# Antecedents of Word-of-Mouth for Meat with Traceability: Evidence from Thai Consumers

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*Abstract*—Because of the outbreak of mad cow disease and bird flu, consumers have become more concerned with quality and safety of meat and poultry. As a consequence, meat traceability has been implemented as a tool to raise the standard in the meat production industry. In Thailand, while traceability is relatively common among the manufacturer-wholesaler-retailers cycle, it is rarely used as a marketing tool specifically designed to persuade consumers who are the actual meat endusers. Therefore, the present study attempts to understand what influences consumers to spread their words-of-mouth (WOM) regarding meat with traceability by conducting a study in Thailand where research in this area is rather scant. Data were collected from one hundred and sixty-seven consumers in the northeastern region and analyzed with SEM. The study results reveal that perceived usefulness of traceability system, social norms, and product class knowledge are significant antecedents where consumers spread positive words regarding meat with traceability system. A number of theoretical and managerial implications as well as future study directions are offered at the end of this study report.

*Keywords*—Perceived usefulness, product knowledge, social norms, traceability, word-of-mouth,

## I. INTRODUCTION

CONSUMER'S concern in meat safety or quality across the globe has been increased due to outbreak of mad cow disease in Europe [1] and H5N1 bird flu in Asia [2]. In Thailand, bird flu situations stirred consumer concern in food safety and resulted in the decrease in chicken and poultry consumption [2]. In response, leading Thai cattle and poultry companies have developed traceability systems to standardize quality and safety of their meat production. Traceability system refers to an information technology which is capable of recording and displaying information for a product in each step of manufacturing process [3]. These pieces of information may include source-of-origin, production method, ingredient, manufacturer, warehouse, distributor, selling place, and product movement from the beginning up to the point where that product reaches enduser. Traceability system, therefore, are tremendously useful for product tracking and checking [4].

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Although traceability has been used within manufacturer-wholesaler-retailers cycle in Thailand, its role as a marketing tool intended for consumers who are endusers of meat products is still in its infancy. In fact, only few meat consumers are aware of the traceability system. One reason that may make meat manufacturer reluctant in using the traceability system as a marketing tool could be the lack of profound understanding of what kind of psychological social factors are involved in the consumption of meat with traceability system.

Therefore, the present study attempts to examine consumer behaviors in the meat with traceability context. In particular, we aim to study how word-of-mouth (WOM) is shaped because word-of-mouth is a critical factor in consumer behaviors regarding the use of information technology [5]. It is expected that perceived usefulness of traceability system, purchasing social norms, and product class knowledge will have positive impacts on word-of-mouth.

## II. LITERATURE REVIEW

### A. Word-of-Mouth

Product success depends on building bonds with its consumers. These consumers often participate in multiple social networks where they may influence the consumption attitudes and behaviors of other consumers through word-of-mouth [6]. Word-of-mouth reflects an informal communication between consumers and consumers regarding the products or services. It is, therefore, different from communication between consumers and marketing organizations such as complaints or promotions [7]. In comparison with marketer-initiated communication, word-of-mouth is less expensive [8], but more credible [6]. These advantages are attributable to the fact that the message in word-of-mouth is delivered personally and the message sender is not paid and often has only the best interest of the message recipients as the motivation for sharing an opinion [9]. Given the special characteristic and the important role of word-of-mouth as discussed above, it is, thus, pivotal for meat marketing practitioners to understand what influence consumers to spread their words-of-mouth regarding meat with traceability.

### B. Perceived Usefulness

Perceived usefulness reflects to the degree to which consumers believe how useful a certain thing is. In the context of the present study, this construct deals with a consumer's belief that traceability system will augment their decision performance in buying meat product [10]. Whether consumers

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will spread positive words regarding traceability system is likely to depend on the degree to which consumers believe that this technology will help improve the purchase decision. In general, consumers are likely to perceive the usefulness of the technology that provides more information on food product. Manufacturers and sellers of meat food product, for example, may implement the traceability system and thus demonstrate the transparency of manufacturing process in every step of the supply chain network [11]. Information provided from the traceability system is regarded as valuable and useful for consumer's better decision making for the food purchase [12]. As a consequence, the positive influence of perceived usefulness on word-of-mouth can be expected.

