EXPLORING CUSTOMERS' PURCHASE INTENTION ON POULTRY PRODUCTS USING PROTECTON MOTIVATION THEORY

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Abstract

The objectives of this research were to investigate the applicability of the PMT in consumers' purchase intent of poultry products (i.e. chicken's meats) and to identify the factors that influence Myanmar consumers' buying decisions on these products. The research applied Protection Motivation Theory (PMT) model together with knowledge construct to explore the influencing factors on consumers' purchase intention of poultry meats (i.e. chicken meat). The partial least squares structural equation modelling (PLS-SEM) was applied to test hypotheses in this study. The results indicated that knowledge, self-efficacy and response costs significantly influenced the consumer's purchase intent of probiotics-used broiler meat (PUBM). This study provided the livestock producers and the retailers to develop the effective marketing program and /or strategies to encourage consumers' purchase intention positively. Moreover, policy makers can build education program to provide correct knowledge and benefits of PUBM to consumers.

Keywords: Probiotics-used broiler meats, Purchase intention, Protection Motivation Theory, Myanmar consumers

บทคัดย่อ

การศึกษานี้มีวัตถุประสงค์เพื่อศึกษาการประยุกต์ใช้ทฤษฎีแรงจูงใจเพื่อการป้องกันโรคของผู้บริโภคในการเลือกซื้อเนื้อไก่ที่ใช้โปรไบโอติก (PUBM) และเพื่อระบุปัจจัยที่มีอิทธิพลต่อการตัดสินใจซื้อผลิตภัณฑ์เนื้อไก่ของผู้บริโภคชาวพม่า งานวิจัยนี้ได้ใช้ตัวแบบ PMT ร่วมกับตัวแปรความรู้เพื่อสำรวจปัจจัยที่มีอิทธิพลต่อความตั้งใจซื้อของผู้บริโภคเนื้อไก่ (สำหรับป้องกันโรค) การศึกษานี้นำรูปแบบสมการโครงสร้างแบบ Partial Least Squares Structural Equation Modelling (PLS-SEM) มาใช้ทดสอบสมมติฐานงานวิจัย ซึ่งผลการวิจัยชี้ให้เห็นว่า ความรู้ ความสามารถในตนเอง และค่าใช้จ่ายในการตอบสนอง มีอิทธิพลต่อความตั้งใจซื้อ PUBM ของผู้บริโภคอย่างมีนัยสำคัญ ผู้ผลิตและผู้ค้าปลีกสามารถนำผลการศึกษาไปพัฒนากลยุทธ์ทางการตลาดและ/หรือกลยุทธ์ที่มีประสิทธิภาพเพื่อส่งเสริมความตั้งใจซื้อของผู้บริโภคในเชิงบวก นอกจากนี้ผู้กำหนดนโยบายสามารถนำผลการศึกษานี้เพื่อให้ความรู้และประโยชน์ในการเลือกซื้อเนื้อไก่ที่ใช้โปรไบโอติกแก่ผู้บริโภคได้อย่างถูกต้อง

คำสำคัญ: เนื้อไก่ที่ใช้โปรไบโอติก ความตั้งใจซื้อ ทฤษฎีแรงจูงใจเพื่อการป้องกันโรค ลูกค้าชาวพม่า

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Introduction

Food safety is a major challenge for Myanmar consumers when finding harmful pathogens in BBQ fish, pesticide residues in vegetables, and red bean cakes with the formalin (Global New Light of Myanmar, 2018). It has been reported that overuse of antibiotics in livestock farming was encountered and chickens' meats from Myanmar livestock farming and wet markets were contaminated with harmful pathogens and drug residues. They also reported that most of the commercial broiler meats are antibiotics-used-broiler meat (AUBM) that were produced by using excess or improper use of antibiotics in farms (Larive International, 2015; Sone & Aung, 2012). Several studies had reported risks associated with the improper use of antibiotics in livestock on human, for example, development of antimicrobial drug resistance, allergic reactions, cancer, immune deficiencies, liver, lung and nerve damage (Darwish et al., 2013; Forgetta et al., 2012; World Health Organization, 2017). Studies have suggested the protective role of PUBM against risks of AUBM (Alagawany et al., 2018; Kim et al., 2016) and sales of probiotic-fed chicken products (i.e. probiotics-used broiler meat, PUBM) in the United States had increased 34% in 2015 due to the demand for antibiotic-free poultry (Poultry World, 2016).

Research Objectives

1. To investigate the applicability of the PMT in consumers' purchase intent of chicken's meats.

2. To identify the factors that influence Myanmar consumers' buying decisions on chickens' meats.

Literature Review

PMT had been applied successfully to the prediction of a range of protective behaviors, including exercise, cervical cancer screening, breast and testicle self-examination, smoking behavior, pro-environmental behavior, nuclear war, dietary behavior (Floyd, Prentice-Dunn & Rogers, 2000; Milne, Sheeran & Orbell, 2000; Norman et al., 2015). No studies have not investigated the issue of how consumers' product knowledge concerning poultry meat risks and PMT constructs can influence their purchase intent of PUBM. The Protection Motivation Theory suggests that prior behaviors (i.e., both adaptive and maladaptive), vicarious learning, and persuasive messages are potential sources of knowledge that influence the threat and coping appraisal process of persuasion (Floyd, Prentice-Dunn & Rogers, 2000; Rogers, 1983). The threat appraisal process involves an assessment of the probability occurrence of the threat (i.e., perceived vulnerability) and the severity of the negative outcome if no course of action is taken (i.e. perceived severity). In addition, rewards associated with unhealthy behaviors (i.e. current behaviors) plays a role in the threat appraisal process (Maddux & Rogers, 1983). The coping appraisal process involves evaluations of how effective the recommended behavior will be in protecting the individual from harm (i.e. response efficacy) and self-efficacy, which is the individuals' evaluation of his capacity to perform the recommended behavior. Additionally, the response costs of the adaptive response (i.e. any cost incurred to perform the recommended behavior) play role in the coping appraisal process. The core assumption of PMT is in such a way that when the individual face any threat,

