

EXPLORING THE MARKETING EFFECT OF TRACEABILITY LABELED PRODUCT – AN EXPERIMENTAL DESIGN APPROACH

Quey-Jen Yeh, Dept. of Business Administration, National Cheng-Kung University, Tainan, Taiwan

yehqj@mail.ncku.edu.tw

Tai-Ping Chang, Kaohsiung Univ. of Sci. and Tech., Kaohsiung, Taiwan

tpchang@nkfust.edu.tw

ABSTRACT

The purpose of this paper aims to demonstrate the marketing effect of fruit traceability. Drawing on social significance supplementary with signaling theory, the research procedure involves experimental design in terms of consumer's prior purchase experience with products associated to certified fruit traceability. The focus is on whether traceability label stimulates consumers' awareness of traceability technology and connection to support and purchase of a high priced traceability associated product. Fruit handmade tea drink was chosen as the experimental target. Boundary of the price extent was also examined. We first evidenced the mediation model of perceived social significance of traceability system of consumers on their support of the system and if this support impact further on buying a high-priced traceable product. We then investigated the moderation of price together with purchase experience on the relationship between support of the system and the purchase intention of traceable product with difference priced levels. The results in both models support our propositions. The findings add to the food traceability literature in that traceability is not simply a symbol of ethics, but also an economic niche.

Keywords: Fruit traceability, signaling theory, experimental design

INTRODUCTION

Food traceability plays an important signal in any market that is burdened with a high degree of information asymmetry and quality uncertainty after a number of food safety crises [6]. Studies drawing on signaling theory in the sector of agribusinesses or consumptive products assume that sellers usually possess more amounts of information than buyers to affect the terms of the deals between the parties [6] [7]. Advertisement, brand reputation, warranties, and certifications are the most common ways applied to support sellers' claims for sales. In response, public or consumers feeling less reliable in the deal would look for extrinsic cues to prevent the risk and avoid being cheated (e.g., [9]).

The purpose of this paper aims to demonstrate the marketing effect of food traceability system where it stimulates consumers to purchase a high priced trace certified product or stay with such a product. Mainly, do consumers perceive food trace certification as a signal of quality? If it does, what is its value in terms of price?

To answer the question, this study draws on traceability significance supplementary with signaling theory for experience goods. The research procedure involves experimental design in terms of consumer's prior purchase experience with production firms associated to certified fruit traceability. The purpose aims to demonstrate the effect of the certification whereby it stimulates consumers to purchase a high priced related product, and that this effect can extend to consumers of less or no prior experience of purchasing such a goods. Fruit handmade tea drink was chosen as the experimental target, because fresh fruit in food industry is particularly important due to the various potential benefits with food safety becoming the ultimate social concern [8]. In addition, fruit drink is a commonly consumed product in Taiwan, concerned

by all age to allow to obtain a general picture of general public.

We first demonstrate that consumers are more likely to purchase and stay with a higher priced traceability certified fruit drink, and further, they would not switch to a lower priced one without an attempt of trace certification. Boundary of the price extent is also examined. We then show that prior purchase experience and the price together moderates this relationship. As one primary stakeholder, consumer-based response to food traceability certification is prudent. The findings add to the food traceability literature in that traceability is not simply a symbol of ethics, but also an economic niche to provide businesses with guidance.

REVIEW OF LITERATURE AND HYPOTHESES

Viewing traceability label as the trigger, fruit tea drink industry in Taiwan as the business background, and marketing effect, including consumer's perceived value of loyalty, price, and product quality as the influence, we assume that buyer's personal traceability awareness toward commodities would affect positively on their purchase intention of a higher priced traceability-labeled product. In addition, the positive linkage between business social activities and customer patronage has allowed managers to realize that in today's marketplace [10]. Thus,

H1: Buyers' perceived social significance of food traceability system is positively related to their concern of buying a higher-priced traceability-labeled product.

H2: Buyers' perceived social significance of food traceability system is positively related to their support of traceability labeled products.

The study of Bradu and Orquin [3] is the first to show that a social responsible label can stimulate consumer decision-making through a moral affective appraisal of the deal. They found significant impact of traceability label on consumers' willingness to buy a chocolate bar mediated by their moral affection. They conclude that consumers process the traceability label through a peripheral route, making a fast, affect-based judgment in a heuristic way, rather than through emphasizing consumer's knowledge base for a more calculated reasoning.

