The effect of perceived risk on attitudes, intention and consumption of fish in Hanoi.

PHAM THI THUY LINH

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The Norwegian College of Fishery Science
University of Tromso, Norway
&
Nha Trang University, Vietnam

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Abstract

This study is one of the first attempts to investigate the attendances and consequences of perceived risk toward consumption fish in Hanoi, Vietnam. The study applies theory of planed behavior and theory of perceived risk for its conceptual framework. The study has three objectives. The first objective is to investigate the consequences of risk on attitude and intention to consumption of fish in Hanoi. The second objective is to examine how knowledge, trust and risk propensity affect general risk . The last objective is to investigate how different dimensions of risk effects general risk . To achieve these objective, the study employs the test of reliability, factor analysis and structural equation modeling to analysis the data collected in Hanoi, the capital of Vietnam.

This study's findings indicate that the models fit well with the data. The perceived risk affected directly attitude and intention to consumption of fish. Knowledge, trust had significantly negative effect on general risk while risk propensity has positive effect on general risk. Finally, both financial risk, physical risk and social risk were highly effects general risk. The implications of the study are discussed.

Key words: Seafood, fish consumption, perceived risk, perceived quality, risk propensity, attitude, intention, Hanoi, Vietnam.

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1. Introduction

There is a growing interest for food safety, food quality and food related health among consumer and policy makers in most industrialized countries. Consumer concern over food safety has steadily increased since the 1970s (Knox, 2000). Thus, risk seems to be an important determinant of food choice and consumption (Knox, 2000). Food risk has become particularly salient in the wake of a decade of 'food scares' (McCarthy & Henson, 2004; Angulo & Gil, 2007; Knox, 2000). Food scares have increased consumers' concerns for food safety causing significant reductions in the consumption of affected products (Angulo & Gil, 2007). Example with meat, this can be related to a series of meat crises and scandals in the mid 1990s such as BSE (Bovine Spongiform Encephalophy) in pies and pâté in UK , foot and mouth disease, and illegal hormones in beef (Pennings, Wansink, & Meulenberg, 2001; Povey, Wellens, & Conner, 2001), listeria in Belgian pâté and Certain soft cheese. With poultry, recent examples include classical swine fever virus, salmonella in eggs and aviate influenza in chicken (Berndsen & Joop, 2005). And newest, consumer in over the world have face with melamine in milk made in China. This effect many other product related with milk such as cakes, candy, ect… All these events have increase public doubts about the risk and benefit of food consumption(Berndsen & Joop, 2005). So consumer worry about food which they buy and purchase.

Also fish and seafood is associated with perceived and actual risk (ref??…). Some types of fish may contain significant amounts of contaminants, such as mercury, polychlorinated biphenyls, dioxins, or other chemical pollutants (Annually Report of Ministry of Public health, 2007). Fish acquire these toxins from pollutants in lakes, rivers, and oceans. Just as poultry and meat can be infected, fish can be contaminated with bacteria, viruses, parasites or other disease-causing organisms (Annually Report of Ministry of Public health, 2007)

Additional, using the antibiotic in aquaculture and chemical for handling and processing fish effect quality and image of seafood product in general and attitude's consumer in particular, and have increase public doubts about the risks and benefits of fish consumption. This issue has at least one thing in particular, namely how consumers

perceived risk, how risk influence perceived quality and attitudes toward the product(s), and if and how these aspects influence their choice or consumption behavior. The system control and manage about quality food in general and seafood in particular are very weakness and shortcoming. The fish you buy in a grocery store are either caught in the wild or raised on a fish farm. The location can result in differences in health benefits and risks. One interesting question is if consumer knowledge about the different consequences of eating fish or seafood with risky attributes effect their perception about risk, their attitudes toward fish and their fish consumption.

In Vietnam, seafood industry is a key sector in economy. According to annual report, its export value in 2007 is about 3.8 billion USD, increasing 12.9% compare with 2006 and employs more than 3.8 millions of labors. Vietnam government suggested that fisheries sector plays a significant role in poverty alleviation and contributes to economics growth. The seafood consumption of Vietnamese also increases (from 12 kg fish/year/person in 1990 to 18 kg fish/year/person in 2008 and target 26 kg fish/year/person in 2010). the domestic market has high demand on seafood products. The income of citizen is increasing dramatically so their requirement is very high. The consumer purchases towards on the product which useful for health, high protein and vitamin. Especially, they want to consume the seafood product.

According to report of nation objective program about safety and hygienic food 2008,Vietnamese's knowledge about safety and hygienic food in general and seafood in particular are low. The consumer lack of information about producer, importer and even information about product which they buy and purchase. They base on their experience and friend to choose product. They lack of information about the kind of chemical which the famer and fisherman use to keep the quality or treat disease for fish in general and food in particular. So, sometime they face with unexpected risk and diseases when eating these food and seafood. This is the reason to make the cases of food poisoning increasing. According to statistic annual, Vietnam has from 250-500 cases of food poisoning with more than 10.000 victims and approximate 200 fatalities per year. The government spent more than 3 billion VND for treating, testing and investigating to find the cause of diseases, preventive measure and disseminate for the people.

In domestic market, there are two main group of fish: fish (anchovy, scad…) and fresh fish(head snake, carp…). Both of them may included many physical risk, but consumer can not recognize by their eyes when they buy and consume these products. For example, the consumer buy fish which were persevered in a long time by chemical at fish room, they can believe that the quality of fish is very good through color, smell and texture of fish but they don't know about the implicit risk and disease in these fish. Last time, to keep the quality of fish for a long time in the sea, fisherman use ice and salt to store in fish room. But now the price of ice and salt are very high, addition, the time of sea trip is longer than ever before so to preserve fish, fisherman use the chemical like $CO(NH_2)$ to keep the "quality" of the fish (Annually Report of Ministry of Public health). With the low content $CO(NH_2)$, consumer have food poisoning in short term and have cancer in long term. Or in aquaculture, to limit the disease for fish or shrimp famer use Chloramphenicol (a kind of antibiotic were used popular in aquaculture to prevent diseases). This is very dangerous for health's consumer and become a risk when they purchase/ consume fish/seafood.

1.1 Research question

Several models are used to explain risk attitudes and behavior in general. (Conchar et al., 2004; Grewal et al., 2007; Mitchell, 1999), or related to attitudes and food consumption behavior in particular. The relationship between attitudes and consumption behavior has been the subject of extensive research described in the consumer behavior and social psychology literature (Verbeke & Viaene, 1999). In food and seafood context, attitudes are suggested to be one of the main determinants in explaining food consumption (Bredahl & Grunert, 1997; Olsen, 2001; 2004; Shepherd & Raats, 1996; Verbeke & Vackier, 2005). This study will focus on how perceived risk influences consumers attitudes and consumption of fish in Vietnam. Because of budget restrictions, it will focus on one particular city in Vietnam, namely Hanoi. Hanoi is capital of Vietnam, the social - economic – politics – culture centre of the whole country. Hanoi has high population density, concentrated many trade center and big market/supermarket.

One of the part in this study is about how perceived risk is related to attitude and consumption of fish. Risk and attitudes may share the same conceptual under spinning (Stone & Mason, 1995). According to Lobb (2006): Risk perception influences the attitudes towards the product. This study will make a distinction between perceived quality (Grewal, 2007, Zeithaml, 1998; Gofton, 1995; Thom, 2007) and a general attitude (Alexander & Catherine, 2004; Robert & Mason, 1995) in order to learn if different aspects of risk are related to different quality aspects with fish. Several studies in the food area make a distinction between motivation (e.g., intention) to buy/consume and actual consumption (ref……). Thus, this study want to define consumption as both intended and actual consumption.

The first research question in this study is*: the consequence of risk on attitude and intention of fish in Hanoi.*

Different aspects with perceived risk in general (Bauer, 1960; Chaudhuri, 1998; Hoover et al, 1978; Guilherme, Jonh, & Andrew; Mitchell, 1998; Alexander & Catherine 2004; Park, Sharron, & Leslie, 2005), and risk related to food and fish in particular (Aikman & Crites, 2007; Ana & Jose, 2007; McCarthy & Henson, 2004), will be discussed. This issues concern with the theory of perceived risk: (Bauer, 1967; Cox, 1967; Mitchell et al., 1999; Roehl & Fesenmarier, 1992).

How knowledge and other central antecedents influences risk is a part of this study. This is done because some recent studies have focus on the role of knowledge: Consumer knowledge has important role in explicating consumer behaviors, particular with regard to information search and information processing (Park, Mothersbaugh, & Feick, 1994). Knowledge of seafood is suggested to be an important factor in explaining choice of seafood (Brunsø, 2003; Gempesaw et al., 1995). According to Olsen (2004) knowledge may also be important concerning the perceived quality of the final meal; the role of trust in explaining perceived risk and its consequences:

Trust has been considered as a negative antecedent of the buyer's level of uncertainty and perceived risk (Bord & O'Connor, 1990). Cho and Lee (2005) said that risk propensity as another construct affecting an investor's assessment of risk. Risk propensity refers to a person's willingness to take or avoid risk. Thus:

The second research question is: *How do knowledge, trust and risk propensity affect general risk?.*

Perceived risk in the field of consumer behavior has been conceptualized as a multi-faceted construct. The facets identified include the potential financial, performance, physical, psychological, time and social losses associated with a purchase decision (Jacoby & Kaplan, 1972; Stone & Gronhuag, 1993). For example, McCarthy and Henson (2002) found that the most important risks perceived by Irish Consumers when purchasing beef related to performance, financial, physical and to a lesser extent, social consequences. This study focus on three dimension, namely: Financial, Physical and Social which affect general risk perceptions associated with fish. Thus:

And the last research question of this study is: *How do different dimensions of risk effects general risk?*

1.2 Method and structure of the thesis

Data used in this thesis is from survey in Hanoi, capital of Vietnam. A convenience sample of 387 questionnaires was collect in April, 2009. The process of analysis will be supported by SPSS 16.0 and AMOS.

The study is presented in five chapter. The first chapter present background information/ introduction, and the second chapter explains the theoretical framework. The chosen research methodology is outline in chapter three. The results of a survey are presented in chapter four, and last chapter presented the discussion/ conclusion.

2. The theoretical framework

Since the concept of risk was introduced in economics in the 1920s (Knight, 1948), it has been successfully used in theories of decision making in economics, finance, and the decision sciences (Dowling & Staelin, 1994). Perceived risk receive attention from both practitioners and academics and has been applied in a wide range of areas including intercultural comparisons, food technology, dental services, banking and apparel catalogue shopping (Mitchell, 1998). A general definition of perceived risk in marketing is " the nature and amount of risk perceived by a consumer in contemplating a particular purchase action" (Nana, 2003). The businesses need to indentify the effects of different types of risk to reduce consumers' perceived risk to target their resources on the right places.

According to Mitchell (1998), Risk analysis can be used in marketing resource allocation decisions. Perceived risk is more powerful at explaining consumer's behavior since consumers are more often motivated to avoid mistakes than to maximize utility in purchasing and perception risk analysis can also be helpful in Brand-image development, targeting, positioning and segmentation.