he may consider the probability occurrence of that threat (perceived vulnerability), the noxiousness of the seriousness of that threat (perceived severity), rewards associated with current behavior (Floyd, Prentice-Dunn & Rogers, 2000). This individual may also consider whether or not a recommended behavior will be able to prevent a given threat, whether he can do successfully or not, and any cost to perform that recommended action. Thus, protection motivation intention was produced when individual perceived severity, perceived vulnerability, response efficacy and self-efficacy outweigh rewards and response costs (Milne, Sheeran & Orbell, 2000).

Previous studies had shown that increased level of knowledge increased perceived severity, perceived vulnerability, and decreased rewards (Haapala & Probart, 2004; Nabizadeh et al., 2018; Xiao et al., 2014). The correlations between knowledge and threat appraisal constructs were shown as H_1a, H_1b, and H_1c. These results suggested that increment in knowledge increased response efficacy, self-efficacy, intention, and decreased response costs (Haapala & Probart, 2004; Nabizadeh et al., 2018). Thus, the relationships between knowledge, coping appraisal constructs, and intention are expressed in H_2a, H_2b, H_2c and H_3. The results found that increases in perceived severity or vulnerability lead to higher protection motivation intention (Calder, Davidson & Ho, 2011; Nabizadeh et al., 2018). These studies also revealed that rewards associated with current behaviors decreased intention (Bourn & Prescott, 2002; Hughner et al., 2007; Rippetoe & Rogers, 1987). The relationships between threat appraisal constructs and intention are expressed in hypotheses H_4, H_5, and H_6. Previous studies suggest that coping appraisal variables: response efficacy and self-efficacy positively correlated with intentions (De Steur et al., 2015; Henson, Cranfield & Herath, 2010). These studies revealed that response costs have negative impact on purchase intent of health protective foods (De Steur et al., 2015; Verbeke, Scholderer & Lähteenmäki, 2009). Hence, relationships between coping appraisal variables and intention are expressed in hypotheses H_7, H_8, and H_9.

Based on previous literature reviews, the conceptual framework was shown in Figure (1)

Hypotheses in this study were as follows:

H_1a Knowledge has a positive impact on perceived severity (SEV).

H_1b Knowledge has a positive impact on perceived vulnerability (VUL).

H_1c Knowledge decreases rewards (RW).

H_2a Knowledge has a positive impact on response efficacy (RF).

H_2b Knowledge has a positive impact on self-efficacy (SE).

H_2c Knowledge decreases response costs (RC).

H_3 Knowledge has a positive impact on intention (PMT).

H_4 Perceived severity increases intention (PMT).

H_5 Perceived vulnerability increases intention (PMT).

H_6 Rewards have a negative impact on intention (PMT).

H_7 Response efficacy has a positive impact on intention (PMT).

H_8 Self-efficacy has a positive impact on intention (PMT).

H_9 Response costs decrease intention (PMT).

