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Developing Innovation Product of Meals Ready-to-Eat (MRE) for Emergency Supply Distribution to Disaster Victims

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Abstract

Purpose: Each emergency event has several aspects of impact, including the effects on lives, economy, and the environment. Additionally, the damage to infrastructure systems can contribute to food shortages during a disaster. **Research design, data and methodology:** This research aims to study ready-to-eat food innovations that influence the consumer buying behavior of emergency victims and to develop ready-to-eat meal innovations to help emergency victims with an emphasis on research and innovation of Meals Ready-to-Eat (MREs). **Results:** A questionnaire was employed to collect the data from people living in Pak Kret Municipality, Nonthaburi Province. Pak Kret Municipality is administered under five subdistricts, covering 34 villages in Pak Kret, Bang Phut, Ban Mai, Bang Talat, and Khlong Kluea. Multiple correlation and multiple regression techniques were used to analyze the data. The study revealed that integrated marketing communication, unique proposition, customer orientation, and product variety influenced consumer buying behavior of MREs to help emergency victims at a statistically significance level of 0.05. **Conclusions:** The results indicate that, in emergency situations, MREs play a crucial role. When infrastructure and essential services are disrupted, MREs are a convenient and long-lasting option for providing timely assistance during emergencies.

Keywords : Integrated Marketing Communication, Unique Proposition, Customer Orientation, Product Variety, Consumer Buying Behavior, Ready-to-Eat Food, Food Distribution

JEL Classification Code: L66, M31, O35

1. Introduction

Flood disasters have been a significant and enduring national problem throughout global history. Thailand, like many other nations, has been particularly vulnerable to floods. This vulnerability is attributed to Thailand's location in a tropical region, where it experiences monsoons from both the northeast and southwest, and occasionally, is affected by the movements of tropical cyclones. These

meteorological factors result in heavy and prolonged periods of rainfall, which contribute to the recurring issue of flooding in the country. Thailand has experienced several catastrophic natural disasters. The most devastating one was a tsunami of magnitude 9.1 on the Richter scale off the coast of the Gulf of Sumatra on 26 December, 2004. The tidal wave reached a distance of 1,300 kilometers with a crest height of 50 meters, collapsing five coastlines and killing about 230,000. The event affected many countries, such as Sri Lanka, Indonesia, and the Seychelles near Africa

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(National Geographic Asia, 2018). Another disaster that affected Thailand was the devastating flood inundating much of Thailand in 2011 which was caused by excessive and continuous rainfall from successive, powerful monsoons and five storms moving from the South China Sea, namely, Haima, Nok Ten, Haitang, Nesat, and Nalgae. As a result of all these factors, there was an accumulated rainfall of 1,822.4 millimeters, which is 28% higher than the 30-year average, especially in the northern region, with accumulated rainfall 42% higher than normal. The flood affected 65 provinces and over 12.8 million people. It was ranked the fourth most catastrophic disaster in the world (Department of Disaster Prevention and Mitigation, 2013).

Retrospective statistics of disasters in Thailand by the Department of Disaster Prevention and Mitigation (2013) showed that there were more than 40,000 floods, 36,024 windstorms, 35 landslides, and one tsunami from 1989 – 2012. In these events, the agencies in charge were unable to manage the disasters or help victims in a timely manner. Several areas were significantly affected. However, some areas were not as much affected as expected. For example, Pak Kret City Municipality in Nonthaburi is right next to the Chao Phraya River. It was expected to be hit by a flood as high as 1 – 1.5 meters. However, only the municipal area with only 2,000 households or 3% of the flooded area was affected (PakKret Municipality, 2014). However, Pak Kret City Municipality is an exception as the area that survived devastating floods by using a model of disaster management called “PakKret Model,” which is a good example of community-based disaster risk management (CBDRM). This model improved the effectiveness of local administrative organizations in disaster response (PakKret Municipality, 2014). The PakKret Model is an effective example of flood response. The flooded area in PakKret City Municipality covered five administrations, including PakKret Subdistrict, BangPhut Subdistrict, BangTalat Subdistrict, KhlongKluea Subdistrict, and BanMai Subdistrict. Disasters have had multiple effects on lives, properties, the economy, society, and the environment, particularly food and drink provisions.

