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About Us

RJCM is an international journal for academics and scholars at the higher education level to communicate and share their viewpoints and academic work with fellow professionals in the areas of creative entrepreneurship and management as practiced in their fields of specializations in social sciences. Currently, it is classified as Tier 2 in Thai-Journal Citation Index (TCI).

RJCM publishes three numbers per volume annually and welcomes contributors to submit their manuscript in January, May, and September of each year. We accept both academic and research papers in social sciences from contributors. The papers are double-blind three-peer-reviewed in each volume and published online-plus-print thrice a year.

The length of the unformatted manuscript in WORD can be 15-25 pages in length including references. The contents of the manuscript should include (1) a title with the author's name, affiliate, email address and telephone contact, (2) an abstract of 150 words with 3-5 keywords, (3) an introduction, (4) a rationale and background of the study, (5) research objectives, (6) research methodology, (7) data collection procedure, (8) data analysis, (9) results and discussion, (10) research limitation (if any), (11) conclusion, (12) acknowledgement(s) (if any), (13) the author's biography of about 50-80 words, 14) references, and (15) an appendix or appendices (if any).

All interested readers and paper contributors please contact Editor-in-Chief 2: Ruja Pholsward, Ph.D., Associate Professor, Rattanakosin International College of Creative Entrepreneurship (RICE), Rajamangala University of Technology Rattanakosin (RMUTR), <rujajinda@gmail.com>, <ruja.pho@rmutr.ac.th>. Please kindly note that website submission will be advised after the first editorial screening.

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Note from Editors of *RJCM* Volume 3 Number 2

Dear *RJCM* Readers,

You are now with our second issue in Year 3 of *RICE Journal of Creative Entrepreneurship and Management* (*RJCM*). This issue contains six articles in the areas of consumers' attitude and behavior, marketing issues, workplace pressure, and language/ digital education.

In this issue, we have two papers in the area of consumers' attitude and behavior: *"Attitude and Consumption Behavior of Craft Beer Consumers in Bangkok, Thailand" (Article 1),* and *"Three Factors Affecting Elderly Consumers' Decision-Making on Buying Food Materials: A Case of the Fresh Market in Putthamonthon District" (Article 2),* followed by one paper dealing with green marketing: *"Integration of Quality Function Deployment into Green Marketing: A Case Study of Green Paving Bricks Utilizing PET Waste" (Article 4),* and the other investigating work pressure: *"Performance Pressure, Workplace Anxiety, Emotional Exhaustion, and Job Performance: An Empirical Research on Chinese Public Universities" (Article 3).* Two more papers address the issues in language/ digital education: *"Needs Analysis of English Skills at Ban Manik Community in Phuket as an International Community" (Article 5),* and *"The Metaverse in Education: The Future of Immersive Teaching & Learning" (Article 6)*. These articles report interesting findings and current developments in the areas under study. This issue also carries a brief professional viewpoint on digital marketing ethics in tourism.

Our paper contributors in the second issue of 2022 are researchers from universities in China and Thailand: (1) Chongqing Technology and Business University, Chongqing, China; (2) Prince of Songkla University, Songkla, Thailand; (3) Bansomdet Chaopraya Rajabhat University (BSRU); (4) Educational Innovation Institute, Promote Alternative Education Association; and (5-8) Rajamangala University of Technology at Phra Nakhon/ Borphitpimuk Chakkrawat/ Salaya/ Wang Klai Kangwon, Thailand.

The editors-in-chief hope that the research findings and current developments reported in these papers will be interesting to both researchers and practitioners in similar fields of study. The *RJCM* editorial team and the authors would appreciate our readers' comments about these articles, if possible. We always welcome contributions from those who may wish to be part of our *RJCM* network.

Nuttapong Jotikasthira, Ph.D., Editor-in-Chief 1
Ruja Pholsward, Ph.D., Editor-in-Chief 2
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Dear *RJCM* Readers,

The Covid-19 pandemic has been a cornerstone of a mankind history where things have never been this obscure, uncertain, and insecure, yet revealing. People do not know what is true, what to believe, and how they would have to adapt their worldviews and cope with things in their lives. Pseudoscience, conspiracy theories, fake news, are floated around in our information reception spans. For some, the Covid-19 phenomenon may need to be observed and explained by "reading-between-the-lines" as the social structures have become somewhat opaque and power holders have kind of restraining themselves from revealing the truth.

As such, the pandemic necessitates social theories to be retested empirically whether they still can explain, not to mention to predict, the social world. Undoubtedly, it has affected people from all walks of life, certainly including researchers and academics who have still continued with their work regardless of the limited channels of communication. The articles contributed to *RICE Journal of Creative Entrepreneurship and Management* in this hard time would help fill the voids between academics and communities concerned.

I feel much obliged to all the authors for contributing the betterment of their work to academic communities. Your research in different fields of management and creative entrepreneurship certainly help reexamine the world temporarily blurred with uncertainties at the time of the pandemic.

