries eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Food items on the menu that I am unfamiliar with make me curious	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am curious about food products I am not familiar with	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I find myself eating many of the same foods day after day (recoded)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Most people do not eat as many different foods as I do	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not usually change the food in my diet much from day to day (recoded)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
My diet is higher in variety than most people I know	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I vary with food, but only with few kinds of food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Construct 04: Variety Seeking Behaviour**

*Appendix 1.4 Variety seeking behaviour*

In the following we would like you to answer about how you seek variety in case of fish. We are going to make an assertion about recent fish consumption frequency. Please make a  for each alternatives that best describes how many times on average during the last two weeks you have consumed fish on your meal. Please mark only one answer in each row.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
How many different kinds of fish species have you been eating during the last month? (Tuna, herrings, Yellow fin tuna, etc...)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

How many different kind of fish dishes have you been eating during the last month? (Cooked with coconut milk, oil fried, soup, grilled, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
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	1	2	3	4	5	6	7	8	9	10
How many different kinds of conservation forms of fish have you been eating during the last month?(Fresh, frozen, salted, canned, dried, etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Construct 05: Health involvement*****Appendix 1.5 Health involvement***

We are now suggesting several properties related to your health involvement. For each assertion we want you to state how much you disagree or agree. If, for example, you feel strongly disagree, tick off the box ☒ under 1. If you feel strongly agree, tick off the box under 7, or somewhere in between if you have another perception. (Mark one box ☒ per line)

	Strongly disagree		Neither disagree nor agree			Strongly agree	
	1	2	3	4	5	6	7
It means a lot to me to have good health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Good health is important to me	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I often think about my health	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I think of myself as a person who is concerned about healthy food	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am very concerned about the health related consequences of what I eat	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Construct 06: Perceived risk**

**Appendix 1.6 Perceived risk**

We are now suggesting several properties related to your risk perception upon buying and consumption of fish. For every proposition please indicate your agreement or disagreement. If, for example, you feel strongly disagree, tick off the box ☒ under 1. If you feel strongly agree, tick off the box under 7, or somewhere in between if you have another perception. Mark one box ☒ per.

	Strongly disagree			Neither disagree nor agree		Strongly agree	
	1	2	3	4	5	6	7
I do not want to eat fish too often because I am afraid of food poisoning from chemical contamination	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not want to eat fish too often because I am afraid from food poisoning from bacterial contamination ( <i>salmonella, campylobacter, listeria, botulism</i> )	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I am very concerned about the possibility of getting ill from eating fish	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
If I were to purchase fish I would worry about loosing or wasting money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not think, eating fish is too expensive for my budget	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
I do not think, eating fish is good value for money	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Construct 07: Fish consumption frequency**

**Appendix 1.7 Fish consumption frequency**

Below, we would like you to present some kinds of fish that you consume on your meals. Please make a  for each alternatives that best describes how many times on average during the last year you have consumed fish on your meal. If none of the response alternatives completely covers your situation, tick off for the alternative that is closest. Please mark only one answer in each row.

**Appendix 1.7.1 Fish consumption frequency in general**

How often do you eat fish as your main meal /course (lunch)...?

	Daily or almost every day	3-4 times a week	2 times a week	Once a week	2-3 times a month	Once a month	1-5 times every 6 months	Less frequently	Never
At home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Away from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

**Appendix 1.7.2 Fish consumption frequency during last two weeks (Recent frequency)**

We are going to make an assertion about recent fish consumption frequency. Please make a  for each alternatives that best describes how many times on average during the last two weeks you have consumed fish on your meal. Please mark only one answer in each row.

Could you please estimate how many times during last 14 days you have eaten fish for the lunch

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
At home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Away from home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>