Perceived risk consists of distinct dimensions. For example, Cox (1967) and Taylor(1974) make a distinction between *uncertainty* and *significance of consequence* and suggest two different modes of behavioral responses in an attempt to lower risk. Uncertainty about the outcome can be reduced by acquiring and handling information. Uncertainty about the consequence can be dealt with by reducing the consequences through reducing the amount of stake.

The development of the theory perceived risk in the context of consumer behavior began in 1960. According to Bauer (1960), consumer's behavior involved risk because their purchasing actions "will produce consequences which he cannot anticipate with anything approximating certainty, and some of the which at the least are likely to be unpleasant". Perceived risk theory was initially used by marketing researchers to understand the effect on consumer behavior of marketing purchase decisions under such condition of imperfect information (Agrawal, 1995; Bauer, 1967; Cox, 1967; Cunningham, 1967; Mitchell & Greatorex, 1988; Mitra, Resiss, & Capella, 1999; among

the other). Cox (1967) argued that in a buying decision, a consumer attempt to indentify buying goals, or desired product attributes.

In addition, researchers have proposed that the consequences from a purchase can be divided into various types of loss: Financial, performance, time, physical and psychosocial. In marketing, risk perceptions directly affect purchasing and purchase intention (Mitchell et al., 1999; Roehl & Fesenmarier, 1992). Perceived risk is not only present in the highly-visible food scares but also motivates and helps to explain consumer' daily and weekly food shopping trips.

The fact that risk may have different causes and different consequences (ref…), make it possible to organize the following of this chapter into the following structure:

Antecedents ----> Perceived risk-----> Consequences

I start with a discussion of perceived risk, and follow up with a discussion of its antecedents and consequences. Finally, I will discuss a more comprehensive analytical model which will be tested empirically a following chapter.

2.1 Perceived risk and its dimensions

In classical decision theory, risk is most particularly conceived as reflecting variation in the distribution of possible outcomes, their likelihoods and their subjective values. The decision makers prefer smaller risks to larges ones (Mitchell 1998). Kogan and Wallach suggested that the concept of risk may have two, somewhat different facets: a " chance" aspect where the focus is on probability and a "danger" aspect where the emphasis is on severity of negative consequences(Mitchell, 1998). The Collins Dictionary definition for risk is "change of disaster or loss" while uncertainty reflects ambiguity (McCarthy & Henson, 2004). Stone and Gronhaug (1993) refer to the Penguin Dictionary of Economics definition of risk as: "a state in which the number of possible events exceeds the number of events that will actually occur, and some measure of

probability can be attached to them" while the definition for uncertainty is: " when no probabilities can be attached to them.

2.2.1 Perceived risk

The perceived risk concept has come through infancy to adulthood and has established a tradition of research unparalleled in consumer behavior research (Mitchell, 1998). Bauer (1960) originally introduced the construct of perceived risk into the marketing literature, stating that " consumer behavior involves risk in the sense that any action of a consumer will produce consequence which he cannot anticipate with anything approximating certainty, and some of which at least are likely to be unpleasant". Perceived risk is composed of "inherent risk", which is the latent risk that a product (or retailer) class holds for a consumer and " handled risk", which is the amount of conflict a product (or retailer) cause when the consumer choose a brand or a store in a particular buying situation (Bettman, 1973). Since then, perceived risk has become a particular construct used by researchers in consumer behaviour (Chaudhuri, 1998; Hoover et al., 1978). Perceived risk, defined as the expected negative utility associated with purchase of a particular brand or product (Dunn, Murphy, & Skelly, 1986)

The concept of perception risk most often used by consumer researchers defined risk in terms of the consumer's perceptions of uncertainty and adverse consequences of buying a product/service. Upah (1980) defined perceived risk as the loss from a bad purchasing decision, perceived by individuals in a buying unit. Interpretation of perceived risk in negative consequences appears to correspond with a buyer's perception towards the risk in general, and the attention on the factors concerning buyers. Thus, perceived risk can be consider as a negative consequence resulting from the purchase (Stone & Winter, 1987; Upah, 1980).

The level of perceived risk is a crucial factor in consumer behaviour (Bettman 1973; Dowling & Stealin, 1994). When uncertainty is high, perception risk increase, consumers engage in different types of risk-reduction activities (Dowling & Stealin, 1994). Perceived risk is powerful at explaining consumers' behaviour because "consumers are more often motivated to avoid mistakes than to maximize utility in purchasing".

2.1.2 Dimensions or components of perceived risk

There are many research about components of risk in general and perceived risk in particular. Perceived risk in the field of consumer behavior has been conceptualized as a multi-faceted construct (McCarthy & Henson, 2004). In 1967, Cunning Ham suggested that *uncertainty* and *consequences* are two components of risk. According to Mitchell and Hogg (1997), *uncertainty* has been defined and measured as confidence, reliability, dependability, trust, likelihood, and probability; *consequence* have been defined and measured in terms of trust, danger, relevance and seriousness.

Although there are many risk dimension, Dowling and Staelin (1994) indicated those most commonly associated with purchase decision are financial risk, performance risk and social risk. Financial risk refers when some product fails, our loss in the money it takes to make the product work properly, or to replace it with a satisfactory product, on the other hand, financial risk is an economic-dependent variable.; performance risk represents the probability that a product might not perform as expected; social risk is concerned with an individual's ego and the effect that a purchase will have on the opinions of reference groups.

Table 1 summarizes the studies that have examined components of perceived risk. For example, in tourist, Moutinho (1987) divided perception risk into fives categories: functional risk, physical risk, financial risk, social risk and psychological risk. Roselius (1971); Darley and Smith (1995) later added a sixth, time loss. Stone and Grounhaug (1993) classified the component of perceived risk as: financial, psychological, social, performance, physical and time related. In 1972, Jacoby and Kaplan indentified five types of perception risk, namely, performance, physical, financial, psychological and social. Mitchell (1998) also defined five dimensions of perception risk including Performance risk, physical risk, Financial risk, Psychosocial risk and time risk. Greenleaf and Lehmann 1995; Havlena and DeSarbo 1990; Jacoby and Kaplan 1972; Roselius 1971

indentified the types of perceived risks that influence consumer decision making include: functional, performance, financial, physical, psychological, and social.

Table 1: Dimension of perceived risk

Prior studies		Perceived risk					
Year	Author	Financial	Performance	Physical	Social	Psychological	Time loss
1971	Roselius	x	x	x	x	x	x
1972	Jacoby & Kaplan	x	x	x	x	x	
1973	Stone & Grounhaug	x	x	x	x	x	x
1974	Lutz & Reilly		x		x		
1974	Kaplan	x	x	x	x	x	
1982	Korgaonkar	x			x		
1990	Havlena & DeSarbo	x	x	x	x	x	
1993	Simpson & Lakner	x	x	x	x	x	
1995	Darley & Smith	x	x	x	x	x	x
1995	Greenleaf & Lehmann	x	x	x	x	x	
1998	Mitchell	x	x	x	x		

In addition to showing perceived risk is a multidimensional construct. However, many research and studies suggested that not all dimension of perceived risk were found to have significant effects on consumer's behavior. For example, Lutz and Reilly (1974) find that performance risk has a significant effect on consumer's information acquisition behavior, but social risk has no effect. Korgaonkar (1982) reports that economic/finance risk is significantly related to consumer's intention to purchase but social risk has no effect. However, the study expect that performance , finance, social and physical risks dominate the other risks (psychological, social) because of their relationship with attitudes and intention/behavior . This study will divide perceived risk into the following dimensions (Mitchell, 1998; Lim, 2003):

* ***Physical risk*** refers to threats to the health or appearance of the consumer and to the physical and mental energy expended on shopping and effort saving functionality of the product purchased (Lim, 2003). Physical risk is the possibility that products are harmful to individuals' health or products do not look as good as the individuals expect.

* ***Financial risk*** includes the consumer's concern about how much good are value for money as well as how much money might be wasted or lost if the product does not perform well (Lim, 2003). Financial risk is defined as a net financial loss to a customer,

including the possibility that the product may need to be repaired, replaced or the purchase price refunded (Horton, 1976). This is an extension into the future (future dollar costs) of the perceived price paid at the point of purchase (current dollar cost). Where the loss of money is an important consideration, financial risk is said to be high.

* ***Social risk*** is concerned with individuals' perception of other people regarding their online shopping behavior.

2.2 Antecedents of perceived risk

In developing of a conceptual model of the determinants and consequences of perceived risk, Dowling and Staeling (1994) suggest that goals, involvement and knowledge is important antecedents of generall perceived risk. Risk is often viewed as an antecedent of involvement (Choffee & McLeod, 1973). Risk is also related to the concept of trust, which has recently been given much attention in the relationship marketing literature (Berry, 1995; Doney & Cannon, 1997; Hawes, 1994). Perceived risk is a necessary antecedent for trust to be operative and an outcome of trust building is a reduction in the perceived risk of the transaction or relationship (Mitchell, 1999).

The relationship between perceived risk and attitude or evaluation is discussed in the literature (e.g., Stone and Mason, 1995). Some studies suggest that product or service quality (attitude) is an antecedent to perceived risk (e.g., Grewal et al, 2007), while others suggest that perceived risk is an antecedent or a part of how consumers evaluate the value or quality (attitude) of a product or services (e.g., Schmiege et al., 2009; Stone and Mason, 1995; Sweeney et al., 1999).

This study will include knowledge, trust/confidence and risk propensity as central antecedents to perceived risk of fish in Hanoi. Thus, in the following I will argue why these constructs are included in this study.

2.2.1 Knowledge

Consumer knowledge has important role in explicating consumer behaviors, particular with regard to information search and information processing (Park, Mothersbaugh, & Feick, 1994). Two distinct components of knowledge are recognized: Subject knowledge and Object knowledge. Subject knowledge refers to a person's

perception of the amount of information about product class stored in his or her memory (Brucks, 1985; Flynn & Goldsmith, 1999; Park et al.,1994). Objective knowledge pertain to the actual amount of accurate information stored in his or her memory (Brucks, 1985; Park et al.,1994.)The distinction is important; each of these knowledge types has different effects on information processing and subsequent consumer behavior (Cole, Gaeth, Chakraborty, & Levin, 1992; Flynn & Goldsmith, 1999). When consumer have more correct knowledge about seafood/fish, then they will perceive fewer risks.

In food and seafood context, knowledge may be also a barrier that inhibits the motivation toward fish consumption(Thom, 2007). Knowledge is an internal resource that can be linked to evaluating the quality of raw material, preparing and serving the final meal and its ingredients (Olsen, 2004).

Knowledge of seafood is suggested to be an important factor in explaining choice of seafood (Brunsø, 2003; Gempesaw et al., 1995). According to Olsen (2004) knowledge may also be important concerning the perceived quality of the final meal and knowledge as a barrier for seafood consumption needs to be investigated with longitudinal design and under experimental conditions in the future.

Given the fact that people possess very limited knowledge of food and seafood, the importance of trust should be no surprise (Chen & Li, 2006). Knowledge about food in particular and seafood in general plays some role in determining the consumer benefit and risk perception (Chen & Li, 2006). Knowledge increases, consumers understandably ask more skeptical attitudes (Sandoe, 2001). In addition, increasing knowledge by the provision of information is more likely to activate existing attitudes already held by consumers than to change these attitudes (Fazio, 1990; Frewer, Scholderer, Downs, & Bredahl, 2000). This study will define and use subjective knowledge about fish including risk as a component which affected perception risk of consumer. So, we thus predict the following hypothesis

Hypothesis 1*: When the consumer have more correct knowledge about fish, then they will perceive less risks*.