H3: Buyers who support traceability labeled products will be more likely to purchase a higher-priced traceability concerned product.

According to Bradu and Orquin [3] and the first three hypotheses H1, H2 and H3, it turns out that support of traceability can play as a mediator to enhance consumers' heuristic, affect-based connection from their perceived social significance of traceability technology to the support of the traceable product and to their purchase intention in traceability concerned products. Baron and Kenny [2] have well defined the difference between a mediator and a moderato. Namely,

H4: Consumers' support of traceability system mediates the relationship between their perceived social significance of the system and purchase intention concerning a higher-priced traceability labeled product.

From previous research, it is evident that consumers are not only willing to purchase a social-action related products, but are often willing to pay higher prices for products from companies in which they are aware of (e.g., [1] [4] [5] [11]). In other words, the marketing effect of traceability is weaker in relation to consumers' previous purchase experience of a non-traceability labeled product, due to the fact that they will acknowledge the quality and value of the product and thus less need to rely on traceability as a signal. Or alternatively, it is stronger when consumers are used to purchasing a traceability-labeled product.

We thus assume that the marketing effect of traceability is related to consumers' previous purchase experience, which is weaker (stronger) when they acknowledge (or not) the quality and value of the product due to previous experience, and thus less (more) need to rely on traceability as a signal. In other words, buyers' previous use or purchase experience will moderate the positive relationship between traceability awareness and purchase intention of a traceability-labeled product assumed. Thus,

H5: Buyers' often-buy experience will moderate the relationship between their support of traceability system and purchase intention concerned a higher-priced traceability labeled products:

H5a: They are more likely to stay with a higher-priced traceability-labeled product, when this product is their often-buy compared to one which is not.

H5b: They are less likely to switch to a higher-priced traceability-labeled product, when their often-buy is higher because of no traceability-label.

However, from the economic perspective, price does make influence on consumer's purchase behavior. Therefore,

H6: The price will compete with prior purchase experience to moderate the relationship between buyers' support of traceability labeled products and traceability concerned purchase intention in H3.

As shown in Figure 1, the research framework comprises the path connecting consumers' perception of social significance about agricultural traceability initiate to consumer support of the technology first, and then to their purchase intention concerning the so labeled products with higher price. Further, the model assumes that both price and consumer prior purchase experience moderate the relationship between the support and the purchase intention. Therefore, the framework involves both the personal internal attribute toward traceability social significance and the external relationship between traceability labeled product and the price level manageable by firms.

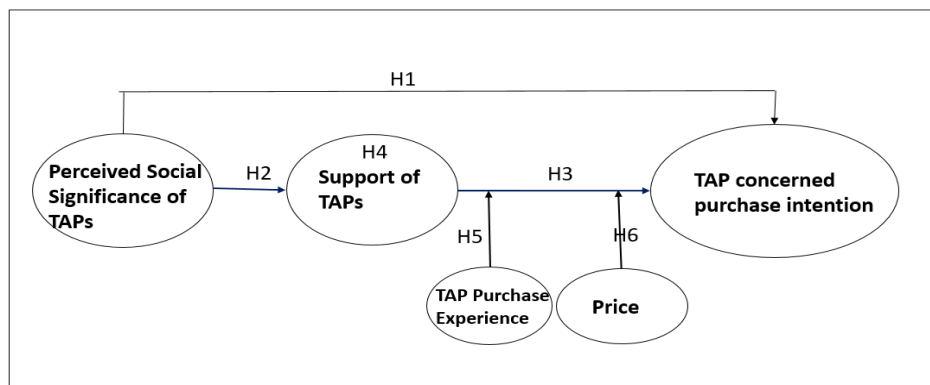


Figure 1: The research framework

RESEARCH PROCEDURE

The Storyline

In the experiment, we begin with a brief illustration of traceability system, including the meaning of TAP (Traceable Agricultural Product), QR code, and third-party certification as below:

“Traceability refers to the ability to trace; look up for the movement of food products (fruits, vegetables, meat...) and ingredients through specified stage(s) of production, processing and distribution. Producers must adopt production methods and risk management measures that conform to the concept of sustainable agriculture to produce safe and traceable products, which are then verified by the international third-party accredited certification systems.” And

“Only those which are certified are entitled to use TAP (Traceable Agricultural Product) labels associated with QR code such that consumers can easily look up the complete product records through scanning the code as below.”

