KNOWING ABOUT YOUR FOOD SAFETY FROM THE FARM TO THE TABLE: USING FOOD TRACEABILITY SYSTEMS THAT REDUCE INFORMATION A SYMMETRY IN TAIWAN

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Abstract— In the past several years, the steady occurrences of food safety problems in Taiwan have caused consumers to pay much more attention to the origin and ingredients of the products they buy. As a result of changes in attitudes of consumption, modern consumers are not only in pursuit of "inexpensive" products, but also "good quality" ones. Thus,while working to satisfy consumer requirements, firms must drive down productions costs in order to increase market share and bolster profits. When asymmetric information exists in the market, due to both human and environmental factors, situations of market failure will occur. Furthermore, transaction costs and the emergence of transaction difficulties can result in scenarios where some businesses engage in opportunism.The number of consumers using food traceability mechanisms is increasing daily. Food traceability systems (FTS) are designed for the purpose of effectively controlling the production conditions throughout the entire production processes, thereby reducing the potential for problems to occur. Also, if there is a problem with the food materials, the source of the problem can be quickly traced by using the production control information recorded throughout production processes.This helps clarify supplier responsibility, and, when the FTS are used in a transparent manner, may reduce the unease felt by consumers.In this research, Social Cognitive Theory will serve as the basis. It will discuss the effect that market conditions, consumer awareness and consumer behavior have on one another and look at whether or not these will impact consumer willingness to use food traceability mechanisms or purchase food traceability products when there are doubts about the quality or source of the food. Furthermore, it will examine the mediating effect of "food supplier consumer confidence" and "perceived supplier risk" factors. Finally, it will verify whether or not there is a significant positive influence that exists between consumer confidence in food suppliers and their willingness to make a purchase;also, whether or not there is a significant negative influence relationship that exists with respect to perceived supplier risk and the consumers willingness to purchase a product.

Keywords— Market failure; Trust; PerceivedRisk; PurchaseIntention; Food Traceability Systems (FTS)

I. INTRODUCTION

In the past several years, Taiwan has seen the persistent appearance of food safety problems. From the Plasticizer of 2011 on to the maleic acid modified starch and adulterated cooking oil scandals of 2013, a series of food-safety storms caused consumers in Taiwan to begin taking closer notice of the source and ingredients of the food products they purchased. Furthermore, as a result of changes in lifestyle and consumption patterns, today's consumers are not only after "cheap" products, but also require "quality" and "convenience". These factors are instigating producers to drive down production costs in order to increase market share so that they can increase profits while keeping customers satisfied. Such behavior has contributed to the recent food safety incidents in Taiwan and has caused consumers to experience a loss of trust in food manufacturers. According to [1], through the processes of exchange, human and environmental factors will lead to market failure and further create market transaction difficulties and transaction costs. Some suppliers will also engage in opportunism. With thoughts turned towards low-cost profitability, producers or raw material suppliers only concerned with their own gain may ignore the health safety of consumers. In order to make the most profit for themselves, suppliers use unapproved additives, such as plasticizers, maleic anhydride, and copper chlorophyll to products for sale. In situations of information asymmetry between consumers and suppliers, some suppliers will take part in this type of opportunism, thus causing consumers' level of trust in the suppliers to depreciate. As a result, consumers will gradually lose hope in manufacturers.

With Social Cognitive Theory serving as a basis[2], this study looks at the three factors of "environment", "individual" and "behavior" as it discusses food supplier market failure and the resultant loss of trust and increase in risk awareness on behalf of the consumer. When the supplier deliberately conceals information unfavorable to the consumers, the consumer cannot obtain sufficient information and a situation of information asymmetry will occur. In the above discussion it is pointed out that food market trading processes are affected by environmental factors and human factors, creating situations of information asymmetry and leading to market failure. And when markets see situations of information asymmetry some suppliers, through the process of transaction, will adopt strategic behavior in order to obtain greater personal profit resulting in situations of opportunism [3].