2.2.2 Trust

Risk is also related to the concept of trust, which has recently been given much attention in the relationship marketing literature (Berry, 1995; Dion *et al*., 1995; Doney & Cannon, 1997; Hawes, 1994; Morgan & Hunt, 1994; Smeltzer, 1997).

According to Howard & Sheth (1969), trust is considered one of the key issues the buyer considers when making a decision to purchase. Mayer et al. (1995) define trust as a willingness to take risk. Literature shows that researchers have different views about the relations between trust and perceived risk. Siegrist (1999, 2000) demonstrated that trust is companies and scientists conducting research in the area of gene technologies has a strong effect on personal perception of the risks. It is argued that the consumer's trust in institutions involved in using or regulating gene technology is negatively related to perceived risk. Lobb (2007) allow for the direct impacts of trust and risk perception on the intention to purchase as well as the interaction between trust, risk perception in food safety information. A consumer's risk perception can be viewed as being dependent on information from various source with differing impacts for negative and positive (Liu et al., 1998).

Mitchell 1998, perceived risk is a necessary antecedent for trust to be operative and an outcome of trust building is a reduction in the perceived risk of the transaction or relationship. Perceived risk is described as having a negative relationship with trust (Mitchell, 1999; Morgan & Hunt, 1994). If the relationship between perceived risk and trust was built, the risk will be decrease.

From a policy perspective, it is interesting to see how risk perception is linked to trust in different sources of food safety information. Trust on information provided by media increase risk perception and so does trust in alternative source such as consumer or environmental organizations, while trust in public authorities reduces it. (Lobb, 2006). The perceived risk is described as having a negative relationship with trust (Kimery & McCord, 2002; Swaminathan, Lepkowska -White, & Rao, 1999; Sluke et al., 2002; Mitchell, 1999; Morgan & Hunt, 1994). This study will define trust as a component

which have impact directly to perceived risk of consumer when they purchase/consume fish. We thus predict the following hypothesis

Hypothesis 2*: When the consumer have more trust, they will perceive less risks. about fish.*

2.2.3 Risk propensity

Consumer risk propensity is a central construct in consumer behavior (Sharma, Alford, Bhuian, & Pelton, 2008). Risk propensity refers to a person's willingness to take or avoid risk (Cho & Lee, 2005). Sitkin and Pablo (1992) said that risk propensity refers to one's tendency to take or avoid risk in a decision situation involving risk. Taylor et al. (1996) also showed that risk propensity is a given situation is affected by the outcomes of previous behavior of taking or avoiding risks in a similar situation. The inclusion of risk propensity is necessary in linking perceived risk and risk-reducing strategies, since it influences not only behavioral choice facing risk but also the perceived level of risk itself (Forlani et al., 2002; Keil et al., 2000). In fact, several researchers have provided empirical support that one's willingness to take risks varies depending on contextual and perceptual factors. This study conceptualize risk propensity as a behavioral tendency to take or avoid risk in consumption fish, include a traditional assessment of risk propensity and suggested that higher risk-taking propensity leads to a lower level of perceived risk (Cho & Lee, 2005).

Hypothesis 3*: The higher the risk propensity concerning purchasing fish, the lower the perceived level of risk*

2.3 Consequences of perceived risk

Some researcher defined perception risk in term of positive consequences. Arrow (1965) investigates the relevance of perceived risk and buyer satisfaction. He found the buyer to be more satisfied with a smaller risk rather than a larger one. However, the other study argued that perceived risk should be interpreted as a negative of consequence and appears to correspond with a buyer's perception towards the risk in general and the attention on the factor concerning buyer (Stone & Winter, 1987; Upah, 1980). Perceived

risk is the consumer's belief about the probability that he or she might suffer negative consequences from initially purchasing a specific good or service. Research on the pre-purchases perceived risk for products lends some credence to the contention that post-purchase perceived risk will affect behavioral intentions(Grewal et al., 2007). This study discuss perceived quality and general evaluation (attitude) as a consequence of perceived risk.

2.3.1 Attitude and intention

The TPB is widely used to explain intention and consumption. This theory suggests motivation or intention to consume as the primary driver of consumer behavior. This study will focus on one part of TPB: The relationship between Attitude – Intention – Consumption.

TPB postulated the conceptually of attitude toward the behavior and refers to the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question. Attitude are determined by a behavioral belief about performing a particular behavior. Attitude is one of three focal antecedent factors in TPB to motivation and consumption.

Intention is assumed as the best predictors of behavior. Intention is assumed as motivational factors influencing the behavior; it indicates the individual's willing and effort to perform the behavior (Ajzen,1991). Within conceptualization of TPB, intention is defined as individual's estimate of the likelihood that he/she will actually perform the critical behavior. Intention is assumed to capture the motivational factors that influence a behavior; they are indications of how hard people are willing to try, how much effort they are planning to exert, in order to perform the behavior (Ajzen,1991). In this conceptualization, intention is considered as mediators of attitude-behavior relationship. This study defines intention as motivation of individuals toward eating fish.

2.3.2 Risk and intention

Related on Perceived risk and intention, Howard and Sheth (1969) proposed that one of the determinants of purchase intention is confidence, which is the inverse of perceived risk. Bennett and Harrell (1975) suggested that confidence might play an

important role in predicting intentions to purchase. This suggests that lower perceived risk may be related to higher purchase intention.

Hypothesis 4: *When consumers perceive lower risk when eating fish, then they will have higher purchase intention*

2.3.3 Attitude and risk

Attitudes are often defined as general evaluation (included value) of an object. In order to get more information, a more specific evaluation is necessary – thus you argue for perceived quality – beliefs. The consumer's attitude is treated as a tendency to evaluate a particular entity (the attitude object) with a certain degree of favor or disfavor (Eagly & Chaiken, 1993). A specific attitude can be used to explain why some people support particular social policies or ideologies while others oppose them.

Attitudes are made up of the beliefs that a person accumulates over his lifetime. Some beliefs are formed from direct experience, some are from outside information and others are inferred or self generated . However, only a few of these beliefs actually work to influence attitude. These beliefs are called salient beliefs and they are said to be the "immediate determinants of a person's attitude" (Ajzen & Fishbein, 1980). An attitude, then, is a person's salient belief about whether the outcome of his action will be positive or negative. If the person has positive salient beliefs about the outcome of his behavior then he is said to have a positive attitude about the behavior. And, vice-versa, if the person has a negative salient beliefs about the outcome of his behavior he is said to have a negative attitude.

Particular to all of definitions, attitudes are often considered as an evaluative or cognitive process, and a disposition to the behave in certain ways (Jaccard & Blanton, 2005). A broadly accepted definition of attitude is as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favor or disfavor" (Eagly & Chaiken, 1993). In this definition, attitude is focused on a particular entity or object, rather than all objects and situations with which it is related; and an attitude is a predisposition to like or dislike that entity.

This study will define attitudes toward fish as a general evaluation of fish. It will be defined different from the evaluation of specific attributes or beliefs about fish. These

attributes or beliefs will be defined as perceived quality. Perceived risk as a factor influencing attitude toward consumption fish. The negative relationship between perceived risk and attitude has been conceptually indicated by Ju-rison (1995) and empirically tested in several environments (Featherman & Pavlou, 2003; Pavlou, 2003; Ge-fen & Pavlou, 2004). Benamati and Rajkumar (2003) confirmed this relationship in an empirical study of application development outsourcing.

How perceived risk influence attitudes

Referring to TRA, the perception of risk is a behavioral belief and as such an important antecedent of the attitude towards. If the perceived risks are seen to out weight benefits, the consumer's acceptance may be very low. The consumers perceived more risk when eating fish, then they will have less positive attitude. Therefore, this study model perceived risk as directly impacting attitude, thus indirectly influencing the intention to increase the level of consumption fish through the effect of attitude on intention.

Hypothesis 5*: When consumers perceive more risk when eating fish, then they will have less positive attitude***.**

How attitude influence intention and behavior

A positive attitude towards products is a good starting point to stimulate sustainable consumption. The relationship between attitudes and behaviour has been the subject of extensive research described in the consumer behaviour and social psychology literature (Verbeke & Viaene, 1999).

In food and seafood context, attitudes are suggested to be one of the main determinants in explaining food consumption (Bredahl & Grunert, 1997; Olsen, 2001; 2004; Shepherd & Raats, 1996; Verbeke & Vackier, 2005). The correlation of attitude with intention was reported significantly high (Olsen, 2001; 2005; 2007; Shepherd & Raats, 1996; Saba & Vassallo, 2002; Verbeke & Vackier, 2005). The impact of attitude on intention and behavior in food/seafood studies were reported to be much higher than those impacts of norms and perceived control (Olsen, 2001; 2007; Verbeke & Vackier, 2005).

The link attitude-behavioral intentions has been extensively examined in the marketing literature. The relation-ship between attitude and intention is based on TRA,

which states that the beliefs about an outcome shape the attitude towards performing a behavior. Attitude, in turn, influences the intention to perform the behavior and, ultimately, influences the behavior itself (Wixom & Todd, 2005). Therefore, the more positive the attitude towards consumption fish, the higher the intention to increase the level of consumption fish will be.

Hypothesis 6*: The higher the attitude towards fish, the higher the (a) intention (b) consumption of fish.*

As is often the case, this study does not allow a check on behavior, rather focusing on intention to behave as a proxy for behavior (Lobb, Mazzocchi & Traill, 2007). The model testing which was not include consumption, will make the analysis more simple. That is the reason why the model testing of this study will not include consumption.

2.3.4 Perceived quality

Consumer's opinion of a product's (or a brand's) ability to fulfill his or her expectations. It may have little or nothing to do with the actual excellence of the product, and is based on the firm's (or brand's) current public image (see corporate image), consumer's experience with the firm's other products, and the influence of the opinion leaders, consumer's peer group, and others.

Perceived quality is among others defined as the consumer's judgment about a product's generall excellence or superiority (Zeithaml, 1988). Perceived quality is also recognized to reflect personal and individualistic characteristics in evaluating products. For example, Sethuraman and Cole (1997) found that perceived quality explains a considerable portion of the variance in the price premium consumers are willing to pay for national brands. The perceived quality of products and services of strong brands add value to consumers' purchase evaluations.

Perceived value is defined as the consumer's generall appraisal of the net worth of the food product, based on the consumer's assessment of what is received (benefits provided by the food product), and what is given (costs or sacrifice in acquiring and utilizing the food product) (Frewer, 1997; Steenkamp, 1989; Kyriakopoulos & Oude

Ophuis, 1997). However, this study will not include cost as a part of the quality construct???

In 2006, Aikman, Crites, and Fabrigar conducted two studies to systematically identify the informational bases of food attitudes. The findings suggest that food attitudes are comprised of five distinct base: positive affect(e.g., calm, comforted), negative affect (e.g., guilty, ashamed), abstract cognitive qualities (e.g., healthy, natural), general sensory qualities (e.g., taste, smell), and specific sensory qualities (e.g., salty, greasy). This study only focus on perceived quality because it can be defined as an evaluation of salient product attributes about seafood and fish like taste, texture, color etc.