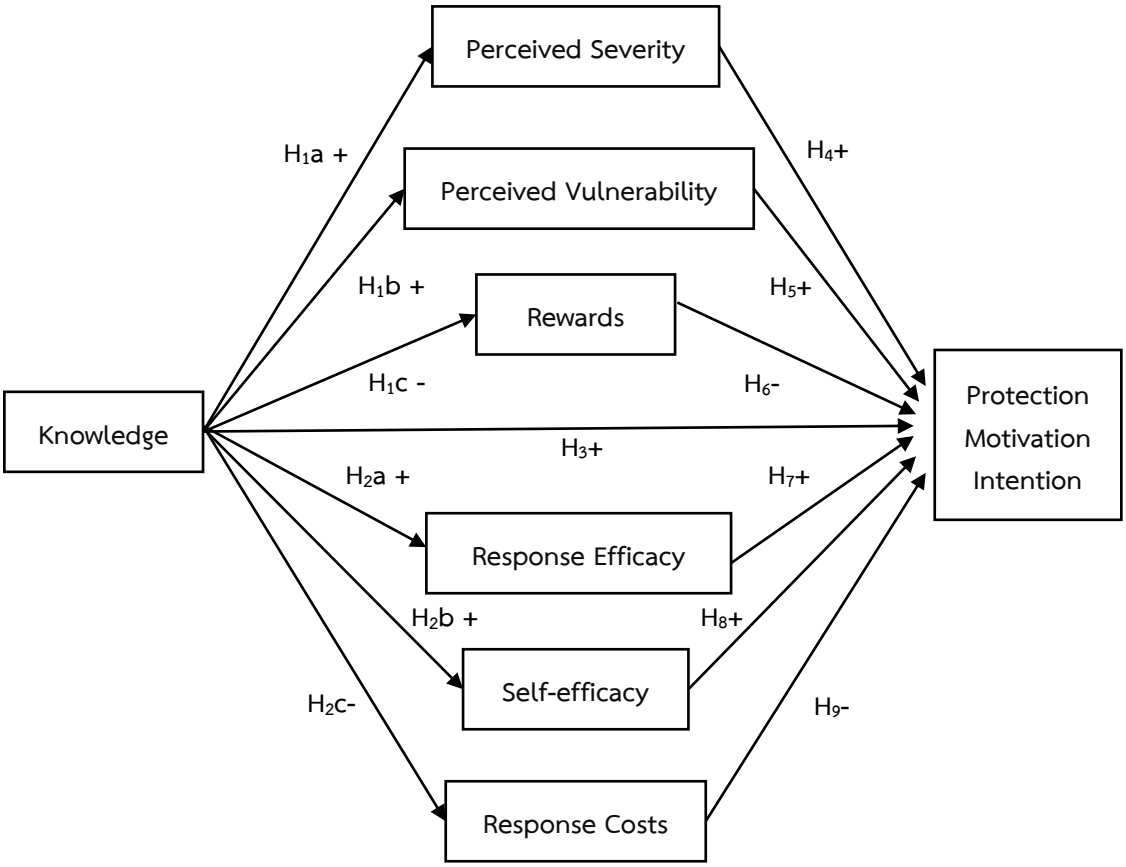

Figure 1 Schematic diagram of Conceptual Framework. Adapted from Rogers (1983) and previous literatures (De Steur et al., 2015; Dowd et al., 2015; Floyd, Prentice-Dunn & Rogers, 2000; Milne, Sheeran & Orbell, 2000; Nabizadeh et al., 2018)

Methodology

The research questions of the study are to explore how knowledge and the PMT constructs influence the purchase intent of the middle-class consumers concerning poultry meat. According to McKinsey Global Institute (2013), the middle class in Myanmar was 2.5 million in 2010. One consumer survey of Boston Consulting Group (2013) also estimated the middle and affluent class to be 5.3 million in 2012, and would be projected to 10.3 million in 2020. In addition, the report also displayed that most of Myanmar middle class consumers were concentrated mainly in Yangon, Mandalay and Ayeyarwady states and are four times more likely to shop at supermarkets, and prefer the quality products, the brands, and easy shopping experiences. Export.gov (2018) also reported the ratio of modern trade to traditional trade to be 90:10 in Myanmar, and 90% of the households bought fresh meat and vegetables from traditional markets. But the modern trade is rapidly growing in Myanmar due to high demand of safety attributes food

products such as organic food among the health conscious and higher income consumer segments. According to EuroCham Myanmar's Consumer Goods Guide 2018 (EuroCham Myanmar, 2017), the national per capita GDP was just only 1200 USD, but in Yangon, the income level was higher than other cities and was estimated at anywhere between 1700–3000 USD. Frima & Brinks (2018) reported consumers who were aware of hygiene standards and food safety concerning meat bought food produce (e.g. fresh meat and vegetables) from supermarkets and, among the top supermarkets, City Mart Holding offer local and imported meat, and also have their own distribution center where they process and package poultry and pork meat into store ready products.

Due to unreachable data collection for middle class population and the number of modern trade shoppers in Myanmar, the study was targeted to collect the data from Yagon supermakets shopper to save the resources of time and money. Thus, the targeted population is Yangon supermarket shoppers whose income was supposed to have US$ 125, and prefers to visit City Mart supermarkets. The minimum sample size calculation was performed with the guidance of Samuel Green's suggestions (Green, 1991). The quota sampling method was implemented according to the guidelines of Rukmana (2014), and the samples were selected from four shopping centers of four districts in Yangon, Myanmar. The criteria for selecting the samples were the age above 24 years old, Yangon super-market shoppers whose income was sup-posed to have US$ 125, and prefers to visit City Mart supermarkets. The sample collection was performed until 400 samples were met.

Based on previous food related studies (Calder, Davidson & Ho, 2011; Dowd et al., 2015; Scarpa & Thiene, 2011), PMT constructs were adopted and content validity was obtained by three experts' evaluation. To ensure the clarity of the questionnaire and to provide the reliability and validity of the measurement indicators, a pilot examination was performed with 54 consumers. Demographic characteristics, knowledge, and PMT constructs were assessed by a self-reported questionnaire. Knowledge construct was measure with 14 items whether or not consumers know risks of AUBM and benefits of PUBM. Perceived severity was measured with 4 items, e.g., "I assume that consuming antibiotics-used broiler meats could cause long time diseases in a few people." Perceived vulnerability was measured with 4 items, e.g., "I may get infected by consuming antibiotics-used broiler meats because of chemicals substances contamination." Rewards was measured with 4 items, e.g., "For me, it is easy to cook antibiotics-used broiler meats than other chickens' meats." Response efficacy was measured with 4 items, e.g., "I believe that consuming probiotics-used broiler meats will reduce the risks of long-time diseases than other broiler meats." Self-efficacy was measured by 4 items, e.g., "I have the ability to purchase probiotics-used broiler meats because they could not contain chemical substances in them." Response cost was measured with 4 items, e.g., "I doubt the cost effectiveness of probiotics-used broiler meats." Intention to buy PUBM was measured with three items asking participants about their intention in the future.

Knowledge and PMT constructs were assessed using a 5-point Likert scale (from 1 = strongly disagree to 5 = strongly agree) and the reliability of all constructs ranges from 0.72 to 0.89.

Results

Most participants were female (53%) followed by male (47%), and their ages were between 25 and 35 years old (45%), followed by between 36-45 years old (26%). 54% of the participants stated their educations as a bachelor's degree, followed by 42% of high school or less education level. They reported their occupation to be private employee (44%), followed by business owner (22%). They also stated that their incomes level is between 200,001 (MMK) to 400,000 (MMK) (47%), followed by above 600,000 (MMK) (15%).