Always with my best wishes for readers and paper contributors of *RJCM*.

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Attitude and Consumption Behavior of Craft Beer Consumers in Bangkok, Thailand

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Abstract

The research investigated attitude and consumption behavior of craft beer consumers in Bangkok, Thailand. The objective was to identify Bangkokians' attitude toward craft beer and their consumption behavior. The researchers used a survey questionnaire, and interview questions to collect data from 454 experienced beer drinkers selected by W.G.Cochra's calculations. The obtained data were analyzed for frequency, mean, standard deviation, t-test, and chi-square test. The result showed Bangkokians' moderately positive attitude toward craft beer at a high level, and their consumption frequency of craft beer at 1-2 times per month at pubs, bars, or restaurants. The consumers under study chose a craft beer brand for its taste, followed by price. Particularly, craft beer stakeholders would like to have the government's support for the current craft beer trend in Thailand to benefit SME entrepreneurs in domestic and international market competition in the craft beer industry.

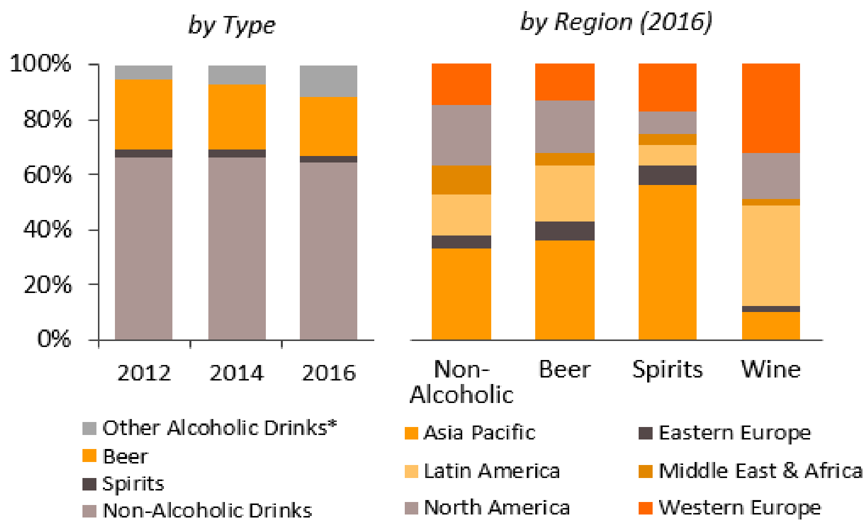
***Keywords**: Attitude toward craft beer, craft beer, craft beer consumption and behavior*

1. Introduction

For a century, alcohol has played an important role in social engagement and bonding. Characteristics of drinking spirits are affected by many factors, such as religion, implementation of alcohol policies, and economic growth. Krungsri Bank (2019) reported alcoholic beverage with a market share of about 35% of the world's total beverage consumption each year and the global spirit consumption volume as shown in figure 1 (Krungsri Bank, 2019). The highest global alcoholic beverage sale volume was in Asia-

Pacific and Western Europe Regions with 56% and 17%, respectively (Grand View Research, 2020). If considering the world distribution of alcoholic beverages by type, Latin America and Western Europe are the world's largest wine distribution (36% and 32%, respectively) while Asia-Pacific is the largest beer market, followed by Latin America, North America, and Western Europe with the ratio of 36%, 20%, 19%, and 13%, respectively (Grand View Research, 2020). These data revealed a relationship between economic growth and the global increase in alcohol consumption.

Figure 1: Global Beverage Consumption Volume
(Source: Krungsri Bank, 2019)



In Thailand, alcohol consumption is currently increasing every year. Among various types of alcohol, beer is the most consumed in the market (65.8%) (Krungsri Bank, 2019). Despite the Alcoholic Beverage Control Act in 2008, the value of the domestic market of beer is still very high at 180 billion baht (Nation of Business, 2018). In contrast to the high value of the beer industry, Thailand's industrial beer market has been solely controlled by two major producers: (1) Boonrawd Brewery Co., Ltd. (Singha, Leo, U Beer), and (2) Thai Beverage Plc., (Chang, Asha, Federbrau). The two sellers currently account for 93% of the industrial beer market share (Na Pombejra, 2018). In the last few years, there has been a new type of beer namely "craft beer" of which the growth is increasing due to its popularity among new generation consumers. Craft beer is a handmade beer that allows various style selections for consumers compared to o ther industrial beers. The quality and taste of beer vary from brand to brand (Tarborda, 2022). Craft beer is rather high in price because it is an imported product. At present, there are more than 40-50 brands of craft beer sold in Thailand with a value of 500 million baht--counted as 0.3% of beer market value. The data revealed that craft beer might be one of the niche products expected to reach 5-7% market growth (Bltbangkok, 2018). Hence, craft beer should be a bright future for SMEs that are interested to invest in beer products but are not able to compete with those big companies due to strict regulations in the government's industrial beer policy.