Seafood is usually evaluated as a high quality product. Taste, nutrition, freshness, health, and appeal are mostly considered as salient food attributes forming a general attitude of food (see Olsen, 2004 for a review). These attributes are also suggested to be the most important in evaluating food products (Olsen, 1999; Steptoe *et al.*, 1995). Taste and distaste are more important for younger consumers (Berg, Johnson, & Conner, 2000) while elderly people are more concerned about of nutrition and health (Roininen & Lahteenmaki, 1999). Generally, taste, appearance, and texture are main indicators in evaluating quality of seafood products. Appearance and texture are important cues that make consumers feel more confident in their evaluation of seafood products.

Some attributes or beliefs like unpleasant smell and bones only contribute negatively to the development of seafood attitudes. For example, several studies show that unpleasant smell and bones are significant reasons for less motivation to consume food across different countries (Bredahl & Grunert, 1997; Leek et al., 2000; Olsen, 1999).

In seafood consumption behaviour, perceived quality (Olsen, 2002; Trondsen, Scholderer, Lund, & Eggen, 2003a; Verbeke & Vackier, 2005), nutrition (Brunsø, 2003), and health (Trondsen, Braaten, Lund, & Eggen, 2003b; Trondsen, Braaten, Lund, & Eggen, 2004) are significant characteristics forming a positive attitude toward eating fish; whereas some other attributes like the smell and bones of fish have only a negative effect on fish preference (Bredahl & Grunner, 1997; Leek, Maddock, & Foxall, 2000; Olsen, 2001; Verbeke & Vackier, 2005).

Several studies also reported that other attributes of fish products are able to impact on attitudes toward the fish purchase such as price/cost, convenience and

availability. Several studies do not include price and cost as a part of the quality construct. Leek *et al.* (2000), Honkanen *et al.* (1988), and Olsen (2004) reported that price, value for money and household income were not perceived as barrier for seafood consumption. Verbeke and Vackier (2005) found that price had negative impact on attitude toward fish consumption in Belgium.

The study considers that perceived quality is the main attributes that influence fish consumption behavior. Perceived quality is defined and measured in both evaluative responses and negative effects.

How risk influence perceived quality

According to Shimp and Bearden (1982),''...higher perceived quality may serve to mitigate the risk that accompanies the uncertainty of whether a product will satisfactorily perform its intended function. So, this study is to examine the causal relationship between perceived risk and perceived quality through the hypothesis below:

Hypothesis 7: *The perceived quality of fish has a negative impact on the perceived risks.*

How perceived quality influence attitude and intention/behavior

The quality concept in marketing perspective in often discussed in terms of perceived quality. Customer's evaluation of perceived quality was defined and measured as evaluation of attribute performance (Churchill & Surprenant, 1982; Oliver, 1997). Marketers also want to know the effect of consumers' perceived service quality on attitude and adoption intention. Thus, this study want to examine the causal relationship between perceived quality and attitude and intention to consumption fish.

Hypothesis 8: *Perceived quality has a positive impacts consumer attitude towards fish*

Hypothesis 9: *Perceived quality has a positive impacts on consumers intention to consume fish*

2.4 The conceptual model

According to Grewal (2007), perceived risk and perceived quality has close relationship. The perceived quality of the service provider is likely to affect the level of risk perceptions associated with future service encounters. Service providers that are

perceived as very high quality are likely to reduce post-purchase perceived risk. As consumers' perceptions of service quality become more favorable, consumers will perceive post-purchase risk to be lower (Grewal, 2007). In this model, perceived quality is an antecedent to perceived risk.

In addition, In the SPARTA model (Lobb, Mazzocchi, & Traill. 2006), the interaction between perceived risk, attitudes, trust and intention were shown very close. Trust has a negative correlation with purchasing intentions and increasing risk perception. or trust in food chain and independent sources shows a positive, albeit non-significant impact. Meanwhile, attitudes towards the product are negatively effected by risk perception.

Based on the 9 hypotheses, this study have developed an analytical framework. Figure-1 illustrated the impact relationships of consumers' perceived risk on perceived quality, attitude and intention towards consumption fish and the relation ship between perceived risk and its antecedences: knowledge, confidence/trust and risk propensity. In this study, we have tested those hypotheses by conducting a survey.

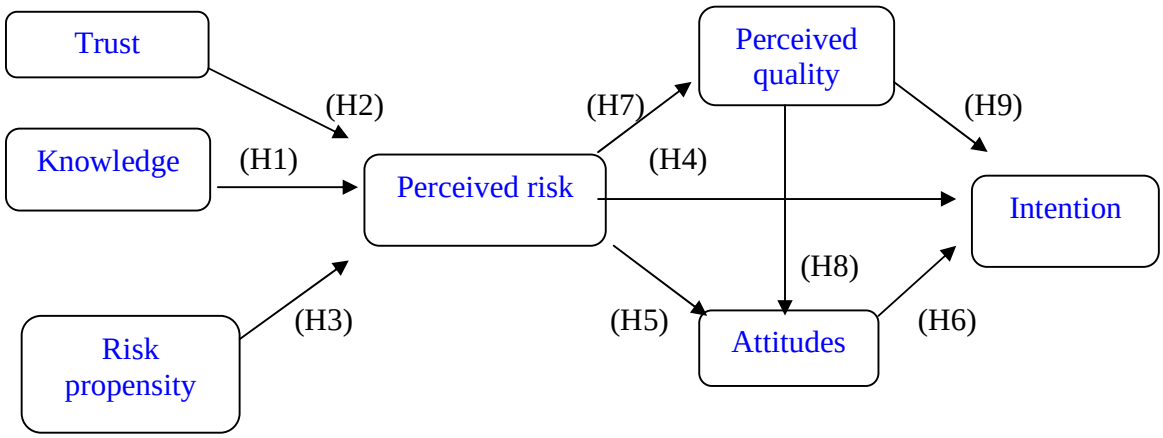

Figure 1: The conceptual framework

Research on the pre-purchase perceived risk for products lends some credence to the contention that perceived risk will affected behavior intentions. Some research suggested that perceived risks are negatively related to intention. Or attitude towards the product are negative affected by risk perception. However, Lobb (2007) conclusion that

perceived risk does not seem to influence behavioral intention directly, it negatively affects attitudes. These interpretations of the relationship between trust, perceived risk, and other salient attitudes imply that trust, (low) perceived risk, and an individual's acceptance of a particular technology should be highly inter-correlated. The relationship hypothesized in this model between risk perception and the other can be tested statistically.

2.5 Relationship between perceived risk and its dimensions.

Many prior studies shown that perceived risks have many dimensions that influence consumer decision making, such as performance, physical, psychological, social and financial (Greenleaf & Lehmann, 1995; Havlena & DeSarbo, 1990; Jacopy & Kaplan, 1972). Dholakia (1997) suggests that the significance of the contribution of these individual facets to general risk. For example, financial risk is found to be very significant for laptop computer (McCarthy & Henson, 2005). This study focus on three dimension of perceived risk, namely: Financial, Physical and Social risk and all of them contributed significant to general risk. So, the last research question in this study related on the relationship between three dimensions of risks and general risk.

3. Data and Methods

This part present the process of data collection, questionnaires and analysis methods.

3.1 Data collection

Survey data were collected by directly interview through questionnaire in Ha Noi, the capital of Vietnam, in April 2009. The samples were taken in four main district of Hanoi (Hoan Kiem district, Ba Dinh district, Hai Ba Trung district and Tay Ho district) because many super market and big market located there. The questionnaire took 30-45 minutes to interview and completed. The respondents were directly personally interviewed at home, in supermarket or their office. The numbers of interview performed was 387 and all of them were chosen for the study. Fifty five percent of the respondents were female and 45% were male. Of all respondents 40% were single and 60% were married. Table 2 shows details of the sample.

Table 2: Socio-demographic characteristics of the sample (% of respondents, n=387).

Gender	Male	45	**Occupation**	Office work	43
	Female	55		Manual labor	7
Age	Under 20	15		Small trade	5
	21-30	34,9		Student/pupil	23
	31-50	34,1		Retirement	10
	50-60	10,1		other	12
	Upper 60	5,9			
Marriage	Single	40	**Income**	Under 1 million	1,8
	Married	60		1-2 million	14
Education	Primary	4,4		2-3 million	20
	Secondary	9,3		3-4 million	25
	High school	13,4		4-5 million	14
	College	16		5-6 million	8
	University	46,5		6-7 million	5
	Post Graduated	16		Upper 7 million	9,56

The final data was code, checked for outliers, normality and linearity by SPSS. Factor analysis and reliability test were implemented in the next step. Descriptive analysis and test of mean difference were performed to deeply and fully understand the measure.

3.2 Measurement

3.2.1 Consumption behavior

In general, this study defines behavior as fish consumption of individuals. The behavioral measure is also in accordance with Jacoby and Chestnut's (1978) formal definition of loyalty as a behavioral response expressed over time. In this study, a self-reported consumption measure was used. Four questions were used to measure the behavior. The first question of " How many times in average during the last year you have consumed fish as a meal?" used to measure the behavior have been applied commonly in marketing and social science, also in the area of food consumption behavior (Raats et al, 1995; Olsen, 2002; Verbeke & Vackier, 2005). The measure was addressed by a 9-point scale of the form from 1 = less frequency, 2 = 1-2 times every month, 3 = 1-2 times every 14 days, 4 = 1-2 times every week, 5 = 3-4 times every week, 6 = 5-6 times every week, 7 = 7-8 times every week, 8 = 9-11 times every week and 9 = 12 times or more than every week. The study assumes that fish consumption frequency correlated positively linearly with attitudes. This mean the higher fish consumption frequency is, the higher favorable attitude toward to product is (Thom, 2007).

Please make a ☒ for each alternative on how many times in **average during the last year** you have consumed fish / food as a meal

How often do you eat fish?	Less frequency	1-2 times every month	1-2 times every 14 days	1-2 times every week	3-4 times every week	5-6 times every week	7-8 times every week	9-11 times every week	12 times ore more every week
	1	2	3	4	5	6	7	8	9
	☐	☐	☐	☐	☐	☐	☐	☐	☐

3.2.2. Intention to consume fish

Intention is a measure of likelihood that a person will engage in a given behavior (Fishbein & Ajzen, 1975; Ajzen, 1991; Thom, 2007). This study considers behavioral intention reflect the individual willing to eat fish and the construct is assumed as a mediator of the relationship between behavior with attitude.

Intention is measured as motivation to consume fish. The construct is usually been measured in term of will, expect, should, wish/intend, determined or want with the probability estimates such as " unlikely" and "likely" (Armitage & Conner, 2001). In which, the explanations like plan, expect and want are commonly used to measured intention in empirical researches in social science and seafood consumption studies (Armitage & Conner, 2001; Sparks, 1992; 1995; Verbeke & Vackier, 2005).

In this study, the respondents were asked to score their probability of intention of eating fish during the 3 coming days with anchors from 1 = very unlikely to 7 = very likely.

Could you please estimate how likely it is that you during the 3 coming days you plan, expect and want or eat fish as a meal – including today?