Three Scenarios of Purchase experience for Traceability Labeled Product

To examine the impact of personal purchase experience for a traceability labeled fruit-tea drink, we create three scenarios: No previous purchase experience as the control group, and previous frequent-buy experience of a product with traceability label and not respectively. Each scenario starts with the following assumed description:

“Suppose you feel like to have a cold drink in a hot day on the street. (Insert the three different scenarios of purchase experience separately here.) As shown below, the volume and fruit ingredient between the two looks similar, except that brand X has a sign of TAP and cost NT\$ 70, but brand Y has not and cost NT\$ 55. Moreover, brand X has a poster saying that their fruits are traceable to the field farm, while store B does not have any sign about the origin of their products.”

Scenario 1: Control group.

Scenario 2: Prior purchase experience of TAP labeled **product**.

Scenario 3: Previous purchase experience of non- TAP labeled product.

Each respondent was shown randomly only one of the three scenarios, with X brand from the TAP firm and Y brand is not, of similar appearance and different prices, where the price of X is \$15 higher. This way divides the respondents into three groups with each group differing in prior purchase experience of a TAP labeled goods.

RESULTS

We approached respondents via paper questionnaires and Internet surveys on Facebook, PTT, as well as in shopping malls during 25th May to 10th June 2018. In attempt to investigate a sample of broader demographic characteristics, different questionnaire distribution channels such as direct distribution in shopping malls and supermarkets, online surveys via Facebook and PTT were all used simultaneously to approach the general public. All scenarios were randomly distributed together to minimize the demographic characteristic among different scenarios.

Of the 181 questionnaires returned, a total of 19 were invalid and removed from further data analysis because they (1) either misunderstood the purchasing experience that they were supposed to play with the purchase experience role, (2) or mixed X brand of TAP with Y brand of non-TAP Y brand given in the three CSR experience scenarios, or (3) indicated that they totally did not understand the content of traceability system. Eventually, a total of 162 respondents, among which 55 were from scenario 1, 53 from scenario 2, and 54 from scenario 3, remain for further data analysis.

The Mediating of TAP Support between Perceived Social Significance and Purchase Intention

Three hierarchical regression models apply to test the mediating of TAP support on the relationship between perceived social significance of TAP and purchase intention for TAP labeled product. Model 1

and model 2 shows respectively the impact of perceived TAP social significance of consumers on their support of it and on their concerned purchase intention, where both are statistically significant. However, in model 3 when TAP support inserted, the impact coefficient of perceived TAP social significance on purchased intention is much reduced, from 0.490 to 0.134. Instead, the impact coefficient of TAP support, 0.634, is much significant and larger. It change of R-square is 0.257, significantly. Therefore, hypotheses H1, H2, H3, and H4, that is, consumer support of TAP plays as a significant mediator to connect the perceived TAP social significance of consumers to their intention of purchasing a TAP labeled product.

The Moderating of Purchase Frequency and Price Level

Hierarchical regression applies to test hypotheses H5 and H6. We first examined the price gap of NT\$15, a percentage of 27% difference. We then examined the price gap of NT\$35. Gender, age, education level, and monthly allowance were treated as the covariates.

The test involved two models in each regression test. For the price gap of NT\$15, Model 1 revealed the significant effect of TAP support on personal intention for purchasing such a product, where the price of store A was set NT\$70 and store B was NT\$55. This significance remained in Model 2, when both the frequent buy experience of TAP and non-TAP scenarios, and their respective interactions with support of TAP variable inserted. However, no significances were found in either TAP or Non-TAP moderator.

For the price gap of NT\$35, Model 1 showed that the impact of TAP support on purchase intention remained significantly positive when the TAP price increased up to 64% and become NT\$35 higher than the non-TAP (90 vs. 50). However, the coefficient became almost twice smaller than the NT\$15, and meanwhile the moderating effect of buy experience became significant because of this larger price change. Specially, due to the highly increase in price, both direct and moderating effects given by non-TAP scenario on purchase intention became significantly negative (-0.184), which implies there is a price boundary for the market value of TAP including consumers who appreciate and support traceability system. The negative interaction coefficient (-0.185) represented the decrease of this purchase intention, due the large increase of price, was significantly less in the high TAP support group than in the low TAP support under the same scenario of low buy non-TAP experience. Thus, H5 and H6 were proved.