As a result of such problems, government agencies and local administrative organizations were unable to assist flood victims in urgent need and the assistance they did provide was inefficient and incomprehensive. The Department of Disaster Prevention and Mitigation has acknowledged such problems and deemed it is important to research and innovate to help victims more efficiently. Considering the livelihood factors of the victims, it was found that food was one of the most needed. However, the current distribution of emergency relief packages, which often include items like instant noodles and rice, poses a challenge. These items require cooking, which becomes problematic during disasters. Disasters can disrupt housing,

infrastructure, transportation, and essential services, leading to power outages and water supply cuts. As a result, the ability to heat or cook food is compromised. In many cases, cooking may be impossible during natural disasters due to the lack of facilities and combustible materials. (Science Center for Education, 2022) Furthermore, in today's world where society is characterized by growth and a fast-paced lifestyle, people are increasingly seeking convenience and swift services. This trend has substantially amplified the importance of readily available, ready-to-eat meals. This heightened significance becomes particularly apparent in the face of diverse disaster scenarios that may occur. For instance, the outbreak of the Coronavirus 2019 compelled people to undergo quarantine within their residences, further accentuating the need for readily available food options. Thailand itself faces the problem of disasters that tend to occur more often and more severely. When disaster strikes, it causes food shortages. Consumers therefore pay attention to preparation and tend to buy more ready-to-eat food products (Krungsri Research: Ready-to-eat Food industry trends, 2021)

During times of disaster, the distribution of ready-to-eat meals is crucial for the survival of emergency victims. Thus the development of innovative food solutions to decrease mortality and malnutrition has gained significant importance. Effective contingency planning for disaster response and evacuation requires the prioritization of essential elements. This is vital to empower individuals to efficiently manage and survive such circumstances. For instance, the fundamental basic human needs encompass food, shelter, clothing, and medicine. Among these, shelter, clothing, and medicine can be dealt with later. Individuals can be relocated to temporary shelters during emergencies, or they can reside with relatives until new accommodations are accessible or damaged homes are repaired. While lack of clothing or medicine is not immediately life-threatening, the food shortage becomes an urgent priority. Meals Ready to Eat (MRE) offer several advantages, including 1) Immediate consumption: MREs can be eaten without reheating. 2) Extended shelf life: MREs can be stored for a minimum of 12 months without refrigeration or preservatives. 3) Preservation of quality: MREs prevent changes in color, odor, and taste due to moisture, oxygen, and microbial contamination when stored at room temperature. 4) Portability: MREs are lightweight and easy to carry, reducing the logistical challenges of transporting them to disaster-stricken areas. Given these advantages, innovating in the field of disaster-ready food to reduce mortality rates and malnutrition among disaster survivors becomes crucial. (Department of Disaster Prevention and Mitigation, 2022)

Therefore, the researcher is interested in exploring and developing food innovation to serve the needs of people in

the community as well as social and cultural contexts for effective disaster response. Creating innovations for use in disastrous events must be done to prevent and reduce the loss of lives (Khunkitti, 2020). It requires preparations in advance to increase the capacity of communities and personnel for effective disaster management and the ability to respond promptly to emergency situations or when unexpected events occur, including a disaster recovery plan for people in disaster-affected communities and a recovery plan (Kosonkittumporn et al., 2020).

The primary aim of this study is to identify and analyze the factors that influence the buying behavior of ready-to-eat (MRE) products. This analysis is conducted within the specific context of the Pak Kret City model, a community-based disaster risk management (CBDRM) model known for its effectiveness in addressing flood-related challenges in the Nonthaburi Municipality area. Additionally, the study acknowledges the critical issue of food shortages during disasters in Nonthaburi Province and aims to understand how these factors come into play in emergency situations. The research delves into four key elements: 1) Integrated Marketing Communication, 2) Unique Proposition, 3) Customer Orientation, and 4) Product Variety, to explore their impact on consumer buying behavior. The study is structured around two primary objectives: To investigate the development of Ready-to-Eat (MREs) innovations for assisting disaster survivors in emergency situations and to investigate the influence of food innovations within Ready-to-Eat (MREs) on the consumer buying behavior during emergency situations.