During the 3 coming days	Very unlikely						Very likely
	1	2	3	4	5	6	7
I plant to eat fish	☐	☐	☐	☐	☐	☐	☐
I expect to eat fish	☐	☐	☐	☐	☐	☐	☐
I want to eat fish	☐	☐	☐	☐	☐	☐	☐

3.2.3 Attitude

Attitude is defined as an association in memory between a given object (e.g. a fish product) and a given summary evaluation of the object (Fazio, 1995). Attitude toward fish consumption is firstly assessed as global evaluation without any specificity in product items, times or context when the consumption occurs (Thom, 2007). Global attitude and evaluative response in attitude research are usually assessed by their valence and extremity. The valence is often assessed by terms expressing good/bad, positive/negative, pleasant/unpleasant, wish/foolish, favorable /unfavorably, like/dislike,

unsatisfactory/satisfactory, whereas extremity is assessed in unipolar scale with judgment estimate of agree – disagree (Eagly & Chaiken, 1993; Thom, 2007).

Five items of attitude evaluation and fish preferences, namely: bad/good, unpleasant/pleasant, unsatisfied/satisfied, dull/exiting, negative/positive are used to assess general attitude in both marketing (Stayman & Batra, 1991) and seafood consumption behavior (Olsen, 2001; 2007; Verbeke & Vackier, 2005). In this study, five items were used to measure attitude. Respondents were asked with question: "In the following we would like you to think about how you feel when you eat fish as a meal" and after that, they give an certainty in evaluation for their answer.

The level of evaluation will increase from 1 = negative feeling to 7 = positive feeling.

When I eat fish, I feel….

	Your feelings / evaluation						
	1	**2**	**3**	**4**	**5**	**6**	**7**
Bad	☐	☐	☐	☐	☐	☐	☐
Unpleasant	☐	☐	☐	☐	☐	☐	☐
Unsatisfied	☐	☐	☐	☐	☐	☐	☐
Dull	☐	☐	☐	☐	☐	☐	☐
Negative	☐	☐	☐	☐	☐	☐	☐

3.2.4 Perceived quality

According to TRA and TPB, attitude toward an objective (e.g. fish product) or behavior (fish consumption) can be assessed by salient beliefs. Perceived quality, healthiness, appealing and negative effects are main salient food attributes forming a general attitude of food (see Olsen 2004 for a review). Customer's evaluation of perceived quality was defined and measured as evaluation of attribute performance (Churchill & Surprenant, 1982; Oliver, 1997). The perceived quality is assessed though three items of appearance, taste and texture (Peter & Hans, 1995; Olsen, 2004). In this study, there is five items which was used to assessed the perceived quality: Variable/Stable quality, Bad/Good taste, Bad/Good texture, Bad/Nice appearance and Poor/Good impression,

The other salient is healthy. Two item of " fish as meal is healthy" and " fish as meal is nutrition" is adopted Steptoe *et al* (1995) and mentioned by Peter and Hans (1995)

as credence quality attributes. Appealing attribute is assumed that " fish as meal suitable for elderly" and " fish as meal appealing children". The items are presented in semantic differential formats with a 7-points scale from 1 = low/bad evaluation to 7 = high/good evaluation.

We would like you to evaluate different characteristics or attributes with fish. Please can you answer how you would evaluate the following properties of fish?

	1	2	3	4	5	6	7	
Variable quality	❑	❑	❑	❑	❑	❑	❑	Stable quality
Bad taste	❑	❑	❑	❑	❑	❑	❑	Good taste
Bad texture	❑	❑	❑	❑	❑	❑	❑	Good texture
Poor appearance	❑	❑	❑	❑	❑	❑	❑	Nice appearance
Bad impression	❑	❑	❑	❑	❑	❑	❑	Good impression
Unhealthy	❑	❑	❑	❑	❑	❑	❑	Healthy
Fat	❑	❑	❑	❑	❑	❑	❑	Low fat / lean
Unsafe	❑	❑	❑	❑	❑	❑	❑	Safe
Risky for health	❑	❑	❑	❑	❑	❑	❑	Without health risk
Not Nutritious	❑	❑	❑	❑	❑	❑	❑	Nutritious

3.2.5 Perceived risk

Variable to measure risk indirectly(i.e., the dimension of risk) were developed with the aid or expert opinions. In this study, the general risk used three item to measure: (a) 'General, I would say that choosing to eat fish is unsafe', (b) 'If I were to tell a friend about fish, I would describe fish as risky food', (c) 'General, I would say that choosing to eat fish is risky'. After that, Three dimension of perceived risk, namely: financial risk, physical risk and social risk were assessed by 9 items. Financial risk was assessed by three items. The first was 'I feel that the ability to face with financial risk when buying fish is high'. The second items was 'Given the expenses involved buying fish, the risk involved in buying fish is very high'. The last item was 'Given the amount of money involved buying fish, the risk involved in buying fish is very high'. Physical risk was measured by three item: (a) 'When I buy fish I am concerned that it will not be as I expected', (b) 'When I buy fish I am concerned that it will not meet my requirements' and (c) 'When I buy fish I am never sure I have chosen the right product'. The last dimension of risk – social risk was

assessed by three items: first 'In many cases I feel stress when deciding to buy fish for my family meals', second 'In quite many cases I feel my family members dislike fish I buy' and last 'In quite many cases my family members deny to eat fish I buy'.

Respondent evaluated these items on 7-point bipolar scale anchored by the endpoints " totally disagree" and " totally agree" and labeled from -3 to +3, with 0 as a midpoint.

Please indicate your evaluation about how risky, worry or safe when choosing fish for everyday meal

	Totally disagree			**Neither agree nor disagree**			**Totally agree**
General risk	-3	-2	-1	0	+1	+2	+3
General, I would say that choosing to eat fish is unsafe	❑	❑	❑	❑	❑	❑	❑
If I were to tell a friend about fish, I would describe fish as risky food	❑	❑	❑	❑	❑	❑	❑
General, I would say that choosing to eat fish is risky	❑	❑	❑	❑	❑	❑	❑
Financial risk	-3	-2	-1	0	+1	+2	+3
I feel that the ability to face with financial risk when buying fish is high	❑	❑	❑	❑	❑	❑	❑
Given the expenses involved buying fish, the risk involved in buying fish is very high	❑	❑	❑	❑	❑	❑	❑
Given the amount of money involved buying fish, the risk involved in buying fish is very high	❑	❑	❑	❑	❑	❑	❑
Physical risk	-3	-2	-1	0	+1	+2	+3
When I buy fish I am concerned that it will not be as I expected	❑	❑	❑	❑	❑	❑	❑
When I buy fish I am concerned that it will not meet my requirements	❑	❑	❑	❑	❑	❑	❑
When I buy fish I am never sure I have chosen the right product	❑	❑	❑	❑	❑	❑	❑
Social risk	-3	-2	-1	0	+1	+2	+3
In many cases I feel stress when deciding to buy fish for my family meals	❑	❑	❑	❑	❑	❑	❑
In quite many cases I feel my family members dislike fish I buy	❑	❑	❑	❑	❑	❑	❑
In quite many cases my family members deny to eat fish I buy	❑	❑	❑	❑	❑	❑	❑

3.2.6 Knowledge – Risk propensity – Trust about fish quality

Knowledge

Knowledge may be an internal resource that inhibits the motivation of eating fish. The construct is related to preparing, cooking, evaluating quality, ect. In this study, knowledge were assessed by two sub-scales, with one sub-scale measured by seven items, namely: (1) 'I find it easy to prepare delicious meals with fish', (2) 'Compared to an average person, I know a lot about fish', (3) 'My friends consider me as an expert on fish', (4) 'I have a lot of knowledge how to evaluate the quality of fish', (5) 'Compared to an average person, I know a lot about the risk for eating maine fish', (6) 'My friends consider me as an expert on the risky aspect with eating fish', (7) 'I have a lot of knowledge how to evaluate the if fish is risky to eat or not'. Respondent evaluated these items on 7-point bipolar scale anchored by the endpoints " totally disagree" and " totally agree" and labeled from -3 to +3, with 0 as a midpoint.

	Totally disagree			**Neither agree nor disagree**			**Totally agree**
Knowledge	-3	-2	-1	0	+1	+2	+3
I find it easy to prepare delicious meals with fish	❑	❑	❑	❑	❑	❑	❑
Compared to an average person, I know a lot about fish	❑	❑	❑	❑	❑	❑	❑
My friends consider me as an expert on fish	❑	❑	❑	❑	❑	❑	❑
I have a lot of knowledge how to evaluate the quality of fish	❑	❑	❑	❑	❑	❑	❑
Compared to an average person, I know a lot about the risk for eating fish	❑	❑	❑	❑	❑	❑	❑
My friends consider me as an expert on the risky aspect with eating fish	❑	❑	❑	❑	❑	❑	❑
I have a lot of knowledge how to evaluate the if fish is risky to eat or not	❑	❑	❑	❑	❑	❑	❑

Risk propensity

Risk propensity has been defined in the business literature as the tendency of an individual either to take or avoid risks (Sitkin & Pablo, 1992; Sitkin & Weingart, 1995) and has been measured using Kogan and Wallach's (1964). MacCrimmon and Wehrung's (1990) study of executive risk behaviour conceptualizes risk propensity in items of measures of willingness to take risks. Blake and Perloff (1973) measured buying intentions as 'willingness to buy' new (risky) products. In this study, four items were used to measure risk propensity. The first item was 'I am willing to accept risk when I buying fish in difference market'. The second item was 'I am willing to take risk when I eating fish'. The third item was 'I am willing to buy and eat a new fish' and the last item was 'I am willing to face risk when I deciding to buy fish for my family meals'. Respondent evaluated these items on 7-point bipolar scale anchored by the endpoints " totally disagree" and " totally agree" and labeled from -3 to +3, with 0 as a midpoint.

	Totally disagree			**Neither agree nor disagree**			**Totally agree**
Risk propensity	-3	-2	-1	0	+1	+2	+3
I am willing to accept risk when I buying fish in difference market	❑	❑	❑	❑	❑	❑	❑
I am willing to take risk when I eating fish.	❑	❑	❑	❑	❑	❑	❑
I am willing to buy and eat a new fish	❑	❑	❑	❑	❑	❑	❑
I am willing to face risk when I deciding to buy fish for my family meals	❑	❑	❑	❑	❑	❑	❑

Trust about fish quality

Confidence about fish quality was assessed by four items: (a) 'I think fish quality is increasingly improving', (b) 'In recent time, my trust on fish quality has improved', (c) 'I am not worried about the quality of fish' and (d) 'I am not concerned about the quality of fish'. Respondent evaluated these items on 7-point bipolar scale anchored by the endpoints " totally disagree" and " totally agree" and labeled from -3 to +3, with 0 as a midpoint.

	Totally disagree			**Neither agree nor disagree**			**Totally agree**
Trust	-3	-2	-1	0	+1	+2	+3
I think fish quality is increasingly improving	❑	❑	❑	❑	❑	❑	❑
In recent time, my trust on fish quality has improved	❑	❑	❑	❑	❑	❑	❑
I am not worried about the quality of fish	❑	❑	❑	❑	❑	❑	❑
I am not concerned about the quality of fish	❑	❑	❑	❑	❑	❑	❑

In the end of questionnaire are some information needed to fulfill. The information is related demographic characteristics such as gender, age, marital status, income, education, and living area

RESPONDENT'S INFORMATION

What is your sex? Male ❑ Female ❑ Married❑ Single ❑
In which year are you born? : 19…….