### C. Social Norms

Social norms are one of the important influencers of consumer behavior [13]. That is, consumers often consider social norms or expectations and behavior of others in their consumption behaviors [14]. Although social norms have been extensively examined in the consumer context, relatively little is known regarding their specific role in meat consumption. In general, a consumer is encouraged to comply with the views of the significant others such as family members, friends or and/or colleagues in order to meet their expectations and thus earn their approval [15]. As literature reviews in social norms indicate the relationships between social norms and consumer's attitudes, behavioral intentions, and behavior [13], it is therefore expected that social norm will also influences consumer's word-of-mouth of meat with traceability.

### D. Product Class Knowledge

Personal familiarity and experience with a specific product accumulated through product purchase and consumption may lead to product class knowledge [16]. Prior to the purchase of meat, consumers may evaluate product quality by activating knowledge structures that they have gained from previous experience based on various intrinsic (e.g., color and fat) and extrinsic cues (e.g., brand, price and region of origin) [16]. Previous product knowledge can enrich the consumer's understanding of products cues and lead to more precise and stable expectations [17]. Moreover, consumers with more product knowledge often have greater awareness of available products, which can increase the likelihood of spreading more word-of-mouth regarding that product.

### E. Hypotheses

Based on the discussions thus far, the current study proposes a set of hypothesized relationships between the three antecedents and word-of-mouth.

H1. Perceived usefulness of traceability system will positively influence word-of-mouth of meat with traceability system.

H2. Purchasing social norms will positively influence word-of-mouth of meat with traceability system.

H3. Product class knowledge will positively influence word-of-mouth of meat with traceability system.

## III. METHODOLOGY

### A. Sample and Procedure

One hundred and sixty-seven consumers from northeastern Thailand participated in the survey with judgmental sampling. The profile of the research participants is: female (65%), between 21 to 30 years old (49%), bachelor's degree holders (60%), public sector employees (43%), and with an income of 10,001 to 20,000 baht/month (57%).

The research participants were first informed of the study description. Next, in the context of meat with traceability system, they were requested to complete the measures of word-of-mouth, perceived usefulness, purchase social norms, and product class knowledge. Finally, they provided their personal data at the end.

### B. Measures

The research participants were instructed to indicate the degree to which they agreed or disagreed with each of the scale items in the Likert type (1 = strongly disagree, 5 = strongly agree). Word-of-mouth was measured with three items (e.g., "I would recommend meat with traceability to someone who seeks my advice.") adapted from [18]. Perceived usefulness of meat traceability system was measured with four items (e.g., "Traceability system would be useful in purchasing meat products.") adapted from [19]. Social norms was measured with three items (e.g., "Most people who are important to me would purchase meat with traceability.") adapted from [19].

Product class knowledge was measured with three items (e.g., "In general, how knowledgeable are you about different types of meat products in the market?") adapted from [20]. Participants rated their knowledgeable with each statement on the 5-Likert scale ranging from 1 (not at all knowledgeable) to 5 (very knowledgeable).

### C. Procedures

Descriptive statistics were examined first with focus on mean, and correlations. Next, the latent construct structures were confirmed by confirmatory factor analysis (CFA) with AMOS 21. Finally, a structural equation model (SEM) was estimated to analyze the relationships among the four latent constructs. The traditional chi-square was reported as a fit measure, although it is quite sensitive to large sample size. Hence, we also report other fit measures: root mean square error of approximation (RMSEA), comparative fit index (CFI), normative fit index (NFI), and Tucker-Lewis index (TLI). Ideally, acceptable models should have an insignificant chi-square ($\chi2$), RMSEA smaller than 0.08, CFI, NFI, and TLI greater than 0.90 [21].

## IV. RESULTS

### A. Descriptive Statistics and Correlation Analyses

Table I presents the means, standard deviations, and Pearson's correlation coefficients for the four constructs.