2. Literature Review

2.1. Development of Meals Ready-to-Eat Innovation to Help Emergency Victims

The frequency of natural disasters globally has risen and is relevant to other regions, especially the storms and floods that are associated with climate change. The United Nations convened a World Conference on “Disaster Reduction” in January 2005 at Kobe City of Japan's Hyogo Prefecture. The conference was attended by government representatives from 168 countries around the world and provided a unique opportunity to promote a strategic and systematic approach to reducing vulnerabilities and risks to hazards. It underscored the need for and identified ways of building the resilience of nations and communities to disasters. Global awareness of disaster risk reduction focuses on preventing new risks, reducing existing risks, and strengthening resilience, contributing to sustainable development. Therefore, Thailand needs to adjust the development process of “disaster risk management” (DRM).

2.2. The Concept of Disasters

A disaster is defined as a hazard that leads to disastrous outcomes. Disastrous hazards can be caused by nature and humans alike (Office of the Royal Society, 2008). Disasters can be divided into two categories (Kosonkittumporn et al., 2020): natural disasters and man-made disasters. Natural disasters are, for example, volcanic eruptions, earthquakes, tsunamis, and various kinds of storms. Man-made disasters include fires, explosions, pollutant releases or spills, pollution, transportation waste, warfare, terrorism, nuclear bombs, and bio-weapons. Disasters require response plans (Department of Disaster Prevention and Mitigation, Ministry of Interior, Thailand, 2017; Sirintip, 2012), which include the following preparations. First, Emergency & Disaster Contingency Planning involves (prevention) processes, such as technical and communication needs for deploying and facilitating emergency communications during a disaster. Second, the emergency response plan (preparedness) requires regular drills. Third, news and updates (emergency response) must be monitored as early warning systems. Fourth, the four necessities must be prepared in sets for easy access, specifically an emergency food supply of water and dry food in case of a disaster or emergency. Fifth, informing and educating the community about various types of disasters, practices, and risk prevention methods is important. Additionally, it highlights the crucial role of public participation in disaster management, which involves cooperation between the government sector, community leaders, and locals.

The collaboration includes the pre-incident preparations, incident coordination, and post-disaster efforts, which involve activities such as preparation meetings, news monitoring, place preparations, disaster warning training, coordination with external organizations, public donations for rescue, repairs of damaged buildings, and evaluation of losses with assistance from community representatives.

2.3. The Concept of Innovation

Innovation refers to an idea or a thing created for the first time or developed from something to solve a certain problem. Innovation can originate from the creation of something entirely new or the modification of existing ideas or products to enhance their efficiency. It also includes technology, ideas, inventions, or products. Innovation must solve a certain problem or pain point or serve some need (Pair, 2020). The word ‘innovation’ has a Latin origin ‘innovate,’ meaning to introduce something as new. When used in different contexts, innovation is viewed as how it creates other mechanisms, such as economic, social, political, and cultural mechanisms. Creativity-oriented innovation involves changes, alterations, and the

development of “existing things to be better” to improve human capacity and further develop other innovations in society (Buanoi, 2016). Marketing innovation for disaster response preparation involves at least four key elements: 1) integrated marketing communication, 2) unique proposition, 3) customer orientation, and 4) product variety.

2.4. Innovation of MRE that Influences Food Buying Behavior of Emergency Victims

Innovation is a new practice or innovation that has not existed before or a modification of an existing thing to be more modern and more effective (Thaipost, 2021). When innovation is applied, it improves efficiency and effectiveness. Innovation is, therefore, crucial for communities during natural disasters. Nipuna (2011) defines innovation as doing something new with a new method. It may also mean changing the ideas, production process, or organization, whether revolutionarily or developmentally. Innovation for natural disaster response must serve the needs of people in the community, such as preventing or reducing potential loss of lives (Khunkitti, 2020). It requires preparations in advance to increase the capacity of organizations, communities, and personnel to respond to unexpected events effectively. When the disaster is over, people affected must restore or improve their livelihood (Kosonkittumporn et al., 2020).