What is your education?

Primary school	❑	College/university	❑
Secondary school	❑	Post graduated	❑
High school	❑		

Occupation

Office work	❑	Student	❑
Manual labour	❑	Retirement	❑
Small trade	❑	Other	❑

What is the total income in your household last year – all included before tax? (1000 VND)

Under 1000	❑	4000 – 5000	❑
1000 – 2000	❑	5000 – 6000	❑
2000 – 3000	❑	6000 – 7000	❑
3000 – 4000	❑	Upper 7000	❑

3.3 Analytical methods and procedures

The primary objective of thesis are to explore different aspects with risk perception and how risk is related to attitudes and consumption fish in Hanoi, and a further understanding of the relationship among these construct. T-test and ANOVA are used to test the mean difference of items. Factor loadings and Cronbach's alpha are index to test of reliability.

3.3.1 Exploratory/confirmatory factor analysis and test of reliability

3.3.1.1 Exploratory factor analysis

Exploratory factor analysis (EFA), corresponding to the former task, imposes no substantive constraints on the data; there is no restrictions on the pattern of relationships between observed and latent variables. EFA is data driven (Brown 2006: 14). Each common factor is assumed to affect every observed variable and that the common factors are either all correlated or uncorrelated. Once model is estimated, factor scores, proxies of latent variables, are calculated and used for follow-up analysis. General purpose statistical software packages such as SPSS, SAS, and Stata can perform EFA.

3.3.1.2 Confirmatory factor analysis

Confirmatory factor analysis (CFA), on the other hand, is theory- or hypothesis driven. With CFA it is possible to place substantively meaningful constraints on the factor model. Researchers can specify the number of factors or set the effect of one latent variable on observed variables to particular values. CFA allows researchers to test hypotheses about a particular factor structure (e.g., factor loading between the first factor and first observed variable is zero). Unlike EFA, CFA produces many goodness-of-fit measures to evaluate the model but do not calculate factor scores. CFA requires special purpose software packages such as Mplus, LISREL, Amos, EQS, and SAS/STAT CALIS.

In fact, CFA is a special case of the structural equation model (SEM), also known as the covariance structure (McDonald, 1978) or the linear structural relationship (LISREL) model (Jöreskog & Sörbom, 2004). SEM consists of two components: a *measurement model* linking a set of observed variables to a usually smaller set of latent

variables and a *structural model* linking the latent variables through a series of recursive and non-recursive relationships. CFA corresponds to the measurement model of SEM.

Validity of a given construct is defined as the extent to which the indicators "accurately" measure what they are supposed to measure (Hair *et al*, 1995). In empirical researches, the validity of a construct is examined in aspects of convergence and discriminates.

Convergent validity concern about how the measures tap the facets of construct. This validity is examined by looking at the individual item loading, composite reliability and variance-extracted measure for each construct. Composite reliability is measure of internal consistency of the construct indicators; an acceptable value should exceed 0.7 (Hair *et al*, 1995). The variance-extracted measure reflects the general amount of variance that the indicators accounted for by the latent construct; these values for each construct should be exceed 0.5 (Hair *et al*, 1995). These indexes are calculated by standard loading for each construct indicator and its measurement error as shown in E.q. 3.1 and 3.2

$$\text{Composite validity} = \frac{\left(\sum std.loading\right)^2}{\left(\sum std.loading\right)^2 + \sum \varepsilon_j} \quad (3.1)$$

$$\text{Variance extracted} = \frac{\sum std.loading^2}{\sum std.loading^2 + \sum \varepsilon_j} \quad (3.2)$$

In which, measurement error (ε_j) = 1- (std.loading)^2 (Hair *at el*, 1995).

3.3.2 Structural equation modeling

Structural equation modeling (SME) is a comprehensive statistical approach to testing hypothesis about relations between observed and latent variable.

A SME thus consists of two components, the " measurement model", in which latent variables are proposed and tested through CFA, and the " structural model", in which the latent variables and observed variables which are not indicators of latent variables are linked together in a relational way.

Confirmatory factor analysis and structural models are achieved by Amos 5.0 packages. Generall model fit (measurement and construct model) is assessed by number of index. Chi-square ($\chi 2$) is traditional test for discrepancy between sample covariance matrix and population covariance matrix. However, this criteria has been recognized to be sensitive with sample size so that it should be used as quickly overview of model fit (Byrne, 2001). Amos 6.0 can report a number of alternative indexes of fit: Root mean square residual (RMR); goodness-of-fit index (GFI), normed fit index (NFI), comparative fit index (CFI), root mean square error of approximation (RMSEA). Acceptable model fit are indicate by RMR and RMSEA values below 0.08, and GFI, NFU and CFI value exceeding 0.90 (Byrne, 2001). This study will use the value of Chi-square, RMSEA, and CFI as criterion to examine the Goodness of Fit of the models.

3.4 Relationship between general risk and dimension of perceived risk

Multiple linear regression was used to test the hypothesis that the three risk facets contributed significantly to general risk. Co-linearity analysis was conducted on the regression models. The model was first tested using the multiplication model for each of the risk types:

General risk = Const + β_1 Social risk + Financial risk + β_3 Physical risk + U (3.3)

Where Const is the constant, β_1 to β_3 are the variable coefficients and U is the random disturbance term.

4. Result

This part begins with exploratory factor analysis and reliability test for the measures. Factor loadings of items are extracted associated with sub-latent constructs, and then Cronbach's alphas are calculated for the most reliable measures. The factor loadings of items and Cronbach's alpha are used to consider the suitability of the indicators in describing the latent factors in question. The items have low factor loadings or have cross-loadings on other factors should not be considered as suitable indicator for the factor in question (Hair *et al*, 1995).

The other process is to test causal models by SEM through two steps (Anderson & Gerbing, 1988). According to Hair *et al* (1995), Cronbach's alpha is only indicative to the existence of uni-dimensionality of multiple-indicators rather the reliability of the constructs. Thus, confirmatory factor analysis is performed to re-examine more stringently the convergent and discriminate validity of each construct within proposed models. Composite reliability and variance-extracted scores of constructs are calculated and used to test the reliability. Once convergent and discriminate validity of constructs are confirmed, the structural models are estimated to test the hypothesis of relationships.

4.1 Consumption of fish

Table 3: Assessment of fish consumption frequency

How often do you eat fish?	Frequency	Percent	Cumulative Percent
less frequency	95	24.5	24.5
1-2 times every month	77	19.9	44.4
1-2 times every 14 days	77	19.9	64.3
1-2 times every week	86	22.2	86.6
3-4 times every week	36	9.3	95.9
5-6 times every week	9	2.3	98.2
7-8 times every week	6	1.6	99.7
12 times or more every week	1	.3	100.0
Total	387	100.0	

The level of eating fish in sample is different. Table… shown that there are fewer respondents eating fish every day (2,3% with 5-6 times every week and 1,6% with 7-8 times every week) , only one respondent eating fish 12 times or more every week. The ratio of the respondent eating fish 1-2 times every week and less frequency are approximate the same (22,2% with 1-2 times every week and 24,5% with less frequency). The majority of respondents eaten fish 1-2 times per month. The respondent eating fish very few make up more than 60%.

4.2 Exploratory factor analysis and reliability test

The exploratory factor analysis (EFA) and reliability test are performed firstly for the items with the attitude beliefs and the other constructs. Reliability is commonly used by scholars of sociology to estimate the stability and consistency of measurement methods. It means no matter how many times the survey is conducted in the same sample with the same questionnaires; the result of analysis will be alike. The values exceeded the minimum standard of .7 (Nunnally & Bernstein, 1994), providing good estimates of internal consistency reliability.

4.2.1 Reliability statistics

Cronbach's alpha is commonly reported as a measure of reliability; however, it is directly influenced by the number of items in a scale and underestimates reliability when the assumption of tau-equivalence (the items load on the same construct exclusively and have loadings equal in magnitude) is violated (Bollen,1989) for further details). In light of the ability to check for tau-equivalence in CFA, use of an alternative coefficient based on a slightly different conceptualization of reliability that accommodates lack of tau-equivalence has been recommended. Initially derived by Jöreskog (1971), this coefficient of construct reliability is based on a definition of reliability as an assessment of the variance in the indicators explained by the common underlying latent construct. Gerbing

and Anderson (1988) recommended using the following formula to calculate construct reliability:

4.2.2 Exploratory factor analysis

An exploratory factor analysis for constructs within proposed model involves items, in which 7 items are regarded to knowledge, 4 items of risk propensity, 3 items of every construct of general risk, financial risk, social risk, physical risk, 4 items of confidence about fish quality, 11 items for perceived quality and 3 items of every construct of attitude and intention. Factor loadings of items, explained variance and Cronbach's alpha of the constructs are presented in table

Rotated Component Matrix

Principal component factor analysis with varimax rotation (Table 4) was performed on the survey data. Principal Component Analysis (PCA) is the commonly used method for grouping the variables under few unrelated factors. Variable with a factor loading ≥ 0.5 are grouped under a factor. A factor loading is the correlation between the original variable with the specific factor and the key to understanding the nature of that particular factor (Debasish, 2004).

Table 4: Rotated Component Matrix

	Component									
	Knowledge	Attitude	Financial risk	Trust	Intention	Risk propensity	Attribute evaluation	Physical risk	Social risk	General risk
Compared to an average person, I know a lot about fish	.733									
My friends consider me as an expert on fish	.798									
I have a lot of knowledge how to evaluate the quality of fish	.817									
Compared to an average person, I know a lot about the risk for eating fish	.856									
My friends consider me as an expert on the risky aspect with eating fish	.839									
I have a lot of knowledge how to evaluate the if fish is risky to eat or not	.805									
When I eat fish, I feel: bad/good		.830								
When I eat fish, I feel: unpleasant / pleasant		.850								
When I eat fish, I feel: not satisfied / satisfied		.857								
When I eat fish, I feel: dull/exiting		.792								
When I eat fish, I feel: negative/positive		.810								
I feel that the ability to face with financial risk when buying fish is high			.887							
Given the expenses involved buying fish, the risk involved in buying fish is very high			.903							
Given the amount of money involved buying fish, the risk involved in buying fish is very high			.828							
I think fish quality is increasingly improving				.741						
In recent time, my trust on fish quality has improved				.792						
I am not worried about the quality of fish				.809						
I am not concerned about the quality of fish				.777						

	Component									
	Knowledge	Attitude	Financial risk	Trust	Intention	Risk propensity	Attribute evaluation	Physical risk	Social risk	General risk
I plan to eat fish during next three day					.840					
I expect to eat fish during next three day					.858					
I want to eat fish during next three day					.856					
I am willing to accept risk when I buying fish in difference market						.873				
I am willing to take risk when I eating fish.						.917				
I am willing to buy and eat a new fish						.603				
I am willing to face risk when I deciding to buy fish for my family meals						.854				
Attribute evaluation for fish: bad / good taste		.421					.591		-.409	
Attribute evaluation for fish: bad / good texture							.676			
Attribute evaluation for fish: Poor / nice appearance							.555			
Attribute evaluation for fish: bad / good impression							.645			
Attribute evaluation for fish: unhealthy/healthy							.789			
Attribute evaluation for fish: fat/low fat							.684			
Attribute evaluation for fish: unsafe/safe							.579			-.480
Attribute evaluation for fish: risky for health/withour risky for health							.595			-.438
Attribute evaluation for fish: not nutrition/nutrition							.738			
When I buy fish I am concerned that it will not be as I expected								.869		