To support craft beer entrepreneurs and provide some useful information to the producers, the researchers are interested in investigating the attitude and consumer behavior of the participating group from the craft beer industry in Bangkok. All collected data were statistically analyzed to identify craft beer consumers' attitude and consumption behavior.

2. Literature Review and Related Research

2.1.1 Consumer Behavior

Consumer behavior generally refers to the fracking of a particular person involved in the exchange of goods and services with money and includes the decision-making process that determines the behavior (Jiratornpipat, 2016). Consumer behavior involves their decision to purchase and use goods. Their individual expression is directly related to the use of economic goods and services, and affected by decision-making processes. It is vitally important to analyze consumer behavior to understand buying habits and uses. Such information can help entrepreneurs shape market strategies to respond appropriately to consumers' satisfaction and behavior characteristics.

Kuester (2012) explained consumer behavior as the study of individuals, groups, or organizations and the processes they use to select, secure, use, and dispose of products, services, experiences, or ideas to satisfy their needs and wants. It is also concerned with the social and economic impacts that purchasing and consumption behavior has on both the consumer and wider society.

The consumer buying process comes out as a model of consumer behavior. The S-R Theory consists of three factors: Stimulus, Buyer's Characteristics, and Buyer's Decision Process. These three factors will result in buyers' feelings. Buyers' characteristics and consciousness will result in buyers' responsibility. There are four factors that influence consumer behavior: Cultural Factors, Social Factors, Personal Factors, and Psychological Factors (Kuester, 2012). These factors are explained as follows:

1. Cultural Factors are related to the values, ideas, and attitudes generated by learning and participation between members of the group. Cultural factors, therefore, play a major role in consumer purchasing decisions. Knowing the nature of consumers' cultural needs in each society helps entrepreneurs to provide suitable marketing stimuli for the target consumer.

2. Social Factors are related to daily life and have a direct and indirect influence over purchasing behavior.

3. Personal Factors deal with the general characteristics of the population, which are classified as primary data characteristics—consumers' interest, gender, age, education, income, status, occupation, and family members. These personal factors influence different consumption habits.

4. Psychological Factors refer to the consumer's consciousness of shopping for goods or services of a person, consisting of incentives, perception, learning, and reliability. Such psychological factors are considered internal in nature (Kotler & Gary, 2001).

2.1.2 Attitude

Attitude refers to the inclination of feelings of liking or disliking. Attitudes occur after the facts or events have been assessed by a person. Attitudes are about the emotions of people in the market; for example, consumers may have a positive attitude or a negative attitude toward the product/ employee and advertising systems under a brand of a company.

Attitude is formed by a person's consciousness toward something, like what consumers have learned from their past experiences. Using attitude as a link between thought and behavior, marketers prefer to use advertising tools to create a positive attitude toward products and brands. An attitude from consciousness within the consumer's mind toward something with a feeling of liking is called positive attitude, and feelings of dislike will result in a negative attitude often caused by unpleasant experiences, learning or environments. Expressed as behaviors, attitudes determine the trend of expression and the choice of purchasing a product. The elemental theory of Zikmund attitude (Schiffman & Wisenblit, 2019) can clarify consumer attitude as a feeling of favorableness or unfavorableness that an individual has toward an object. An individual with a positive attitude is more likely to buy a product and this results in the possibility of liking or disliking a product. The Tricomponent Attitude Model (Tutorialspoint, 2022) comprises:

Affective Component is a part of the attitude that reflects a person's feelings or emotions toward something. This is caused by various causes, such as individuals, gestures, habits and incentives, feelings expressed as good or bad, hate or love, plus or minus, and like or dislike.

Cognitive Component represents the knowledge of a person toward something as part of a person's thoughts and reasoning in distinguishing and negative consequences. These are information that has been collected and experienced in the past; the result is a trend in some way as good or bad, like or dislike, and valuable or unvalued.

Behavior Component reflects the intention or readiness to frack as expected behaviors, as well as reflect an action tendency toward things in an instant, which is associated with feelings, mindfulness, and reason (iEdunote, 2022).

2.1.3 Craft beer

Craft beer is dubbed a handmade beer from the creativity of brewers. The selection of varieties of malts, varieties of hops yeast, and water, which are the main ingredients in brewing as well as a flavoring with locally available ingredients, such as fruits, flowers, coffee, and herbs, which have a positive effect on the quality and taste of beer and vary from brand to brand (Tarborda, 2022). Each brand of craft beer is unique with its style in color, smell and taste. Craft beer has become increasingly popular these days for its craftsmanship in brewing from the imagination and idea of the brewer to add any type of rice, hops, and yeast, together with local ingredients, such as fruit-based., season flowers, coffee beans, and the like (Thaikla & Semmahasak, 2017).