When a disaster occurs, it is necessary to prepare for a response. Meals Ready-to-Eat (MRE) is a type of food in a tightly sealed container that can be eaten without reheating or re-cooking. MRE is produced with a scientific process and sterilized more instantly than canned food. Therefore, MRE is of great quality in terms of color, smell, flavor, and texture. More importantly, it is pathogen-free and can be stored at room temperature for more than a year without using preservatives (Department of Science Service, 2018). MRE was developed by the US Army for special forces and ranger units during the Vietnamese War. MRE was also distributed to civilians during natural disasters (Defense Technology Institute, 2013). Hasamoh (2021) conducted a study titled “Shredded Chicken & Sterilized Fish: Food Innovation in Disaster Preparedness for Sustainable Development” to explore food innovation in disaster preparedness and raise awareness of disaster response. The study aimed to create food innovations suitable for local culture that could be stored for a year. Additionally, the development process helped raise awareness among villagers about disaster response preparation. As a result, the villagers understood how to stock food before a disaster occurred. The findings of this study align with those of the Department of Disaster Prevention and Mitigation (2021), which develops MRE to help emergency victims. The referenced study aimed to model MRE for assisting

emergency victims and developing for mass production with good quality at a lower cost. The study revealed that most consumers demonstrated their high to moderate favor for MRE to help emergency victims, that the development of MRE has a correlation with consumers, and that the development of MRE formulas has a correlation with consumers.

2.4.1. Integrated Marketing Communication

Communication is an activity that transfers knowledge and experiences as well as providing information to each other. Businesses can use it to exchange information about the purchase of products, whether they are consumer or industrial products. Therefore, effective marketing communication is crucial for businesses adapting to changes under digital technology, transitioning into a digital economy. Integrated Marketing Communication (IMC) is regarded as a vital component in conducting business as it aims to add value to the purchase of products and services and foster positive brand perceptions (Kotler & Keller, 2016). IMC involves blending and harmonizing marketing communication from various channels, and it is pivotal in motivating and stimulating customers to make informed purchasing decisions. It is essential for businesses to communicate effectively and raise customer awareness until they accept and decide to purchase a product. Understanding the actual target audience and how to reach and engage with customers at the right time is paramount. Furthermore, designing marketing communication that seamlessly integrates with consumers' daily activities during their preferred times is crucial. Kotler (2011) emphasizes that IMC is a planning process, designing marketing communication to reach consumers and target audiences consistently to gain continuous acceptance of a product, service, or organization. This involves evaluating the role of various communication methods, such as advertising, public relations, sales promotion, personal selling, and direct response, in combination to create a coherent and highly effective message. This ensures that information is consistently linked and yields maximum results, as communication is tailored to fit the daily routines of the target audience, allowing for appropriate and contextually relevant messages.

H1: Integrated marketing communication influences the buying behavior of MRE to help emergency victims.

2.4.2. Unique Proposition

The uniqueness proposition, which involves offering something distinctive and not in line with traditional patterns, holds unique marketing value that is unmatched. This uniqueness plays a crucial role in gaining a competitive edge in the market. Marketing activities have the potential to generate advanced innovations, which are not solely

dependent on entirely new ideas but can also involve modifying existing concepts or practices to create this unique value. This uniqueness proposition significantly influences the buying behavior of MRE intended for disaster relief. It impacts various aspects of consumer behavior, including brand selection, decision-making rationale, choice of purchase location, involvement of individuals in the purchase decision, purchase frequency, consumption preferences, and expenditures per purchase. Consumers perceive that clear and distinct advertising communication instills confidence in them. Additionally, consumers tend to have moderate opinions regarding online media-driven recreational activities and the benefits of membership cards. In the current era, membership cards and online activities are prevalent across nearly all product categories. They aim to stimulate customer loyalty toward brands, aligning with the research conducted by Saeheng (2011).