The partial least square structural equation modelling (PLS-SEM) was applied to assess the measurement model and structural model. Table 1 shows that all Cronbach's alpha values were higher than a cut off value of 0.7 except response cost (0.60), and composite reliability values of all constructs were also above 0.7. Though it was well recommended that Cronbach's alpha should be greater than 0.7, it was in accordance with the suggestion of alpha value 0.6 for exploratory research and multidimensional constructs (Hair et al., 2010). One plausible explanation for low alpha value of response cost could be the nature of the questionnaire and a new field of research for the participants. Though all the items or indicators seemed to measure the response cost, they were different from each other in terms of nature and were not connected to a single dimension. All values of AVE for all constructs are above the value of 0.5. The relationships between the constructs and their indicators are satisfactory, proving the reliability and validity of the measurement indicators. As Table 2 displayed, the square root of AVE of each construct are superior to all the correlations among all the constructs, indicating the discriminant validity.

Table 1 Standardized factor loadings, construct reliability and average variance extract values of the measurements (n=400)

Constructs	Items	Factor Loading	CR	Cronbach's Alpha	AVE
Knowledge	Knowledge9	0.78	0.88	0.82	0.65
	Knowledge10	0.82			
	Knowledge11	0.84			
	Knowledge12	0.78			
Perceived Severity	SEV2	0.89	0.86	0.76	0.67
	SEV3	0.77			
	SEV4	0.78			

Table 1 Standardized factor loadings, construct reliability, and average variance extract values of the measurements (n=400) (Cont.)

Constructs	Items	Factor Loading	CR	Cronbach's Alpha	AVE
Perceived Vulnerability	VUL1	0.89	0.90	0.83	0.74
	VUL2	0.90			
	VUL3	0.79			
Rewards	RW2	0.75	0.86	0.73	0.75
	RW3	0.97			
Response Efficacy	RF1	0.84	0.85	0.73	0.65
	RF2	0.80			
	RF3	0.78			
Self-efficacy	SE1	0.89	0.93	0.88	0.81
	SE2	0.91			
	SE3	0.89			
Response Costs	RC3	0.68	0.81	0.60	0.68
	RC4	0.95			
Protection Motivation	PMT1	0.88	0.89	0.82	0.73
Intention	PMT2	0.90			
	PMT3	0.78			

Note: Calculation by using Adanco Advanced Analysis of Composites Software version 2.0.1

Table 2 Discriminant Validity: Fornell-Larcker Criterion (n=400)

Construct	Knowledge	SEV	VUL	RW	RF	SE	RC	PMT
Knowledge	0.81							
SEV	0.14	0.82						
VUL	0.09	0.57	0.86					
RW	0.12	0.30	0.26	0.87				
RF	0.51	0.03	0.10	0.05	0.81			
SE	0.41	0.20	0.15	0.22	0.38	0.90		
RC	0.24	0.31	0.23	0.22	0.10	0.41	0.83	
PMT	0.43	0.36	0.22	0.31	0.32	0.60	0.42	0.86

Note: SEV, Perceived Severity, VUL, Perceived Vulnerability, RW, Rewards, SE, Self-efficacy, RE, Response Efficacy, RC, Response Costs, PMT, Protection Motivation Intention Square root of AVE in diagonal elements (bold) and values outside the diagonal elements are the inter-constructs correlations.

The structural model represents the relationships between constructs that were hypothesized in the research model. According to Chin (1998) suggestions, the strength of each structural path and the combined predictiveness (R^2) of its exogenous constructs were examined.

For threat appraisal constructs, knowledge can explain 2% of variance in perceived severity (R^2 = 0.02), 1% of variance in perceived vulnerability (R^2 = 0.01), and 1% of variance in rewards (R^2 = 0.01). For coping appraisal constructs, knowledge accounted for 26% of variance in response efficacy (R^2 = 0.26), 17% of variance in self-efficacy (R^2 = 0.17) and 6% of variance in response costs (R^2 = 0.06). Totally, the model can explain 49% of variance in purchase intent of PUBM. As Table 2 showed, knowledge had negative impact on perceived severity (β = -0.13, $p < 0.05$), meaning that increased knowledge level of consumers would not increase perceived severity of AUBM risk. Thus, H_1a was not supported. Moreover, the correlation between perceived vulnerability and knowledge was also negative, but not significant, meaning that consumers' increased level of knowledge would not increase perceived vulnerability. Thus, H_1b was not supported. Between Knowledge (KN) and Rewards (RW), the path is correlated positively but not statistically significant (β = -0.13, $p > 0.05$), meaning that even though consumers could have increased knowledgeability of benefits of PUBM, their pleasures with AUBM could also be high, and so not supported H_1c. For coping appraisal constructs, knowledge was positively related with both response efficacy (β = 0.51, $p < 0.001$) and self-efficacy (β = 0.41, $p < 0.001$), meaning that inducing increased knowledge level of consumers towards benefits of PUBM would increase their beliefs in products efficacy, and also their confidence in their abilities to buy PUBM. So, H_2a and H_2b were supported. Moreover, the path correlations between knowledge and response cost was significantly negative (β = 0.05, $p < 0.001$), stating that encouraging consumers' knowledge would reduce their perceptions of barrier to buy PUBM. Thus, H_2c was supported. Additionally, the relation between intentions and knowledge was also positively significant (β = 0.16, $p < 0.001$), indicating that consumers' higher level of knowledge would increase purchase intent of PUBM. Thus, H_3 was supported. For intention and threat appraisal constructs, intention was negatively related with perceived severity (β = -0.20, $p < 0.001$) and perceived vulnerability (β = 0.20, $p > 0.05$), meaning that consumers' increased level of perceived severity and perceived vulnerability would not increase protection motivation intention. Thus, H_4 and H_5 were not supported. Between intention and rewards, the correlation was positively significant at (β = 0.12, $p < 0.05$), meaning that though consumers' pleasures with AUBM was high, their intention to buy PUBM was also high. So, this reverse finding did not support H_6. For coping appraisal constructs, intention was positively associated with self-efficacy at significant level (β = 0.39, $p < 0.001$), meaning that consumers beliefs in their abilities to buy PUBM would increase intent purchase. Thus, H_8 was supported. But the relationship between intention and response efficacy was not statistically significant (β = 0.08, $p > 0.05$). And so, H_7 was not supported. For intention and response costs, statistically negative relation was found (β = 0.39, $p < 0.001$) and so H_9 was supported. Results were shown in Table 3 and Figure 2.