2.2 Related Research

Lerro et al. (2020) wrote a paper on measuring consumers' preferences for craft beer attributes through Best-Worst Scaling, reporting that Italian craft beer consumers are young, well-educated, and employed. They drink craft beer more than once per month, mainly in the pub and with friends and colleagues. Craft beer is perceived with higher quality and different flavors, particularly tastier, more genuine, and natural when compared with a commercial beer. As for the beer attributes, Italians prefer the taste, fermentation process, and color, while considering promotion, brand, and price rank as the least important.

Apassara (2020) studied factors influencing consumer behavior trend toward purchasing decision of craft beer in Bangkok Metropolitan. The participants were 400 craft beer consumers aged 20 years old and over, living in the Bangkok Metropolitan area. They responded to the survey questionnaire that the product factor was vitally important: Product Identification, Product Expected, Product Potential, Product Augmented. The participants also gave comments on other marketing mixes, such as price, distribution channel, marketing promotion—all of which were rated at a good level

Laplai et al. (2020) analyzed factors affecting beer consumption in Thailand and the government policies concerned. The research results showed that (1) the factors affecting beer consumption in Thailand at the 0.01 level of significance were beer market price, past consumption and quarterly periods, and those at the 0.05 level of significance rested on consumer income and some government measures. The volume of beer consumption increased when the consumer income increased, particularly in the first or fourth quarter of the year. However, it decreased when the beer retail prices increased and beer consumption in the previous quarter increased, when the government used tax measures, and in the third quarter period of the year. In addition, each tax policy obviously affected beer consumption at different levels. An increased specific tax tended to reduce the volume of consumption more than a rise in ad valorem tax. It was noted that just a small rise in the tax rate could not decrease beer consumption—not much disturbing the consumer purchasing power.

Juengprasert et al. (2020) examined factors affecting Thai consumers' decision on purchasing beer Chang Classic in Phan Thong District, Chon Buri Province. The researchers analyzed the consumer characteristics and behavior, and the marketing mix factor for purchasing decision on Beer Chang Classic. The participants were 400 beer consumers who responded to the constructed questionnaire (Cronbach's alpha marketing mix 0.918). The obtained data were analyzed by descriptive statistics and the logit model. It was found that those factors affecting the participants' purchasing decisions statistically significant at the 0.10 level were career, education, frequency of beer drinking, cost per time, and brand loyalty.

Kengkarnchang & Srising (2020) consumer behavior and marketing mix factors influencing on purchasing Craft Beer in Bangkok. The researchers conducted a survey with 454 respondents participating on a voluntary basis. The respondents were 20+ years old, living in Bangkok and consuming craft beer. Frequency, percentage, mean, standard deviation, one-way ANOVA, and multiple regression analysis were used to analyze the obtained data. The majority of the respondents were male, aged 31-40, single status, a bachelor's degree education, and private company employees with a monthly income of 15,000-25,000 baht. The results showed they were most frequent visitors to craft beer places, and they were affected by beer advertising media in purchase intention. As for the marketing mix factors, only three factors of Product, Price, and Promotion affected their purchase intention while Place did not

Williams & Barretta (2018) explored purchase decisions and consumption behavior as shown in the U.S. beer industry sales of flat and craft breweries that increased in number and impact, and their market share by volume moved upward from 5% in 2010 to 11% in 2014. The study focused on the perceptions and behaviors of craft beer consumers compared to consumers of mass-market beer using the industry term “premium” for mass-marketed beer. Such comparison was investigated using three methods: observational research, field experiment, and web-based consumer survey.

Na Pombejera (2018) studied the psychology of Thai craft beer consumption and the opportunities to increase purchase. There has been a steady increase in beer consumers seeking an alternative drink to mass-produced beer. This has increased opportunities for Thai microbrewers in introducing more Thai craft beer into the market. It should be noted that most brands of Thai craft beer have high quality when compared with foreign craft beer from America, Australia, and Scotland. Some people perceive foreign craft beer as a “premium” product for its rather high price. Thai craft beer with unique taste and aroma should have a good potential in competing with foreign brands. Phakdeephirot (2021) asserted that consumers would certainly prefer uniqueness with a higher level of quality in signature products, particularly in the tourism industry.

National Statistical office (2017) reported the smoking and drinking behavior survey 2017. There were three types of alcohol drinkers: beer (34.3%), local alcohol (29.4%), and brown liquor (27.5%). Local alcohol (34.0%) was the most popular among men, followed by brown liquor and infused liquor/ Chinese liquor (30.5% and 30.2%, respectively), while for women beer (48.3%) followed by brown liquor and local liquor (17.4% and 13.8%), respectively. The first reason for men and women to start drinking was friends/ peer influence (41.6% and 29.6%, respectively). The second reason for men was curiosity (30.5%), while for women socializing and religious customs, e.g., at weddings, and house warming parties (27.8%).

3. Research Methodology

The researchers used a quantitative questionnaire in four parts:

Part 1: Personal factors--gender, age, occupation, education, and income. The data format was in Nominal/ Ordinal scale.

Part 2: Consumers’ attitude toward craft beer on a Likert-type scale, ranging from 1= Strongly Disagree, 2 = Somewhat Disagree, 3 = Somewhat Agree, 4 = Agree, and 5 = Strongly Agree.