This study on consumer buying behavior for goods sold at the same price from the shops in Bangkok area revealed that direct communication with customers via social network platforms like Facebook and Twitter offers member discounts, ensures regular product discounts, and employs advertisements across various media. Consumers place importance on these aspects.

H2: Unique proposition influences the buying behavior of MRE to help emergency victims.

2.4.3. Customer Orientation

Customer orientation is the process that organizations use to build customer engagement by emphasizing responsiveness to customer needs. This focus is a crucial result of an overall organizational strategy that prioritizes customer-centric culture and excellence in operations. Both customer satisfaction and dissatisfaction are essential pieces of information that help organizations understand their customers, market perspectives, customer behaviors, and customer goal setting. The organization must keep customers at the center to meet customer needs, primarily by creating customer satisfaction. This is important in achieving business success. Saduakkarn (2018) conducted a study on Decision Purchasing Behavior for Frozen Foods in CP Fresh Mart of Consumers in Thonburi. The study found that demographic factors such as gender, age, education level, marital status, occupation, and average monthly income were correlated with buying behaviors. These behaviors included purchase frequency, time spent on buying, the amount spent per purchase, and the types of purchased products, which included ready-to-cook food, ready-to-eat food, and ready-to-serve food. Additionally, factors related to the marketing mix, such as product, price, distribution channels, and marketing promotion, were found to be correlated with buying decision behavior.

H3: Customer orientation influences the buying behavior of MRE to help emergency victims.

2.4.4 Product Variety

Product development is something that makes business continually progress. Therefore, businesses must constantly seek ways to enhance their products. This involves creating new products that complement their core products by innovatively expanding on existing product features. This approach considers market demands and presents newly conceived products. This aligns with the research conducted by Charoenwiriyaikul et al. (2022), which focused on behavior of frozen food consumption via online system of people in Bangkok. The study found that businesses in the frozen food industry, under the context of the COVID-19 pandemic, operated at their highest capacity. Consumer behavior regarding frozen food consumption through online platforms was primarily driven by the desire to save time and ensure safety. Convenience was also a key factor.

This research further resonates with the study by Rojanapibunphon (2007) which explored the behaviors and attitudes of consumers toward frozen ready-to-eat food in Bangkok. The study revealed that consumers in the sample group preferred eating out, with infrequent consumption of frozen ready-to-eat food, typically less than once a month. The top three preferred brands were SandP, CP and Easy Cook. These preferences were primarily driven by the ease of purchase, convenience, and time-saving aspects. The majority of consumers bought frozen ready-to-eat food from convenience stores, typically in quantities of 2-3 boxes at a time. The most crucial factors influencing their purchasing decisions were taste, certification of standards, and warm customer service at the point of sale.

H4: Product variety influences the buying behavior of MRE to help emergency victims.

Based on a review of concepts, theories, documents, and relevant literatures, the theoretical framework is generated as below.

Developing Innovation Product of Meals Ready-to-Eat (MRE) for Emergency Supply Distribution to Disaster Victims

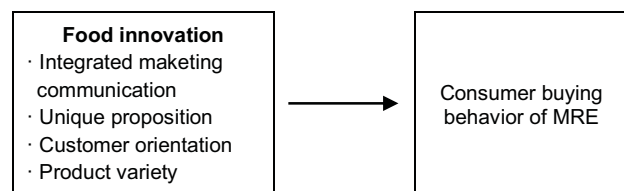


Figure 1: Study Model

3. Research Methods and Materials

3.1. Population and Samples

The population from the Pak Kret Model was the people living in Pak Kret City Municipality who were affected by the 2011 Thailand Floods. The scope of this study is Pak Kret City Municipality, covering five subdistricts, more precisely 11,771 households in Pak Kret Subdistrict, 22,516 households in Bang Phut Subdistrict, 12,554 households in Ban Mai Subdistrict, 14,063 households in Bang Talat Subdistrict, and 3,902 households in Khlong Kluea Subdistrict, totaling 64,806 households.