Table 3 Results for the Structural Model

	Hypotheses paths		Std. Error	Beta	t-value	P-value (2 sided)	Results
H_1a	Knowledge ⟶	SEV	0.06	-0.13*	-2.37	0.018	Not supported
H_1b	Knowledge ⟶	VUL	0.05	-0.09	-1.66	0.097	Not supported
H1c	Knowledge ⟶	RW	0.06	0.12	1.92	0.056	Not supported
H_2a	Knowledge ⟶	RF	0.04	0.51***	11.41	0.000	Supported
H_2b	Knowledge ⟶	SE	0.05	0.41***	7.61	0.000	Supported
H_2c	Knowledge ⟶	RC	0.05	-0.24***	-4.96	0.000	Supported
H_3	Knowledge ⟶	PMT	0.05	0.16***	3.42	0.001	Supported
H_4	SEV ⟶	PMT	0.05	-0.20***	-4.20	0.000	Not supported
H_5	VUL ⟶	PMT	0.05	0.02	0.41	0.679	Not supported
H_6	RW ⟶	PMT	0.04	0.12**	3.21	0.001	Not supported
H_7	RF ⟶	PMT	0.05	0.08	1.59	0.111	Not supported
H_8	SE ⟶	PMT	0.07	0.39***	5.62	0.000	Supported
H_9	RC ⟶	PMT	0.06	-0.12*	-2.22	0.026	Supported

Note: Significant level at 0.05. 0.01 and 0.001

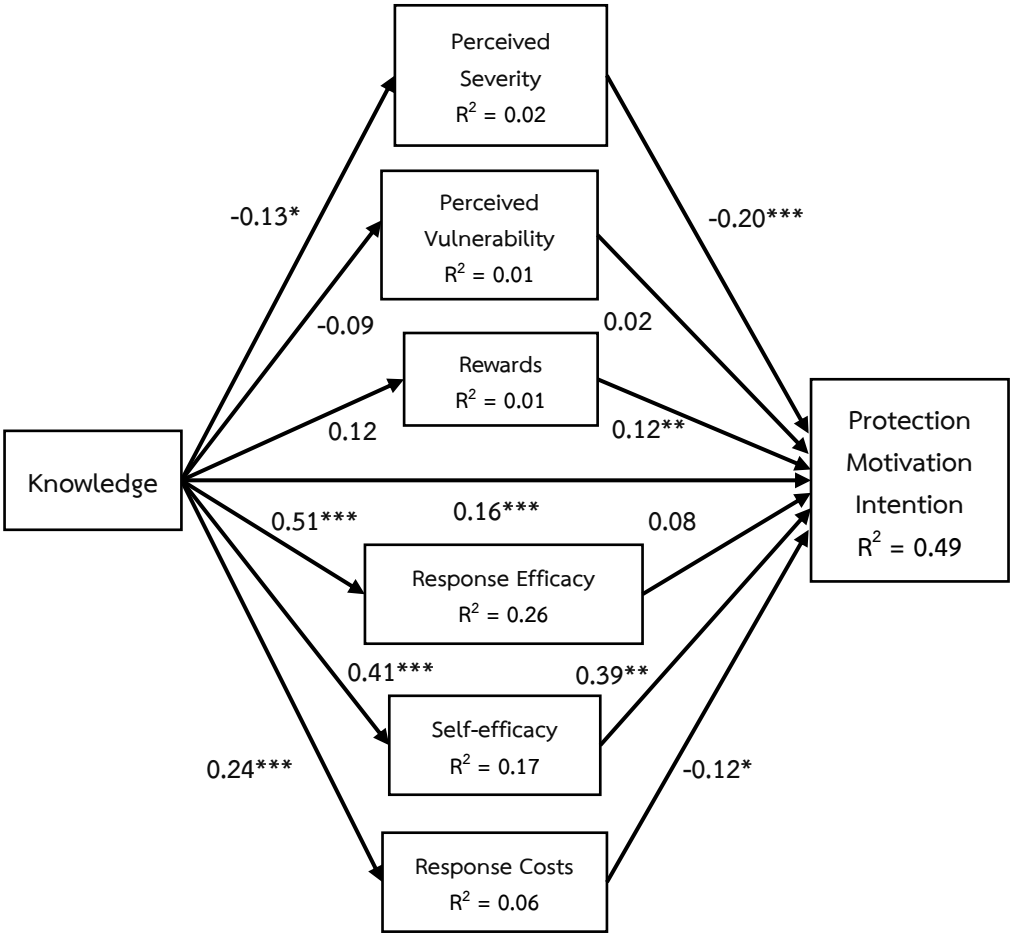

Figure 2 Results for the Structural Model. Author's calculation.