Part 3: Consumers’ behavior toward craft beer consumption.

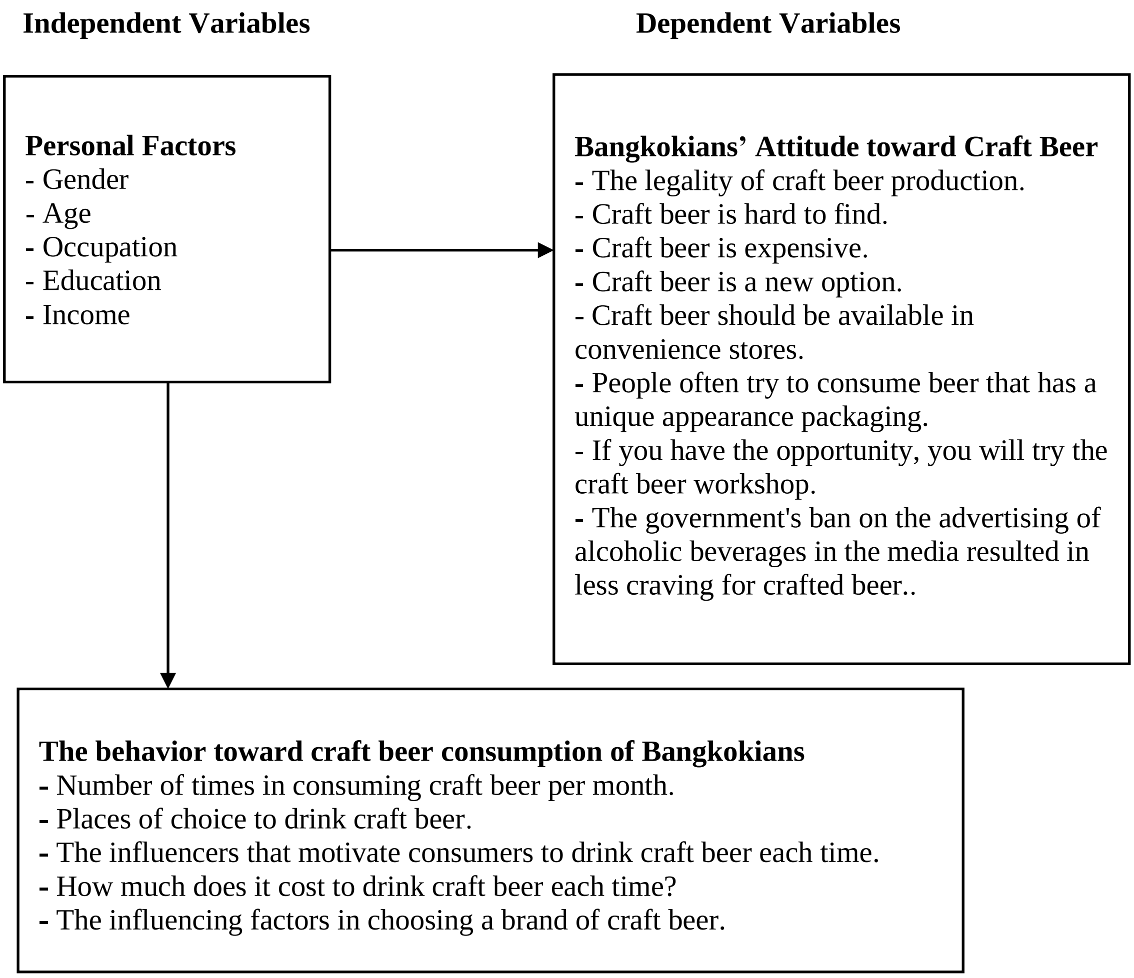
3.1 The Respondents

The respondents in the study were a sample of no specific population size living in Bangkok with alcohol consumption experience. W.G.Cochra's calculations were chosen to reach a sample of 398 persons. Later on, the researchers determined the sample size at 454 persons.

3.2 Data Analysis

The researchers analyzed the obtained data by frequency, percentage, mean and standard deviation, chi-square, and t-test analysis.

Figure 2: Dependent and Independent Variables



4. Result and Discussion

4.1 Demographic Variable

More than half of the respondents were female (231/50.9%), between 21-30 years old (269/ 59.3 %), followed by 31-40 years old (116/ 25.6%); 41-50 years old (11/ 2.4%); older than 50 (2/0.4%), respectively. As shown in Table 1, quite a good number of the respondents have university education (273/ 60.2%), have their own business or work for private companies (218/ 48%), and earn monthly income of 15,001-30,000 baht (199/ 43.8%). It should be noted that craft beer appears popular among students (131/ 28.9%). The demographic details are presented in Table 1.