Samples in this study were people in the Pak Kret Model living in Pak Kret City Municipality. The researcher used the numerical data of the population and samples living in Pak Kret City Municipality, Nonthaburi Province. The population in five subdistricts in Pak Kret City Municipality was 37,500 people in Pak Kret Subdistrict, 63,169 in Bang Phut Subdistrict, 32,766 in Ban Mai Subdistrict, 47,480 in Bang Talat Subdistrict, and 9,474 in Khlong Kluea Subdistrict, totaling 190,389 people. The sample size was calculated by using the technique by Weiers (2005:350). The level of confidence was determined at 95%, with a tolerance of not more than 5%. The sample size was 400 people.

3.2. Tool Validity and Reliability

3.2.1. Content Validity

This was tested by using a questionnaire with five experts in the field of business administration to check the questionnaire's validity or the Index of Item Objective Congruence (IOC). It found that the IOC value is between 0.80-1.00, which is within the acceptable range (Nunrally & Bernstein, 1994).

3.2.2 Reliability Check

This used Cronbach's alpha and it was found that the reliability of the whole questionnaire was 0.871, which is greater than 0.70, and is considered an acceptable value (Hair et al., 2010).

3.3. Measurement

Food innovation is the independent variable of the study. According to and Rajkulchai (2019), food innovation involves integrated marketing communication, unique proposition, customer orientation, and product variety. The items were measured using a seven-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

Consumer buying behavior was adapted from Llonch et al. (2002). The items were measured using a seven-point Likert scale from 1 (strongly disagree) to 5 (strongly agree).

4. Results and Discussion

Demographic data of the population of Pak Kret City Municipality, Nonthaburi Province.

The emergency victims were mostly females, followed by males, aged 40-54 (42.50%), followed by 55 and above (26.25%), 23-39 (24.50%), and 10-20 (3.75%), respectively. The majority of the population was married (52.75%), followed by single (37%), and widowed or divorced (9.50%), respectively. Most of the population had an education level of a bachelor's degree (44%), followed by lower than a bachelor's degree or equivalent (31.50%), and higher than a bachelor's degree (24.50%), respectively. The samples worked as government officials or for state enterprises (28.25%), followed by business owners (24.75%), freelancers (18%), employees of private companies (17.50%), and others (11.50%), respectively. Their average monthly income was lower than 15,000 baht (35.50%), 15,001 - 30,000 baht (20.50%), more than 50,000 baht (16.75%), 30,001- 40,000 baht (16.25%), and 40,001 - 50,000 baht (11%), respectively. Regarding their health status, the samples did not have medical conditions (60%), followed by having diabetes (14.25%), gastrointestinal diseases (11%), heart diseases (6.50%), allergies to dust, changing weather, and pollen (5%), renal diseases (2.50%), and blood pressure (0.75%), respectively. Emergency victims were not allergic to food (75.50%) or some types of food (24.5%). Most emergency victims had been affected by disasters (64.25%) and were not affected by disasters (35.75%). Lastly, emergency victims would prepare MRE to help emergency victims (90.75%) and would not (9.25%).

Opinions of the samples regarding food innovation are summarized in Table 1 below.

Table 1: Overall and specific opinions on consumer buying behavior of MRE to help emergency victims

Causes of variance	SS	df	MS	F	Sig.
Variance between groups	71.387	4	17.847	64.998	0.000 ^b
Variance in the group	108.457	395	0.275		
Overall	179.844	399			

According to Table 1, the participants demonstrated their opinions on consumer buying behavior of MRE to help emergency victims at the highest level overall, in unique proposition, customer orientation, product variety, and integrated marketing communication. This is because the participants see that buying MRE is beneficial and crucial for the survival of emergency victims. The advantages of MRE are 1) no requirement of reheating, 2) storable for as

long as 12 months at room temperature and without preservatives, 3) well-preserved qualities in terms of color, smell, and flavor, and not being affected by dampness, oxidation, and microbial contamination when stored at room temperature, and 4) being light in weight, easily portable, and using small transportation space, making it easy to distribute it to the victims at a large volume (Science Center for Education, 2012).

Results of multiple regression analysis: Marketing innovation correlates with consumer buying behavior of MRE help emergency victims.