	Component									
	Knowledge	Attitude	Financial risk	Trust	Intention	Risk propensity	Attribute evaluation	Physical risk	Social risk	General risk
When I buy fish I am concerned that it will not meet my requirements								.841		
When I buy fish I am never sure I have chosen the right product								.689		
In many cases I feel stress when deciding to buy fish for my family meals									.650	
In quite many cases I feel my family members dislike fish I buy									.805	
In quite many cases my family members deny to eat fish I buy									.718	
General, I would say that choosing to eat fish is unsafe										.654
If I were to tell a friend about fish, I would describe fish as risky food										.685
General, I would say that choosing to eat fish is risky										.626
Cronbach's alpha	0.918	0.962	0.933	0.669	0.91	0.848	0.962	0.847	0.755	0.778

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Table 5: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	**% of Variance**	Cumulative %
Knowledge	13.226	29.390	29.390	13.226	**29.390**	29.390
Attitude	4.504	10.008	39.399	4.504	**10.008**	39.399
Financial risk	3.810	8.467	47.866	3.810	**8.467**	47.866
Confidence/trust	2.626	5.836	53.702	2.626	**5.836**	53.702
Intention	2.409	5.354	59.056	2.409	**5.354**	59.056
Risk propensity	2.105	4.679	63.735	2.105	**4.679**	63.735
Perceived quality	1.699	3.775	67.511	1.699	**3.775**	67.511
Physical risk	1.296	2.880	70.390	1.296	**2.880**	70.390
Social risk	1.174	2.608	72.998	1.174	**2.608**	72.998
General risk	1.066	2.369	75.367	1.066	**2.369**	**75.367**

Extraction Method: Principal Component Analysis.

The result in table 5 shows that the factor loadings of items are all grater than 0.7. The Cronbach's Alpha of intention, Perceived quality, Attitude, Knowledge and financial risk are all grater than 0.9 and of risk propensity and physical risk are greater than 0.8. Only confidence/trust is less than 0.7. Health risk and social risk are between 0.7 and 0.8. The index of reliability are exceeding far than recommended level of 0.7 and not exceeding level 0.8.

The high Cronbach's Alpha show the high inter-correlations among the items. The 10 factors below explain for 75.367 % of the variance in the data.

- Knowledge (factor 1)

Knowledge includes 7 items . After doing Exploratory factor analysis (EFA) and reliability test, only 1 item was rejected. The factor loading of items are very high, all greater than 0.8, only two item less than 0.8 but higher than 0.7. The cronbach's alpha (0.918) is far above the suggested level.

- Attitude (factor 2)

Attitude has 5 item and all of them are excepted because their factor loading of items are very high, greater than 0.8, only one item less than 0.8 (dull/exiting = 0.792). The cronbach's alpha (0.962) is far above the suggested level.

- Financial risk (factor 3)

Financial risk includes only 3 item and the same with attitude, all of them are excepted with very high loading of items, more than 0.8 (Given the expenses involved buying fish, the risk involved in buying fish is very high = 0.903 and I feel that the ability to face with financial risk when buying fish is high = 0.887); the item of "Given the amount of money involved buying fish, the risk involved in buying fish is very high" has little lower loadings of 0.828. The Cronbach's alpha is higher than the suggested level (0,933).

- Confidence about fish quality (factor 4)

Four items described the confidence about fish quality and the result of EAF suggested that: only one item has loading of items more than 0.8 (the item of "In recent time, my trust on fish quality has improved" = 0,814 and "I am not worried about the quality of fish" = 0.809); three items have loading of item more than 0.7 (the item of "I am not concerned about the quality of fish" = 0.777; "I think fish quality is increasingly improving" = 0.741 and "In recent time, my trust on fish quality has improved" = 0.792). The Cronbach's alpha is very low, not exceeding the level 0.7 (0.669).

- Intention (factor 5)

Intention was measured by three items regarded to " plan to eat", " expect to eat" and " want to eat" fish. The items have high loading, 0,840 for " plan to eat", 0,858 for "expect to eat" and 0,856 for " want to eat" fish. The Cronbach's alpha is very high, far above suggested level (0,91).

- Risk propensity (factor 6)

Risk propensity involves four items. The items have high loading, 0,917 for item of "I am willing to take risk when I eating fish"; 0,873 for item of "I am willing to accept risk when I buying fish in difference market" and 0,854 for item of "I am willing to face risk when I deciding to buy fish for my family meals". Only one item has factor loading less than 0.7 (' I am willing to buy and eat a new fish' = 0.603. The Cronbach's alpha is very high, far above suggested level (0.848).

- Attribute evaluation (factor 7)

Attribute evaluation was measured by 14 items. However, only two items have loading more than 0,7. Four items have loading factor more than 0.6 and the other items have loading less than 0.6. The Cronbach's Alpha is very high, approximate 1 (0.962).

- Physical risk (factor 8)

Physical risk involves three items. The item have high loading of 0,869 for "When I buy fish I am concerned that it will not be as I expected" and 0,841 for "When I buy fish I am concerned that it will not meet my requirements". Only one item has loading factor less than 0.7 ' When I buy fish I am never sure I have chosen the right product' = 0.689. The Cronbach's Alpha equal 0,847.

- Social risk (factor 9)

Social risk was measured by three items. The loading items of 0.05 for "In quite many cases I feel my family members dislike fish I buy" and 0,718 for "In quite many cases my family members deny to eat fish I buy". One item has loading less than 0,7. The Cronbach's alpha (0,755) is with accepted level.

- Health risk (factor 10)

In 10 factor, only health risk has the loading of item of all three items less than 0.7: for "Generall, I would say that choosing to eat fish is unsafe" = 0,654 and for "If I were to tell a friend about fish, I would describe fish as risky food" = 0,685. The Cronbach's alpha (0,778) is with accepted level.

4.3 Test of the concept model

The section has objective to understand the underlying relationships among factors.

The method of structural equation modeling (SEM) is applied in further writing. SEM is mostly used in social sciences (Kelloway, 1998), especially in testing of hypotheses of causal influences. The condition for SEM is an a priori defined model of variables among which the authors want to assess the connections or relations and the strength of those relations. In their hypotheses, the authors anticipated casual influences among variables researched, therefore they adopted SEM.

Amos 5.0 can report a number of alternative indexed of fit: comparative fit index (CFI), root mean square error of approximation (RMSEA). Acceptable model fit is indicate by RMSEA values below 0.08 and the value of comparative fit index (CFI) range from 0 to 1.00 with a value close to 1.00 indicating good fit (Bryne, 1998; 2001)

A structural equation model (SEM) with 7 constructs was used to test the proposed model presented in Fig.1 As indicated, the general efficacy of the model and statistical significance of the structural relationship were examined with full-information structural equation modeling.). This study will use the value of RMSEA and CFI as criterion to examine the Goodness of Fit of the models

4.3.1 Confirmatory factor analysis

The proposed model in this study involves 7 construct as shown in Fig. … This study concentrate on general risk perception with three items, namely: first 'General, I would say that choosing to eat fish is unsafe' , second 'If I were to tell a friend about fish, I would describe fish as risky food' and the last 'General, I would say that choosing to eat fish is risky' and consider its as the main construct.

Initial confirmatory factor analysis of seven factors was consisted of 23 items, in which only attitude and knowledge have 4 items per factor and each other factor has 3 items.

Convergent validity of constructs is evaluated by number of criteria: standardized loading factors of each item in construct (Bagozzi, Yi, & Phillips, 1991); composite reliability and variance extracted scores of the constructs (Bagozzi & Yi, 1988). Composite reliability and variance-extracted scores are calculated according to equation of 3.1 and 3.2.

The measurement model with 7 constructs exhibited a good fit with the Chi-square = 498, the Root mean square error of approximation (RMSEA) value = 0.06 which is within the suggest standard by Hair et al. (1995), the comparative fit index (CFI) = 0.960 which exceeds the standards recommended level of 0.09 by Browne and Cudeck (1993); Bollen (1998).

Following table 4, the factor loadings of items are all high (above 0.7). Composite reliability and variance extracted scores of construct all exceed the recommended level of 0.6 and 0.5, respectively, (Bagozzi & Yi, 1988; Hair *et al*, 1995). In another word, convergent validity of constructs is confirmed.

High correlations between latent constructs indicate a signal that the discriminate validity of constructs may be violated. It is found some high correlation between constructs as shown in table 6 below.

Table 6: Standardized confirmatory factor analysis coefficients and construct reliability

Constructs and indicators	Standardized factor loadings	Critical ratios	P-value	Composite reliability	Variance extracted
Knowledge				**0.89**	**0.67**
Compared to an average person, I know a lot about fish	**.691**	**14.282**	***		
Compared to an average person, I know a lot about the risk for eating fish	**.895**	**19.629**	***		
My friends consider me as an expert on the risky aspect with eating fish	**.881**	**19.317**	***		
I have a lot of knowledge how to evaluate the if fish is risky to eat or not	**.794**				
Risk propensity				**0.90**	**0.76**
I am willing to accept risk when I buying fish in difference market	**.865**	**19.540**	***		
I am willing to take risk when I eating fish.	**.944**	**20.577**	***		
I am willing to face risk when I deciding to buy fish for my family meals	**.800**				
Confidence about fish quality				**0.83**	**0.63**
In recent time, my trust on fish quality has improved	**.599**				
I am not worried about the quality of fish	**.881**	**41.053**	***		
I am not concerned about the quality of fish	**.869**	**39.575**	***		
Perceived risk (general risk)				**0.78**	**0.54**
General, I would say that choosing to eat fish is unsafe	**.793**				
If I were to tell a friend about fish, I would describe fish as risky food	**. 751**	**11.777**	***		
General, I would say that choosing to eat fish is risky	**. 663**	**11.149**	***		
Perceived quality				**0.89**	**0.73**
Good/bad taste	**.918**	**24.543**	***		
Good/bad texture	**.887**	**18.349**	***		
Nice/poor appearance	**.748**	**24.543**	***		
Attitude				**0.96**	**0.85**
Good/bad	**.928**	**26.427**	***		
Pleasant/ unpleasant	**.954**	**28.062**	***		
Satisfied/unsatisfied	**.958**	**28.330**	***		
Exiting/dull	**.855**				
Intention (During the 3 coming days)				**0.96**	**0.90**
I plant to eat fish	**.954**				
I expect to eat fish	**.951**	**41.053**	***		
I want to eat fish	**.943**	**39.575**	***		

Chi-square = 498.7, df = 209; CFI = 0.960, RMSEA = 0.06
Three stars (***) mean that the p-value is less than 0.001.

Table 7: Inter-correlation among constructs in model

Constructs	**Knowledge**	**Trust**	**Risk propensity**	**General risk**	**Perceived quality**	**Attitude**	**Intention**
Knowledge	1						
Trust	0.256	1					
Risk propensity	0.159	0.112	1				
General risk	-0.077	-0.248	-0.011	1			
Perceived quality	0.433	0.348	0.134	-0.326	1		
Attitude	0.427	0.369	0.047	-0.329	0.704	1	
Intention	0.395	0.368	0.154	-0.209	0.543	0.532	1

4.3.2 Structural model

Follow the Standardized confirmatory factor analysis coefficients and construct reliability result (table 6), the standardized confirmatory factor of item three of general risk was less than 0.7 so this study reject this item.