As greater importance is gradually being attached to food safety problems, use of food traceability systems (FTS) is also gradually being taken more seriously. In

January of 2005 the EU started formulating food traceability guidelines, using a consumer-supplier bi-directional distribution chain food traceability system, which not only allows consumers to trace the products themselves, but also allows them to understand their sources and journeys. This "farm-to-table" records includes data on cultivation, production, processing, transportation, storage, cooking and other related items. From the feed used in aquaculture to the pesticides used on crops; from additives used during processing to the spices used during cooking, any risks that might come up throughout the supply chain can be readily identified. Consumers in some EU nations believe that food traceability can provide excellent control of food quality and food safety throughout the food supply chain [4]. The transparency and tracking features of the FTS create a situation where the information on food production and selling is publicly available, allowing for consumers to obtain more information so that they can make informed decisions when purchasing products. Consequently, more and more consumers are gradually attaching importance to food traceability systems. Reference [5]&[6] argue that the use of food traceability systems can reduce the uncertainty that consumers have towards food products when purchasing them. Reference[7] argues that FTS implementation can resolve food product information asymmetry problems and that FTS will reduce the number of occurrences of the same. This will reduce uncertainty among consumers and have a diminishing effect on opportunistic behavior [8]. Although FTS cannot eliminate the occurrence food crises, it can help businesses to quickly detect food safety problem sources in subsequent investigations and reviews [9], [10]. Reference[11] discovered that food traceability product information can increase consumer trust. In the research of Reference[12], it is pointed out that food traceability systems can cause consumers to develop a sense of trust towards suppliers and reduce information asymmetry and opportunism. The formation of trust can also reduce the perceived risk the consumer associates with purchasinga product [13].Thus, as past research has demonstrated that when consumers trust suppliers it can effectively lower the consumers' risk perception, more and more suppliers are working to gain consumer trust and reduce risk, thereby increasing consumers' willingness to make purchases.

II. LITERATURE REVIEW & PROPOSITION DEVELOPMENT

2.1. Market Failure

The concept of Market failure can be traced back to Reference [14], he defined that"Market failure refers to when information asymmetric(IA) exists in the market, due to both human and environmental factors, situations of market failure will occur. Furthermore, transaction costs and the emergence of transaction difficulties can result in scenarios where some businesses engage in opportunism". As a result of changes in attitudes of consumptionwhile to satisfy consumer requirements, firms must drive down productions costs in order to increase market share and bolster profits. Thus, scholars are generally suggesting that IA and opportunism might be the main cause of the market failure.In this research, we discuss that market failure occurs in the market which includes IA between consumers and food suppliers and opportunism of food suppliers.

2.1.1 Opportunism occurs in the market

In this research, we discuss that market failure occurs in the market which includes opportunism of food suppliers.Opportunism is commonplace in new or ongoing relationships in all its forms and it is an important concept in the academic area. Because of transaction costs and the emergence of transaction difficulties can result in scenarios where some businesses engage in opportunism. Reference [1][14]notes that opportunism is differs from simple self-interest seeking.Because it not only seek self-interest with guile but also involves making false or empty.And in order to make the most profit for themselves when markets see situations of information asymmetry some suppliers, through the process of the transaction, will adopt strategic behavior in order to obtain greater personal profit resulting in situations of opportunism.

2.1.2 Information asymmetric (IA) exists in the market

In this research, we discuss that market failure occurs in the market which includes IA between consumers and food suppliers.According toReference[15]defined that the Agency theory under the condition of IA explains the agency relationship between a principal and an agent. This IA problem, mainly caused by the principal and agent are self-interested that only concerned with their own gain. However, Arrow represents that causes IA related problems not only the problems of adverse selection (i.e., before the transaction for its own benefit that hiding of information by the agent) but also moral hazard (i.e., after the transaction that hiding of actions and related information by the agent).Reference[16] argue that food safety issues often arise from problems of IA between consumers and producers that third-party certification and traceability networks are examples of systems used to help bridge the information gap between market players and reduce inefficiencies that arise from IA.Now the government is making efforts to establish public trust in FTS, hoping that the gap of information asymmetry between consumers and food supplier can be further filled [17]. The use of FTS can reduce the uncertainty that consumers have towards food suppliers when purchasing them[5], [6].FTS implementation can resolve food information

asymmetry problems [7], and that FTS will reduce the number of occurrences of the same. Reference [8] argued thatFTSwill reduce uncertainty among consumers and have a diminishing effect on opportunistic behavior.