Table 1: Demographic Variables

Variable	Details	Frequency	Percent
Gender	Male	223	49.1
	Female	231	50.9
Age Group	Less than 20	56	12.3
	21-30	269	59.3
	31-40	116	25.6
	41-50	11	2.4
	Older than 50	2	0.4
Level of education	Lower than Bachelor's Degree	181	39.9
	Bachelor Degree	230	50.7
	Higher than Bachelor's Degree	43	9.5
Occupation	Officer	73	16.1
	Private company employee	129	28.4
	Personal business	89	19.6
	Freelance	31	6.8
	Student	131	28.9
	State enterprise employee	1	0.2
Monthly Income (Baht)	Less than 15,000	147	32.4
	15,001-30,000	199	43.8
	30,001-45,000	63	13.9
	More than 45,001	45	9.9

4.2 The Attitude toward Craft Beer Consumption

The result on overall attitude toward craft beer was at a high level (Mean=3.47, S.D.=0.58). There were top four individual items: (1) craft beer should be available in convenience stores (Mean=3.98, S.D.=0.99); (2) craft beer is a new option (Mean=3.87, S.D.=0.90); (3) People often try to consume beer that has a unique appearance packaging (Mean=3.82, S.D.=1.07); and (4) If you have the opportunity, you will try the craft beer workshop (Mean=3.77, S.D.=1.20). To the researchers, the consumers' view on craft beer available in convenience stores is very interesting and could be taken as a good point for easy access to the local craft beer products.

It should be noted that the lowest item was the government's ban on the advertising of alcoholic beverages in the media resulted in less craving for crafted beer (Mean=2.63, S.D.=0.58). This point could be taken for a moderate measure on alcoholic drinks to be considered by the government. The details on attitude toward craft beer consumption are given in Table 2.

Table 2: Attitude toward Craft Beer Consumption

Attitude Variables	Analysis Results	
	Mean	**S.D.**
The legality of craft beer production	3.33	1.07
Craft beer is hard to find.	3.01	0.90
Craft beer is expensive.	3.36	0.96
Craft beer is a new option.	3.87	0.90
Craft beer should be available in convenience stores.	3.98	0.99
People often try to consume beer that has a unique appearance packaging.	3.82	1.07
If you have the opportunity, you will try the craft beer workshop.	3.77	1.20
The government's ban on the advertising of alcoholic beverages in the media resulted in less craving for crafted beer.	2.63	1.14
Total	3.47	0.58

4.3 Bangkokians' Craft Beer Consumption Behavior

As shown in Table 3, more than half of the respondents consumed crafted beer about 1-2 times per month (55.9%). Each drinking cost was more than 1,000 baht (41.2%). The cost was related to the majority of respondents with monthly income in the range of 15,001-30,000 reported in Table 1. It should be noted that Kengkarnchang & Srising (2020) also reported similar research results on the relationship between Bangkokians' monthly income of 15,000-25,000 baht and their beer drinking.

The obtained data show that nearly half of the respondents prefer to drink craft beer in pubs and bars (45.4%) and choose a brand of craft beer by taste (49.1%). This finding was similar to the research by Lerro et al. (2020) on young and well-educated Italian consumers preferring craft beer more than once per month when socializing with friends and colleagues mainly pubs.

The restaurant came second (41.2%) as a drinking place with friends (59.0%). To the respondents, men and women tend to start drinking for socializing with friends and colleagues (59.0% and 28.6%, respectively). The result on the drinking cost of around 1,000 baht attracted alcohol drinkers to craft beer (31.3%). These findings were similar to the report by the National Statistical Office (2017) in that men started drinking out of curiosity, while women in socializing at events like wedding receptions and house warming parties. The details of Bangkokians' craft beer consumption behavior are shown in Table 3 below.

Table 3: Craft Beer Consumption Behavior of Bangkokians

Variable	Details	Response Frequency	Percent
Number of times to consume craft beer per month.	1-2 times	254	55.9
	3-4 times	112	24.7
	More than 5 times	88	19.4
Places of choice to drink craft beer.	Hotel	36	7.9
	Restaurant	187	41.2
	Pub and bar	206	45.4
	Other	25	5.5
The influencers that motivate consumers to drink craft beer each time	Relative	44	9.7
	Friend	268	59.0
	Colleague	130	28.6
	Other	12	2.6

Variable	Details	Response Frequency	Percent
How much does it cost to drink craft beer each time? .	100-500 baht	125	27.5
	501-1,000 baht	142	31.3
	More than 1,000 baht	187	41.2
The influencing factors to choose a brand of craft beer to drink.	Price	101	22.2
	Product	12	2.6
	Type of beer	69	15.2
	Taste	223	49.1
	Other	49	10.8

4.4 Relationship between Occupation and Frequency of Craft Beer Consumption

Table 4 shows that craft beer drinking frequency per month is dependent on the occupation at the significant level of .05. Officers (35 of 73 =47.9%) consumed craft beer per month 3-4 times; private company employees (96 of 129 =74.4%) consumed craft beer 1-2 times per month. Those business owners (42 of 89 =47.2%) consumed craft beer more than 5 times per month. Freelancers (15 of 31 =48.4%), students (88 of 131= 67.1%) and one state enterprise employee (1 of 1=100%) consumed craft beer 1-2 times per month. From the obtained data, it would be interesting for marketers to see that consumers who are with private companies or self-employed tend to select craft beer for their time with friends and colleagues.