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TABLE I
DESCRIPTIVE STATISTICS AND CORRELATIONS

| Constructs | Mean | S.D. | 1 | 2 | 3 | 4 |
|---|---|---|---|---|---|---|
| 1. WOM | 3.82 | 0.70 | 1 | | | |
| 2. Perceived usefulness | 3.88 | 0.68 | 0.592** | 1 | | |
| 3. Product class knowledge | 3.12 | 0.73 | 0.236** | 0.139 | 1 | |
| 4. Social norms | 3.59 | 0.72 | 0.504** | 0.547** | 0.160* | 1 |

** significant at the 0.01 level
* significant at the 0.05 level

### B. Measurement Model Results

Anderson and Gerbing's [22] procedure was adopted to assess the convergent and construct validity of the measurement model. A first-order confirmatory factor analysis was employed to examine four individual constructs. The results indicated that standardized loading varied from 0.77 to 0.95 with all highly significant. The composite reliabilities varied from 0.86 to 0.90, satisfying the criteria of 0.70 or higher. The average variance extracted varied between 0.69 to 0.78, thus satisfying the criteria of 0.50 or greater [21], [23]. A second-order CFA was then conducted to examine the overall fit of the measurement model (Table II). The results showed the overall goodness-of-fit assessment for second-order CFA to be: chi-square = 123.302, df = 59, chi-square/df = 2.090, p = 0.000, RMSEA = 0.081, CFI = 0.961, NFI = 0.928 and TLI = 0.948. Altogether, the results reveal that there is a satisfactory fit between the proposed model and the data.

TABLE II
RESULTS OF CONFIRMATORY FACTOR ANALYSIS

| Items | Standardized Loading | t-value | C.R. | AVE |
|---|---|---|---|---|
| *Product Class Knowledge* | | | | |
| 1. Compared to others you know, how knowledgeable are you about the features of different types of meat products in the market? | 0.95 | a | | |
| 2 .In general, how knowledgeable are you about different types of meat products in the market? | 0.91 | 17.41 | | |
| 3. Compared to your friends, how much experience do you have with different types of meat products? | 0.78 | 13.47 | 0.89 | 0.77 |
| *Perceived Usefulness* | | | | |
| 1. Traceability system would be useful in purchasing meat products. | 0.77 | a | | |
| 2 .Traceability system would enhance my effectiveness in purchasing meat products. | 0.82 | 11.06 | | |
| 3. Traceability system would facilitate the decision making in purchasing meat products. | 0.89 | 12.20 | | |
| 4. Traceability system would provide more alternatives in purchasing meat products | 0.85 | 11.59 | 0.86 | 0.69 |
| *Social Norms* | | | | |
| 1. Most people who are important to me think that it is fine to purchase meat with traceability. | 0.88 | a | | |
| 2. Most people who are important to me would purchase meat with traceability. | 0.90 | 14.80 | | |
| 3. Most people who are important to me would encourage me to purchase meat with traceability. | 0.82 | 13.15 | 0.87 | 0.75 |
| *WOM* | | | | |
| 1. I would recommend meat with traceability system to someone who seeks my advice. | 0.89 | a | | |
| 2. I say positive things about meat with traceability system to other people. | 0.90 | 16.29 | | |
| 3. I would recommend meat with traceability system to others. | 0.87 | 15.25 | 0.90 | 0.78 |

$\chi2 = 123.302$, df = 59, $\chi2$/df = 2.090, p = 0.000,
RMSEA= 0.081, CFI = 0.961, NFI = 0.928 , TLI = 0.948
[a] The corresponding parameter is fixed to a value of 1.00 to set the scale of measurement.

### C. Structural Model Results

After the measurement model was confirmed, the next step is to test the research hypotheses using structural equation modeling analysis (Table III and Fig. 1).