Discussion

This study proposed and examined a conceptual model to understand how consumers' knowledge, together with PMT constructs influence intentions to purchase PUBM. The study sought to explore the utilization and value of the PMT when applied to investigating the consumers' intentions towards the purchase of PUBM. Due to rising incomes and changing dietary behavior, the researcher was motivated to assess consumers' risk perceptions concerning poultry meats and the influencing factors on purchase intent of poultry meats. In addition, consumers in Myanmar were assumed to have a considerable knowledge level concerning risks and benefits of AUBM and PUBM due to increasing social media users (Statista, 2019) and recent studies displayed the core role of social media, for example, Twitter, Facebook, YouTube etc., as a new source of information or knowledge for food risk and benefit communication of organizations (Rutsaert et al., 2013).

The present study had two primary goals. Firstly, the researcher was motivated by finding chemical substances and harmful pathogens on meat and vegetables in Myanmar. Although the risks of improper use of antibiotics in chickens (i.e. risks of AUBM) has been reported in numerous studies in literature (Chattopadhyay, 2014; Etienne et al., 2017; Seal et al., 2013; World Health Organization, 2017), attention to research among consumers who have the potential risks of AUBM, have been supposed to be the middle-class income level, and have a considerable level of knowledge concerning AUBM risks and PUBM benefits, have been ignored. In addition, the relationships of the main components of PMT and knowledge to predict intention and behaviour were ignored in many previous studies of the food domain context (Cox et al., 2004; Henson, Cranfield & Herath, 2010; Plotnikoff & Higginbotham, 1998; Scarpa & Thiene, 2011). Second, the study sought to enhance the predictive power of the PMT through the incorporation of one additional construct within it, namely, Knowledge. Thus, it motivated the researcher to be an area of study with the potential for adopting PUBM. According to the researcher's knowledge, this was the first study addressing the structural relationships of PMT constructs and knowledge on consumers' intention towards PUBM purchase in the domain of poultry and meat products sector. There were few or no earlier studies on the contribution of this independent variable (i.e. purchase intention of PUBM) to knowledge and PMT constructs and so, no comparison could then be made. Hence, the study was performed among a population of consumers in urban area of Yangon, Myanmar where there was available information related to risks and benefits of AUBM and PUBM, more population of higher income levels, and more modern trade market.

The findings of this study supported that PMT constructs play the vital roles linking knowledge with purchase intentions of PUBM. Though the predictive power of constructs to predict purchase intent of PUBM was medium, the study was able to objectively disclose the affecting factors of consumes' buying decisions on broiler meats, and so the model was structurally sound. Additionally, the present study added to existing research that knowledge

and PMT constructs, particularly copping appraisal, predicted protection motivation intention. Understanding these relationships is vital when formulating the strategies to promote new product development and designing to educate risks of AUBM. The results showed that knowledge about AUBM risks and benefits of PUBM predicted an increase in self-efficacy and response efficacy, and a decrease in response costs and subsequently might have influenced intention. More importantly, because of the high impact of knowledge on PMT constructs showed in the present research, further studies are indicated to examine relationships between knowledge and PMT constructs for different behaviors and population, as well as studying educational interventions to understand how changes in knowledge levels can influence constructs of PMT and related behaviors.

Due to the negative correlations between knowledge and both perceived severity and perceived vulnerability, the present study was not consistent with previous study (Nabizadeh et al., 2018) that indicated a direct effect of knowledge on perceived severity and perceived vulnerability. One plausible explanation would be due to no previous experiences of consumer concerning the risks of AUBM, for example, suffering from illness, diarrhea, or long stays in hospitals due to consuming AUBM. In addition, the correlation between perceived vulnerability and knowledge was also not significant in this study. Haapala & Probart (2004) revealed that though one fifth of the students surveyed reported having been sick because of something they ate, they still perceived lower occurrence of foodborne diseases. So, their intention to protect themselves from foodborne illness was low in spite of the fact that they perceived fair seriousness of those diseases. Finally, they concluded that though students had experiences of the foodborne illness threat, with low perceived vulnerability and high perceived severity seems to be insufficient to prompt action in this group of young students. But the present study was consistent with the recent research (Ritland & Rodriguez, 2014) that revealed the fact that greater exposure to obesity information or knowledge had no significant impact on both perceived severity and perceived vulnerability. Another plausible explanation would be participants' age. Most of the participants' age are between 25 and 35 years old (44.5%). Some study revealed that young adults are less concerned by the threatening information (Cismaru & Lavack, 2006). In addition, the correlation between rewards and knowledge was also positively related but not significant. The study of Tanner, Hunt & Eppright (1991) had shown that experiential knowledge (i.e. prior sexually transmitted disease experience) increased rewards associated maladaptive behaviors, and decreased perceptions of probability of occurrence of those diseases threat (i.e. perceived vulnerability) without decreasing threat severity perceptions. Their findings suggested that perceived vulnerability occupied a central role in the threat-persuasion process. Finally, they concluded that most of the studies that have examined the role of knowledge in the PMT model have demonstrated mixed results. This study also suggested that knowledge concerning product risks and benefits for making food choice is a part of the decisions making process, and consumers'

food choices behaviors was complicated (Ueland et al., 2012).