Table 4: Relationship between Occupation and Frequency in Consuming Craft Beer per Month

Occupation	Frequency in Consuming Craft Beer per Month								
	1-2 times		3-4 times		More than 5 times		Total	%	
	Frequency	%	Frequency	%	Frequency	%			
Officer	25	34.2	35	47.9	13	17.8	73	100	Pearson Chi-square P = .000
Private company employee	96	74.4	16	12.4	17	13.1	129	100	
Own business	29	32.6	18	20.2	42	47.2	89	100	
Freelance	15	48.4	9	29.0	7	22.6	31	100	
Student	88	67.1	34	26.0	9	6.9	131	100	
State enterprise employee	1	100	0	0.0	0	0.0	1	100	

*Significantly at the .05 level

Statistical assumptions

H0: p = 0 Number of times in consuming craft beer per month is not dependent on occupation

H1: p = 0 Number of times in consuming craft beer per month is dependent on occupation

P (probability) = 0.000, α (significance level) = .05

Therefore, the P-value is less than the value α, so rejected H0 and accepted H1.

In conclusion, the number of times in consuming craft beer per month is dependent on the occupation at the significance level of .05.

Table 5 shows the cost of one-time craft beer drinking dependent on monthly income at the significance level of .05. Consumers' income less than 15,000 bath (72 of 147 = 49.0%) appeared to match with the cost of one-time craft beer drinking at 100-500 baht. The income range of 15,000-30,000 baht (100 of 199 = 50.2%), 30,001-45,000 baht (41 of 63 = 65.1%), and over (23 of 45 = 51%), were able to afford the cost of one-time craft beer drinking more than 1,000 bath. Undoubtedly, consumers' income tends to determine their choice of product consumption as part of socio-economic impact (Kuester, 2012).

Table 5: Chi-square of the Relationship between Monthly Income and Cost of One-time Craft Beer Drinking

Monthly Income (baht)	**Cost of One-time Craft Beer Drinking (baht)**								
	100-500		500-1,000		More than 1,000		Total		
	Frequency	%	Frequency	%	Frequency	%	Frequency	%	
Less than 15,000	72	49.0	52	35.4	23	15.6	147	100	Pearson Chi-square P = .000
15,001-30,000	33	16.6	66	33.2	100	50.2	199	100	
30,001-45,000	11	17.5	11	17.5	41	65.1	63	100	
More than 45,001	9	20.0	13	28.9	23	51.1	45	100	

*Significantly at the .05 level

Statistical assumptions
H0: p = 0 Cost of one-time craft beer drinking is not dependent on monthly income
H1: p = 0 Cost of one-time craft beer drinking is dependent on monthly income
P (probability) = 0.000, α (significance level) = .05
Therefore, the P-value is less than the value α, so rejected H0 and accepted H1.
In conclusion, the cost of one-time craft beer drinking is dependent on monthly income at the significance level of .05.

4.5 Attitude toward Craft Beer by Gender

Table 6 presents consumers' different levels of attitude toward crafted beer as classified by gender. As shown in overall, male and female consumers did not differ in attitude toward craft beer. However, it should be noted that there were three items significant at the 0.05 level, indicating difference in attitudes between male and female consumers: (1) The legality of craft beer production (t=5.125, sig=.000); (2) Craft beer should be available in convenience stores (t=4.611, sig=.000); (3) The government's ban on the advertising of alcoholic beverages in the media resulted in less craving for craft beer (t= -2.475, sig=.014). To the researchers, these statistically different aspects by gender could be taken for consideration in craft beer business and media management. It should be noted that both male and female consumers wanting to try the craft beer workshop (Mean=3.91, S.D.=.086, and Mean=3.91, S.D.=.072, respectively); this could be a good opportunity to promote uniqueness of the local craft beer (Phakdeephirot (2021).

Table 6: Attitude toward Craft Beer by Gender

Attitude toward Craft Beer	Male		Female		t	P
	Mean	S.D.	Mean	S.D.		
The legality of craft beer production. *	3.58	.069	3.08	.069	5.124	.000
Craft beer is hard to find.	2.93	.063	3.09	.056	-1.882	.060
Craft beer is expensive.	3.30	.069	3.42	.058	-1.279	.201
Craft beer is a new option.	3.90	.062	3.84	.057	.677	.499
Craft beer should be available in convenience stores. *	4.19	.063	3.77	.065	4.611	.000
People often try to consume beer that has a unique appearance packaging.	3.76	.077	3.87	.066	-1.112	.267
If you have the opportunity, you will try the craft beer workshop.	3.91	.086	3.91	.072	2.514	.012
The government's ban on the advertising of alcoholic beverages in the media resulted in less craving for craft beer. *	2.50	.084	2.76	.066	-2.475	.014
Total	3.50	.071	3.47	.063	.772	.130

*Significant at the .05 level

4.6 Suggestions

The researchers also asked five beer experts for their opinions on craft beer business and found eight suggestions as shown in Table 7.