TABLE III
RESULTS OF STRUCTURAL MODEL

| Hypotheses / path | Beta | S.E. | t-value | |
|---|---|---|---|---|
| H1: Perceived usefulness → WOM | 0.53*** | 0.10 | 5.70 | supported |
| H2: Purchasing social norms → WOM | 0.20* | 0.09 | 2.31 | supported |
| H3: Product class knowledge → WOM | 0.15* | 0.06 | 2.37 | supported |

Note : ***p < 0.001 , **p< 0.01 , *p< 0.05

*Hypothesis 1* examined the impact of perceived usefulness on word-of-mouth. The estimation results indicate that perceived usefulness significantly and positively influence word-of-mouth (β = 0.53, *t* = 5.70, *p< 0.001*). Thus, H1 is supported.
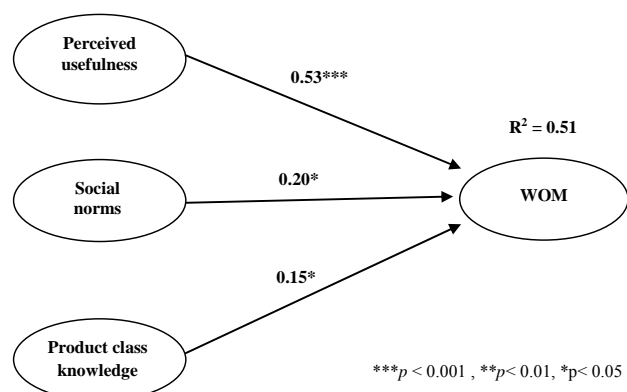
*Hypothesis 2* examined the impact of purchasing social norms on word-of-mouth. The results indicate that social norms significantly and positively influence word-of-mouth (β = 0.20, *t* = 2.31, *p < 0.05*). Therefore, H2 is also supported.

*Hypothesis 3* examined the impact of product class knowledge on word-of-mouth. The results reveal that product class knowledge significantly and positively influence word-of-mouth (β = 0.15, *t* = 2.37, *p < 0.05*). H3 is supported, as well.

### V. DISCUSSIONS

In summary, our study results reveal that, for Thai consumers, perceived usefulness of traceability system, purchasing social norms for meat with traceability and product class knowledge positively influence word-of-mouth where

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consumers spread positive words regarding meat with traceability system.



Notes: chi-square = 123.302, df = 59, chi-square /df = 2.090, p = 0.000, RMSEA= 0.081, CFI = 0.961, NFI = 0.928, TLI = 0.948

Fig. 1 Results of the hypothesized model

In terms of theoretical implications, this study contributes to the word-of-mouth literature by applying this construct in the context of food consumption and technology acceptance. Specifically, we propose and find support for three antecedents of word-of-mouth: perceived usefulness of traceability system, purchasing social norms for meat with traceability, and product class knowledge. In addition, the present study has also contributed to the cross-cultural consumer behavior area by examining the consumer's responses to traceability system in Thailand as relatively few studies were conducted to examine this topic in Asia [11], [24].

The present study also provides a number of managerial implications for marketers of meat products. First, in order to persuade consumers to adopt or talk about and spread words about meat with traceability system, marketers must attempt to convey how useful this technology can be for the decision making of meat purchase. This attempt could be achieved through the use of well-planned marketing communication strategies and tactics. For example, advertising must be capable of demonstrating the usefulness of this technology. Print ads may be particularly relevant in this situation as they can provide detailed information on the benefit of traceability. Next, as the impact of social norms appears to be significant, the marketers must consider to roles of social network in helping the spreading of word-of-mouth. Therefore, Facebook, Twitter, Line and alike should receive special attentions in devising a marketing communication plan. It should be noted that the relative impact of social norms, however, is lower than that of the perceived usefulness as indicated by the standardized coefficients. As a consequence, when resources are limited, marketing practitioners should allocate special attention to these two variables accordingly. Next, an interesting target for meat with traceability system could be consumers who have a relatively high level of meat

knowledge as product class knowledge appear to have positive impact on word-of-mouth.

Finally, the present study has a number of limitations which suggest avenues for future research. First, researchers may attempt to revalidate our results with consumers from other countries where traceability is more widely used. Furthermore, in addition to a survey method as used in the present study, other research methods including depth interview, experiment, and content analysis may shed further light on consumer's response to the use of meat traceability system. Finally, since the current study focuses on positive word-of-mouth, future research may examine the antecedent of negative word-of-mouth [25] to achieve a more comprehensive view of this construct.

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