Although the standardized beta coefficients showed the significant relationship between perceived severity and intention, it was not positively correlated, as hypothesized in (H_4) in this study. This finding was not in accordance with the evaluation of Calder, Davidson & Ho (2011) study among university students and employees, that report threat appraisal was significantly associated with the consuming of Omega-3 intention. But in Henson, Cranfield & Herath (2010) study among consumers in Guelph, Ontario, it was revealed that consumers' perceived severity and perceived vulnerability were negatively associated with purchase intent of foods and non-prescription pills containing phytosterols that can reduce the risks of cardiovascular diseases. One plausible explanation would be due to consumers' optimistic or unrealistic bias. Previous researches indicated that individuals tend to believe that they have less chances to experience negative events, and more chances to experience positive events than their peers (Miles & Scaife, 2003; Weinstein & Klein, 1996). Due to this optimistic or unrealistic bias, self-protective behavior and efforts to promoted risk-reducing behaviors were negatively impacted by perceived risks (i.e. severity and vulnerability). Previous studies by Maddux & Rogers (1983) also revealed that threat appeals work only if people believe that they can cope effectively with the danger. If people believe that they cannot cope with a threat, increasing the level of threat decreases intentions to adopt the recommended response because attempts to frighten people without reassuring them that they can cope with the threat has a boomerang effect. Due to this effect, people actually planned to consume more alcohol, exercise less, and avoid precautions against the health threat. The conditions producing this deleterious effect are beliefs people have that they are incapable of protecting themselves because the coping response is ineffective and/or they cannot perform the response (Self & Rogers, 1990). This effect was confirmed by the insignificant association between intention and response efficacy in the present study. Perhaps another reason for this negative relationship could be due to their uncontrollable conditions (Witte, 2008). It is apparent that tolerance of risk is positively correlated with perceived benefit; the bigger the benefit, the greater the willingness to take risk (Wandel, 1994). In this context, chicken's meat prices in Myanmar was the cheapest one if compared with other meats. Hence, the benefits of AUBM (i.e. low prices) outweigh the risks, and lead to take risk. Furthermore, this difference could be related to the dietary habit of the consumers in this study area. Myanmar consumers have no habit of consuming partially cooked meats, and to prevent the food related risks, World Health Organization (2017) also suggested to avoid this unhealthy practices. Due to negative correlations between intention and perceived severity, an explanation could be in such a way that consumers perceived more seriousness of AUBM, but their intentions to protect themselves from these risks were low or they had already taken precautions from these risks by cooking the meats thoroughly. Thus, their perceived severity of AUBM was low and negatively correlated to purchase intent of PUBM due to their dietary

practices as suggested by preventive measures of food risks by World Health Organization (WHO Food Safety Programme, 2001). In Yeung & Morris (2001) study, this finding was also confirmed that consumers believed that the potential risks from chicken meat, for example, chemical and microbial hazards, can be eradicated by cooking it well. Recent study also found a weak influence of perceived vulnerability on intention (Nabizadeh et al., 2018), and revealed weak associations between perceived severity, perceived vulnerability (threat appraisal), and intention. They concluded a limited role of perceived threat in motivating action in the context of vitamin E and C consumption among the cement workers who were exposed to toxic metals. A few studies indicated significant associations in this regard (Floyd, Prentice-Dunn & Rogers, 2000; Milne, Sheeran & Orbell, 2000). In addition, rewards associated with maladaptive behaviours positively correlated with protection motivation intention, meaning that though, in this study, level of consumers' pleasures with AUBM was high, their intention to purchase PUBM was also high. This finding was not in accordance with the PMT (Rogers, 1983). One plausible explanation could be due to complicated processes of consumers' food choices behaviors (Ueland et al., 2012). Socio-economic characteristics and cultural norms may affect dietary habits and the choice of food, and the subsequent individual's belief to do behavior. Further research is needed to examine the interactions between knowledge and threat appraisal, as well between threat appraisal and behavioral intention in diverse population and for different behaviors. It was consistent with previous studies that have indicated an important role of knowledge on the recommended behavioral changes (Eppright, Tanner & Hunt, 1994; Li et al., 2011). The results revealed that knowledge, self-efficacy, and response costs were significantly correlated with intention, meaning that believing themselves able to successfully perform the recommended behavior appears to have been prerequisite for intending to adopt that behavior (McKinley, 2009). The result of the study was consistent with previous study of university students' intention to consume n-3PUFA (Calder, Davidson & Ho, 2011), that indicated significant correlationships between coping appraisal constructs and intention. In another studies, self-efficacy predicted the gluten consumption intention (Dowd et al., 2015) as well fruit and vegetable eating behavior (McKinley, 2009), based on the PMT among adults with coeliac disease and college students, respectively. In Henson, Cranfield & Herath (2010) study of consumers' purchase intention towards foods and non-prescription pills containng phytosterols that can offset the risk of cardiovascular disease, it was revealed that self-efficacy was the strongest predictor of purchase intent. In light of these previous findings, the results of this study, which have tested PMT in preventive health contexts, suggest coping appraisal also has a predictive effect on intentions and related behaviors. A demonstrated effect of increased knowledge on coping appraisal could be performed to focus on marketing campaigns of PUBM. As coping appraisal is more predictive of intention to buy PUBM than other constructs, the result findings were consistent with the study of cements workers' vitamin consumption behavior

(Nabizadeh et al., 2018), promotion campaigns could be emphasized on these correlations. Because of statistically significant impacts of knowledge on both coping appraisal constructs and intention, the importance of knowledge should be considered to create a link between them, while formulating marketing campaigns. In addition, according to previous PMT research, intention had a significant role and strong predictor on dietary behavioral changes (Calder, Davidson & Ho, 2011; Sainsbury, Mullan & Sharpe, 2013). Therefore, specific attention should be paid to it when designing intervention plans. The relationship of knowledge to other variables in the study indicates a potential marketing campaign on the promotion of the benefits of PUBM and also, it could be appropriate to predict purchase intent of consumers in regional countries where risks of AUBM are being faced and PUBM production is at the beginning of the development.