Figure 2 further explains this moderation. Consistent with the previous significant negative coefficient (-0.184), the values in Figure 2 are also negative, which represents a reduction in purchase intention of TAP goods and this reduction is particularly significant for those who were assigned to play in the scenario as a frequent buyer of non-TAP fruit tea drink. The interaction further suggests that the effect given by large price change is much less on those who support TAP than on those who do not.

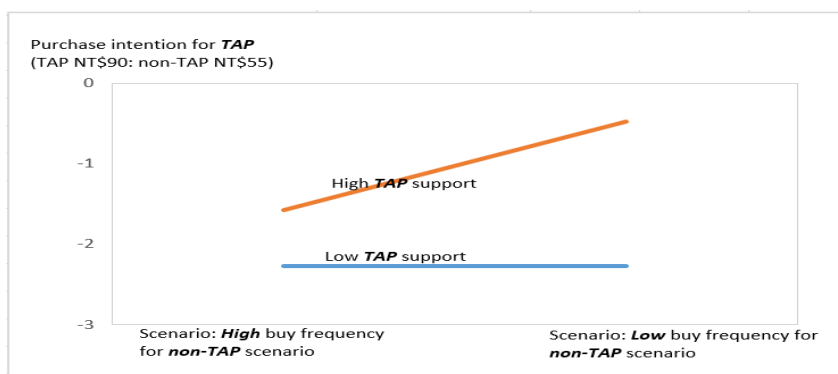


Figure 2. Comparing the decrease extent of purchase intention for TAP due to TAP price increase between the two scenarios of high and low buy frequency for non-TAP.

CONCLUSION

This article first evidence that traceability can enhance people's intention of buying such a high priced product when they recognize the involvement of traceability by the firm, where the price gap was set to be more than twenty-seven percent based on a NT\$50 of similar quality but non-traceable goods. We then expose that consumers' prior traceable product purchase experience, either always buy a traceable or non-traceable product, moderates their decision in choosing a product of traceability-labeled brand.

Secondly, we then exam the proposition that the perceived social significance of fruit traceability is related positively to consumers' intention to buy a high priced traceability-labeled product, and this relationship can be further strengthened by the mediator of personal intrinsic support. This mediation is like a mechanism similar to the peripheral route concept given in Bradu and Orquin [3], where Bradu and Orquin found that consumers' willingness to buy a chocolate bar was mediated by people's moral affection.

Previous studies also have addressed that the effect of traceability is weaker in relation to consumers' previous purchase experience of a non-traceability labeled product, due to the fact that they will acknowledge the quality and value of the product and thus less need to rely on traceability as a signal (e.g., [1] [4] [11]). Indeed, although consumers can be more willing to pay a higher price for social-action related products, such as traceable goods, because they believe such a firm is more socially responsible, they are less likely to do so if they have prior purchase experience since they are aware of its reliability and quality. In this study, we also found similar results in that consumer prior purchase experience of non-traceable product can moderate the relationship between their support of traceability and purchase intention of a high-priced traceability labeled product. When they were less used to non-traceable products, they appeared more likely to choose a traceable product even the price was sixty-four percent higher, while less likely to do so when they were more used to non-traceable products. Traceability initiatives appeared able to communicate customers with quality cue, and motivated them to go with the product. In addition, this moderation extent was pertinent to the price level, where the moderating was not significant when the price gap difference between the traceable and non-traceable products were low. The gap can be between 30%~65% dependent upon the goods' price.

On the other hand, may be because of being used to the low price, those assigned to the high buy experience of non-traceable scenario, appeared to be more possible to stay with the non-traceable, while less possible for those assigned to the low buy experience of non-traceable scenario. The reduction of purchase intention of this later group due to high price appeared to be smaller than the former group. Seemingly, the experience, either because of the low price or used to traceable products, does make people more likely to stay with what they are used to. Traceability as a cue seemingly is not just able to generate consumers' dependability, but also their connection of a firm's concern in traceability to concern in product quality. This also implies that consumers' tolerance of price difference may vary dependent on their prior traceable product purchase experience. The tolerant range of those who have the experience to the high-priced traceable goods appear to be significantly larger.

REFERENCES

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