2.2. Trust in FTS

Reference[18] suggested that trust has been investigated in numerous studies in many different fields. In the economic literature, Reference[19]argue that trust reduces the transaction costs of an exchange. According to Reference[20] arguments, trust as reliance between parties that the other party is reliable in the organizational.Whether interpersonal or between buyer-supplier any relationship, is built on trust. Trust is a psychological condition and it the most valuable of uncertainty conditions [21]. Reference[22] indicated that people tend to apply trust as a reducer of social complexity when a social environment cannot be adjusted through rules and customs. In previous discussions of relationships between customers, trust is usually related to service attributes – altruism, integrity, and quality and reliability [23].

Reference[24] suggested that trust is the foundation of e-commerce. Reference[25] argued that trust is the most crucial factor for the success of e-commerce.Some scholars believe that trust not only reduces uncertainty about the future but also continuing relationship with opportunistic behavior participants [26]. Through the literature review of trust issues, we can know that trust research has spanned over a long period of time and across many disciplines. The relationship that food supplier of consumer trust and food-safety have aroused the attention of the world [27], [28], [29].Giraud &Reference[30] discovered that food traceability product information can increase consumer trust. In the research of Reference[31], FTS can cause consumers to develop a sense of trust towards suppliers and reduce information asymmetry and opportunism.Wherein, trustreduces the transaction costs of an exchange. The transaction cost is included in the information asymmetry and opportunism. Thus, we can extend derivatives that trust reduces the information asymmetry and opportunism. Reference[32]argued that trust diminishing opportunism in exchange relations and promoting cooperation. Above of the literature review on market failure and trust, we are able to suggest that using FTS is not only reduce the market failure occur in market, but also increase consumer trust.Hence, the following proposition is proposed perceived regulatory effectiveness has a positive impact on trust in seller.

Proposition 1: Base on Market failure for consumers to use FTS positive impact onconsumer' trust.

2.3. Perceived Risk

Reference[33] defined that "the nature and amount of risk perceived by a consumer in contemplating a particular purchase decision". Reference[34] argue that the perceived risks as " the expectation of losses associated with purchases and acts as an inhibitor to purchase behavior." Nowadays, risk has been conceptualized as a consumer's perceptions of the uncertainty and adverse consequences [35], [36].Reference[37] represent perceived risk is a concept of an anticipated loss resulting from a future transaction is a subjective concept, which is tough to measure directly. The literature indicates that, perceived risk is inevitable under conditions of information asymmetry that has been used in the literature as a proxy for risk that theory was effect on consumer behavior of making purchase decisions for cases of imperfect information [38], [39], [40], [41].However, some scholars believe that perceived risk depends on the purchase behavior and even cultural differences, which may vary depending on specific transactions and environments [42], [43].

Food safety is a major factor quality and origin of food when consumers produce food valued. Reference [44] represent that from the past to emphasize ingredients and cooking techniques to present freshness businessman low cost, large supply, consumer demand, low prices, high quality and tasty, in such an environment, chemical food additives appeared. Adding food additives in food results, not only for a long time to deceive the public, it is harmful to human health hazards. In the past several years, Taiwan has seen the persistent appearance of food safety problems. The Plasticizer of 2011 on to the maleic acid modified starch and Oil fraud case of 2013. Food safety has become a major issue of public concern in Taiwan. Reference[45] argued that food adulteration is an evolving concept of fraudsters to profit from the acts. And The Food Risk Matrix was developed and published by[46] that they defined that food adulteration that is for economic gain, food fraud, there are three types of risks.