From a theoretical viewpoint, the outcomes of this study added new insight in respect of consumer food safety concern regarding AUBM in Myanmar consumers, since to date this issue has been inadequately researched. The results of this study showed 49% of variance in intention explained by both knowledge and the constructs of PMT. According to Chin (1998), the amounts of 0.67, 0.33, and 0.19 for the variance percentage in a model can be regarded as substantial, moderate, and weak, respectively. Hence, the research model in this study could explain more than moderate variance percentage in intention. The results were nearly consistent with the results of Cox, Koster & Russell (2004) in explaining a high percentage (59–69%) of the variation of intention to consume functional foods and supplements in an applied PMT model among an Australian population. In addition, the findings were also consistent with previous studies of eating a low-fat diet by PMT variables revealed that it had explained 46–55% of the variance in intentions and 27–39% of the variance in behavior (Plotnikoff & Higginbotham 1995; Leas & McCabe, 2007). Additionally, the present study finding was also in accordance with the previous study (Cox et al., 2008), explaining 44 to 51% of variation in 'likelihood to purchase eight products containing Long-chain omega-3 fatty acids (LCO3FA) that reduced risk of coronary heart disease/prevent and treat chronic diseases such as coronary heart diseases.

But, in the present study, the results indicated that consumers' knowledge can explain only little variances of two percent in perceived severity at $p<0.05$, one percent in perceived vulnerability at $p = 0.10$, and one percent in rewards at $p = 0.06$. Moreover, the correlations between intention to purchase PUBM and both perceived vulnerability and response efficacy were not statistically significant. Though all items of knowledge tried to measure the latent constructs, there were little significance of correlations between knowledge and perceived vulnerability, as well perceived vulnerability and intention. Furthermore, in this study, some reverse questionnaires were also incorporated to avoid response bias, but all these reverse items had to be excluded because of no reliability. One plausible explanation could be multi-dimensions of knowledge, the nature of the questionnaire and participants' low interest because of new

field study. The researcher acknowledged the need for instrument validation through more testing and observational studies for the impact of knowledge on threat appraisal constructs as well as their impact on intention. Although the restricted sample size was collected in a single geographic area, i.e. Yangon, Myanmar, the study's potential generalizability to a wider context was granted because of significant correlations among the constructs, and improvements could be made if a bigger sample were to be used and be drawn from a wider geographical population, in ASEAN countries where livestock industry is being developed and improper uses of antibiotics in chickens are being practiced. The study provided the utility of the PMT model as the marketing communications tool to induce behavioral change because intentions had large effect size on behavior (Sheeran, 2002). In conclusion, the research model can measure the influencing factors of consumers' buying decisions on broiler meats because this study provided the importance of consumers' confidence in their abilities to perform the recommended behavior (i.e. intent to buy PUBM), and the significant effects of knowledge on response efficacy, self-efficacy, response costs, and intentions.

Conclusion

By applying and testing the Protection Motivation Theory (PMT), this study serves as one of the early attempts in the food domain of PUBM to explore consumers' self-protective behavior against health risks of AUBM by adopting PUBM. The results of this study indicated three key findings. The first is confirmation that, with respect to consumer intentions regarding the purchase of PUBM, the PMT constructs can serve effectively as a framework for predicting said intentions because of significant impact of self-efficacy and repose costs on intention. The second, however, is partial support for the notion that the utility of PMT can be increased further still through the incorporation of knowledge. In other words, knowledge appear to be useful constructs in furthering the understanding and predictability of consumer intentions regarding the purchase of PUBM. Relatedly, the results of this study provide support for existing evidence regarding the relevance of this construct in the prediction of intentions and behavior with health-related research. Especially, knowledge had direct impact on purchase intention and both response efficacy and self-efficacy. Finally, the third key finding of the present study is that among consumers in Myanmar specifically, knowledge, self-efficacy, and response costs are all of critical importance in an effort to predict consumer's purchase intention towards PUBM. At the same time, further investigations will be necessary in order to further illuminate the better predictions of knowledge on threat appraisal constructs: perceived severity, perceived vulnerability and rewards and their effects on intentions.

The results that revealed the affecting factors on consumers' purchase intent in response to PUBM are relevant for marketing communicators in public service. In addition, the study revealed consumers' perceptions towards AUBM and purchase intent of PUBM. It is a valuable empirical finding and understanding to formulate more persuasive promotion

campaigns that can result in better use of advertising budgets for livestock companies. With respect to these findings, a promotion campaign based on PUBM should attempt to increase awareness of PUBM, its positive impact on public health and self-efficacy of consumers, while at the same time it should be ensured that consumers perceived fewer barriers to PUBM (i.e., availability, price barriers, etc.). Thus, businesses and organizations need to focus on providing a continuous stream of knowledge information on the benefits of PUBM, and emphasize how their products are in alignment with consumers' food safety values. The study provided the utility of the PMT model as the marketing communications tool to induce behavioral change because intentions had large effect size on behavior (Sheeran, 2002).

As a conclusion, considering that knowledge, self-efficacy, and response costs showed as strong predictors of consumers' purchase intent of PUBM, specific attention should be paid to coping appraisal constructs and knowledge when designing marketing campaigns. Moreover, the predicting role of knowledge on response efficacy, self-efficacy and response costs should be considered too in those campaigns. Given that the rapid growing urbanization, rising incomes, life styles changes and growing concern of the risks of AUBM has been introduced in Myanmar, effective ways of protection from adverse effects of AUBM should be focused by adopting PUBM. Moreover, the benefits of probiotics use in human and animals are increasing convinced more and more, and PUBM would be a possible solution to provide protection against harmful risks of AUBM. In addition, consumption of PUBM would lessen the negative potential impacts of AUBM on human health.

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