After reject one item of general perception risk, the structural model appeared with goodness fit. The Chi-square for the model is 454.9 with 180 degree of freedom. The Root mean square error of approximation (RMSEA) = 0.063 within the recommended level, and the comparative fit index (CFI) = 0.959 exceeding the recommended level of 0.9.

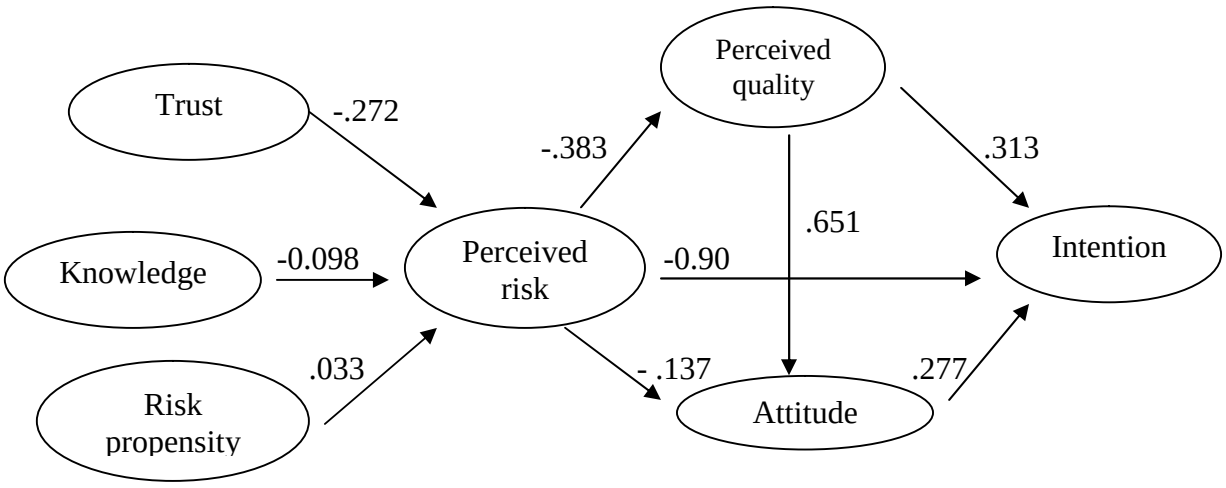

Figure 2: Standardized regression coefficient of beliefs model

Table 8: Hypothesis results from the structural model

Research hypothesis	Regression weights	Standardized Regression weights	t-value	p-value	Conclusion
H1. Knowledge → Perceived risk	-0.092	-0.098	-1.636	0.102	Supported
H2. Trust → Perceived risk	-0.354	-0.272	-4.028	***	Supported
H3. Risk propensity → Perceived risk	0.029	0.033	0.558	0.577	Not supported
H4. Perceived risk → Intention	-0.148	-0.090	-1.594	0.111	Supported
H5. Perceived risk → Attitude	-0.174	-0.137	-2.714	0.007	Supported
H6. Attitude → Intention	0.361	0.277	4.155	***	Supported
H7. Perceived risk → Perceived quality	-0.548	-0.383	-5.939	***	Supported
H8. Perceived quality → Attitude	0.578	0.651	12.719	***	Supported
H9. Perceived quality → Intention	0.362	0.313	4.569	***	Supported

Three stars (***) mean that the p-value is less than 0.001.

The results are shown in table 8 and figure 2.

H1 suggested a negative relationship between knowledge and perceived risk. This relationship is supported because the corresponding estimate of -0.098.

H2 predicted a negative relationship between perceived risk and trust and this relationship is supported by the corresponding estimate of -0.272.

H3 predicted a negative relationship between perceived risk and risk propensity. The result shown that it is not supported by the corresponding estimate of 0.033. It is positive relationship between them.

Data concerning the paths from perceived risk to intention (β_{H4} = -0.090) and attitude (β_{H5} = -0.137), and suggest that H4 and H5 are supported. This mean that if consumer have more perceived risk about fish then they will less attitude and intention towards fish.

H6 suggested a positive relationship between attitude and intention. This relationship is supported by the corresponding estimate of 0.277. This mean that the more positive the attitude towards consumption fish, the greater the intention to increase the level of consumption fish will be.

Data regarding the paths from perceived risk to perceived quality (β_{H7} = -0.383), and perceived quality to attitude (β_{H8} = 0.651) and intention (β_{H9} = 0.313) indicate that H7 , H8 and H9 are supported. This mean that if consumer have more perceived risk about fish then they will less perceived quality. And perceived quality impacts consumer attitude and intention towards consumption fish positively.

4.4 Relation ship between general risk and dimensions of perceived risk

The F-statistic was significant in both models, demonstrating that at least one of the independent variables was significantly different from 0. All risk facets were positively related to general risk. Thus, it would appear that all of the risk facets investigated contribute to the level of risk perceived. The result presented in table 9 shown that: if the social risk increased 1% the general risk increased 0.443%. Then, if the financial risk increased 1% the general risk will increased 0.357%. And the last, if the physical risk increased 1%, the general risk will increased 0.289%. So, the most dimension which contributed to general risk is social risk because the of social risk is highest (equal 0.443) and the least dimension is physical risk by β of physical risk is lowest (equal 0.289).

Table 9: General perceived risk for fish

Model	B	Std. Error	Beta	t	Sig.
(Constant)	8.406E-17	.039		.000	1.000
Financial risk	.357	.039	.357	9.077	.000
Social risk	.443	.039	.443	11.272	.000
Physical risk	.289	.039	.289	7.358	.000

a. Dependent Variable: general risk

Adjusted $R^2 = 0.403$

5. Discussion and Conclusion

The current study investigates interrelationships between the antecedents and consequences of perceived risk toward fish in a convenience sample of 387 consumers in Hanoi.

Consumption fish in Hanoi: The respondents in Hanoi reported that they eat marine fish as a meal not much, only 3-4 per month. The seafood consumption of Vietnamese people, particularly in inland regions, is considerably lower than coastal region and other countries such as Japan, Korea, China, or Western countries.

This study tests a structural equation model proposing risk perception (general risk) toward fish as an important construct. Confirmatory factor analysis in the measurement model provided strong support for distinguishing between antecedents and consequences of perceived risk, as well as that perceived risk has several dimensions (name the dimensions). The result of the structural model based on main constructs of the extended TPB and theory of perceived risk fit well with the Vietnamese data. On the whole, the proposed research model (general model) in this study explains the data very well**.**

Antecedence of perceived risk

The subjective knowledge about fish including risk of the consumer is the most important antecedence of perceived risk in the Vietnamese sample. This study shows that consumer's subjective knowledge has a significant influence in decreasing the perceived risk when the consumer purchase /consume fish. Knowledge has a negative influence on perceived risks. This mean that consumer in Hanoi indeed perceive lower risks when they purchasing/eating fish. In other words, in Hanoi if the public's knowledge in food safety could be increased, people would not be so skeptical about common food (fish). The result of this study was consisted with some prior studies. Example, Chen and Li (2006) found that if consumer have more knowledge then they will perceive less risk from applying gene technology to food production.

Trust as a component which have impact directly to perceived risk of consumer when they purchase/consume marine fish. This result suggested that trust has a significant influence on perceived risk. And the same with knowledge, trust also has a negative influence on perceived risk. In other words, the consumer in Hanoi have more trust, they will perceive less risk when purchase/consume fish.

Besides knowledge and trust, risk propensity is found to be another key determinant of perceived risk. Specifically, the consumer with higher risk propensity in his/her

purchasing/eating fish perceives a lower level of perceived risk. This study shows that the positive relationship between perceived risk and risk propensity. The result has contradictory to some earlier findings which assert that when consumer has higher the risk propensity concerning purchasing fish, they perceive lower level of risk. Meanwhile, Cho and Lee (2006) suggested that risk propensity had a negative and significant effect on risk perception.

Consequences of perceived risk

The results suggest that the perceived quality of marine fish has a negative impact on the perceived risks. In particular, consumer with higher perceived risk toward purchase/consume fish have significantly lower perceived quality. This mean that consumer in Hanoi have higher perceived quality about common food (fish) so they have less risk when purchase/consume fish.

Besides, perceived quality has directly influenced on attitude and intention. This study suggested that perceived quality has significantly positive relationship with attitude and intention. On the other hand, the consumer in Hanoi has higher perceive quality of fish when they purchase/consume so they has higher attitude toward this food and want to purchase/consume.

The second consequences of perceived risk is attitude. The result shows that perceived risk as directly impacting attitude, thus indirectly influencing the intention to increase the level of consumption marine fish through the effect of attitude on intention. This study shows that the consumers perceived more risk when purchase/consume marine fish, then they will have less positive attitude. Additional, the attitude of the consumers is the most important predictor of intention to consume fish in the Hanoi sample. The study confirmed that attitude was the strongest predictor of intention in the social as well as the food context (Ajzen, 1991; Fishbein & Ajzen, 2005; Olsen, 2001, 2004; Verbeke & Vackier, 2005). The correlation of attitude with intention and with perceived risk was significant high. So, attitudes are the most important antecedence of intention to consume fish.

One of the most important consequences of perceived risk is intention. Perceived risk can be influence indirectly intention through perceived quality and attitude or influence directly intention. This study suggested that perceived risk has a significant influence in decreasing intention when the consumer purchase/consume fish. This mean that when the consumer in Hanoi has higher perceived risk, they has lower purchase intention about fish. In addition, intention were influenced by perceived quality and attitude.

This result related on attitude and intention were consistent with the result of Tuu, Olsen, Thao & Anh (2008)'s study.

Implications

The result of this study suggested that the consumer in Hanoi consume fish at a very low frequency. Fish was an important food which provided many protein, omega3 and other vitamins for consumer's health. So fish as meal is a common consumed food in Hanoi. The demand for eating fish increased dramatically, especially the food crisis and disease happen in over the world and fish was considered the best choice of the consumer. However, this study show that the frequency of eating fish is very low. There is a reason to explain this situation: the consumer feel risk and not secure about the quality of fish. The consumers were worry about quality of fish in the market and super market. So, the seafood industry and companies can take these advantages to promote their quality of product if they want to increase the demand of fish. They should focus on step by step of the supply chain to ensure the quality of product from the aquaculture pond to the dinner table. In addition, the seafood industry and companies should support for fisherman the loan and technical to help them improving the method of preserve product, limiting used the preservative substance.

Limitation and suggestion for future research

This is one of the very few studies including perceived risk and its dimensions and consequences in food area in Hanoi. The present research is based on a convenience sample from one city in Vietnam (inland regions, very far from sea), so the result are not necessarily representative of the whole of the population. The result presented here base on primary data and the measures utilized in this study were self-reported. Lacking of experience about research model so some of constructs in study has limitation, such as, the intention was measured by the items within time interval of next three days had a moderate score and appeared not consistent with the consumption behavior. This limitation suggests that the future studies should measure the intention within a longer time interval, for example in one or two weeks. Experimental designs should be in order to meet issues of causality in future studies.

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