Table 2: Results of multiple regression analysis: Marketing innovation correlates with consumer buying behavior of MRE help emergency victims.

Food innovation	\bar{x}	S.D.	Importance level
1. Integrated Marketing Communication	4.18	0.72	Highest
2. Unique proposition	4.32	0.63	Highest
3. Customer orientation	4.23	0.80	Highest
4. Product variety	4.20	0.68	High
Overall	4.24	0.54	Highest

According to Table 2, consumer buying behavior of MRE to help emergency victims has a linear relationship with dependent variables at a statistically significant level of 0.05. Since there is more than one dependent variable with an influence on the consumer buying behavior of MRE to help emergency victims, each of them is separately analyzed.

Enter multiple regression analysis was performed to prove a relationship between marketing innovation and consumer buying behavior of MRE to help emergency victims.

Table 3: Results of the Enter multiple regression analysis to prove a relationship between marketing innovation and consumer buying behavior of MRE to help emergency victims.

Model	Consumer buying behavior of MRE				
	B	SE(b)	Beta	t	Sig.
Constant	0.799	0.211		3.780	0.000
1. Integrated Marketing Communication	0.299	0.047	0.325	6.395	0.000
2. Unique Proposition	0.266	0.052	0.252	5.164	0.000
3. Customer Orientation	-0.006	0.039	-0.007	-0.156	0.876
4. Product Variety	0.203	0.052	0.208	3.921	0.000
	$r = 0.630^a$ $R^2 = 0.397$		Adjusted $R^2 = 0.391$ SE = 0.52400		

Note: Statistical significance level of 0.05

According to Table 3, the factors that most influenced buying behavior of MRE to help emergency victims were integrated marketing communication, unique proposition, and product variety.

4.1. Discussion

Innovation of MRE influences the consumer buying behavior of emergency victims. This finding aligns with Hasamoh (2021). Even though communities receive help from the government, private sectors, and the general public's donations during an emergency, the distribution of aid items to the community can encounter delays, often failing to reach every household in a timely manner. For this reason, the referenced study could innovate shredded chicken and sterilized and long-lasting starch-based products, which can be stored for up to a year. These food products align with local culture and are well-suited to the region's needs. The development process could raise awareness of preparedness for disasters, enabling villagers to stock food before a disaster occurs. Similarly, the Department of Disaster Prevention and Mitigation (2021) conducted a research and development project of MRE innovative food to help emergency victims and develop a model of MRE to help 975 emergency victims, especially the suitable menus for natural disasters. It was found that the most suitable menus of MRE were Khai Phalo (Thai egg stew), garlic friend chicken, Thai green curry with chicken, and cooked rice. Therefore, these four menus were researched and developed as a model MRE to help emergency victims. Each of the four menus was innovated with three different recipes. Likewise, Charoenwiryakul et al. (2022) investigated the consumption behavior of frozen food through online channels among Bangkok people. The purpose was to examine the operation level of frozen food entrepreneurs during the COVID-19 epidemic and the consumption behavior of frozen food through online channels, such as reduced time for purchasing and consuming, convenience, and safety. It was found that the operation level of frozen food entrepreneurs was at the highest level. Regarding the consumption behavior of frozen food through online channels, less time shopping and safety were at the highest level, while convenience was at a high level.

5. Conclusion

Food innovation is crucial for a prepared response to natural disasters and raising awareness to serve the need of Pak Kret City Municipality, Nonthaburi. MRE food was used as the guideline for developing innovations within the framework of community disaster management. Ultimately, the community can be self-reliant and more effective in responding to disasters without solely relying on government assistance. Therefore, the escalating severity of disaster occurrences and the issue of food shortages during such times, the research highlights the importance of

developing ready-to-eat food innovations to aid disaster survivors. This research, focused on developing innovation product of MRE food for emergency supply distribution to disaster victims, aims to raise awareness about proactive disaster preparedness. Furthermore, it emphasizes the importance of creating easily transportable and storable food innovations suitable for a range of scenarios, including camping and remote travel. These innovations are essential for enabling swift and efficient aid distribution to affected individuals during disasters.

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