From the above can be found in the literature, food fraud and fraud are both an intentional act perpetrated for economic gain. Reference[1] suggested through the processes of exchange, human and environmental factors will lead to market failure and further create market transaction difficulties and transaction costs. Some suppliers will also engage in opportunism. With thoughts turned towards making the most profit for themselves.Reference[47] indicated that no food can be considered to be risk-free. Thus, Reference[48] suggested that food choice is often influenced more by the psychological interpretation. Reference[49] argued that perception risk in food safety is a psychological interpretation that influences the attitudes and behavior of consumers with respect to the purchase of food. According to this study would like to propose that market failure will increase perceived risk of consumer producing foods in the

market. Hence, the following proposition is proposed:Proposition 2:Base on Market failure for consumers to purchase of food has a negative impact on perceived purchase risk.

2.4. PurchasefoodIntention

Purchase intention has been used as a predictor of subsequent purchasing in the literature. Reference [50], [51] argue that purchase intention is the possibility of consumers are willing to buy products. In this research, Social Cognitive Theory will serve as the basis. It will discuss the effect that market conditions, consumer awareness, and consumer behavior have on one another and look at whether or not these will impact consumer willingness to use food traceability mechanisms or purchase food traceability products when there are doubts about the quality or source of the food. Furthermore, it will examine the mediating effect of "food supplier-consumer confidence" and "perceived supplier risk" factors. In the world, food manages are typically twice as expensive as other food by the FTS because of the additional food-safety information provided by the FTS. Despite this, consumers are more concerned about food quality than how many pays because consumers believe use FTS were let them have more assurance about food safety than other food. Reference[52] discovered that customer has high trust in the seller using BTS, it suspicious the accuracy of the information provided by the seller. Reference[53] suggested that when consumers trust an online store, they will be more likely to purchase there. Previous studies have also shown FTS can cause consumers to develop a sense of trust towards suppliers. Therefore, based on the arguments above that proposed:

Proposition 3:Consumers use FTS were have more trust about food that positively affected consumers' purchase intention.

Many scholars represent that purchase intention is negatively driven by the perceived risk associated with the purchaseUnderwood, Reference[54]most purchasers are risk averters. Reference[55] discovered that perceived risk will affect the consumer's wishes. Risks perceived by consumers, it will have the reverse effect on consumer willingness to buy in the market [56]. Some studies highlight the importance of the subjective nature of risk perceptions in purchase behavior[57], [58]. Previous studies have also shown that a negative relationship between risk perception and purchase likelihood. Therefore, based on the arguments above that proposed:

Proposition4:Consumers buy food has perception risk that has a negative impact on purchase food intention.

2.5. The conceptual model of this study

The conceptual model of this study is illustrated in Fig. 1.

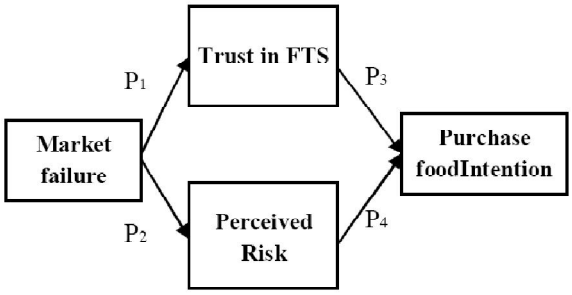


Fig.1. the conceptual model of Knowing about Your Food SafetyFrom The farm to the table

CONCLUSIONS

In the past, many scholars [44], [45] have mentioned food safety issues, and now the subject gradually be taken seriously. Because the consumers that derived the consumer cannot obtain sufficient information and a situation of information asymmetry will occur market failure but there has been less discussion orientated towards, consumers' perceived risk in food whether due to the risk of market failure. it discusses food supplier market failure and the trust in FTS and increase in risk awareness on behalf of the consumer. In the future, this study will further develop a framework of market failure, trust in FTS, perceived risk in food and purchase intention of consumers, and hope to mature the relationship of those constructs and be more completely.

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