Table 7: Suggestions from Craft Beer Experts

Number	Suggestions
1	Craft beer should be supported by the government.
2	Greater variety of beers in the market.
3	Production control should be monitored.
4	If craft beer is not restricted, it may generate more income for the country.
5	Craft beer is an edible art, unlike industrial beer.
6	We wish we could have Thai craft beer sold in convenience stores.
7	Craft beer can indicate that local raw materials can produce world-class beer.
8	Unfortunately, Thai craft beer won an international award, but Thai people do not know about Thai craft beer brand.

5. Conclusion

The research showed that the consumers' attitude toward crafted beer consumers was moderately positive (Mean=3.47, S.D.=0.58). The consumers would prefer craft beer available in convenience stores. They were attracted by a unique appearance in packaging regarding purchasing decision upon craft beer as a new generation product. The overall results also revealed that stakeholders would like the government to support the craft beer business seriously so that entrepreneurs can make use of local raw materials to produce world-class beer.

As known in the beer industry circle, Thai crafted beer has won international awards, but local people do not such information about Thai craft beer brands. It seems obvious that the government's present alcoholic drink policy tends to be too strict to accommodate local beer production. The measures from such a policy include (1) the registered capital of a liquor company must be at least10 million baht; (2) The company owns paid-up share or investment of not less than 10 million baht; and (3) The company's production volume must be at least 10 million litres per year. These measures tremendously deter small beer factories from entering the local beer market and leave them with sale at the production site and bottling in limited number for small-scale consumption. These policy measures have definitely imposed severe limitations on SME businesses in creating new developments in the liquor industry. The trend in craft beer consumption among young employees should deserve a good attention from the government authorities concerned. Those craft beer SMEs still have a long way to strive to survive and move forward with their products to serve the main marketing segment for betterment of the beer industry.

6. The Authors

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Three Factors Affecting Elderly Consumers' Decision-Making on Buying Food Materials: A Case of the Fresh Market in Putthamonthon District

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Abstract

This research aimed to study three factors--demographic, marketing, and behavior—that affect elderly consumers' decision-making on buying food materials in the fresh market in Putthamonthon District, Nakhon Pathom Province, Thailand. The researchers used a survey questionnaire to collect data from 400 residents in Putthamonthon District, selected by Taro Yamane method. The data were analyzed by descriptive statistics and a chi-square test for the relationship between the obtained variables. The results revealed that (1) the consumers were concerned with food material quality in terms of freshness, cleanliness and safety, and (2) other factors--price, place and promotion--were also important. The demographic factors influenced purchasing behavior, especially the relationship between the family income factor and the behavior factor.

Keywords: *Marketing factor, decision-making, food materials, fresh market, the elderly*

1. Introduction

Thailand has been approaching an aging society since 2005. In 2019, Thailand had a population of 66.5 million, and the elderly was 11.1 million or 16.73% of the total population. The Ministry of Public Health Thailand reported more than 12 million aged over 60 years old as 18% of the population (Department of Mental Health,2020). In 2022, Thailand will be a complete aging society with 20% of 60 years old and above of the total population and 28% in 2033 (Foundation of Thai Gerontology Research and Development Institute (TGRI), 2021). A typical aging society holds equal to or more than 20% of 60 years old of the total population (Department of Older Persons, 2021). Aging people need to adjust their lifestyle after working to cope with expenses, and this type of economic pressure results in change in mindset and behavior (Sheridan et al., 2022). SCBEIC (2019) reported a declining trend of marriages from 3.13 in 2007 to 2.98, and the number of couples in 2017 decreased at 5.1%. Married couples feel comfortable living without children (Lee et al., 2022). In addition, Magrelli et al. (2022) pointed out that some elderly though married and with children do not live with their children and grandchildren. Many seniors are changing their lifestyles after retirement due to economic and social pressure leading to more difficult conditions of life. Such a trend has caused a decrease in the average number of family members.

The elderly living in a large city have adapted into self-reliance away from their children. They have planned for a place to live on their own with good facilities. The researchers found in Putthamonthon District a large number of aging residents who enjoyed urban communities adjacent to Bangkok--connected to transport routes, tourist attractions, reputable educational institutions and local/ strategic development plans for the residential areas (Department of Older Persons, 2021).

Putthamonthon District has currently been responsive to the expansion of the aging society. This type of residential expansion has prompted new services for the elderly, particularly food markets. The researchers therefore would like to investigate these aging residents' consumption behavior and decision on purchasing food materials and the factors involved in their decision-making process. The business sectors need such information to be able to deliver the types of products and services in accordance with food quality and good nutrition for the elderly. It is a good business opportunity for entrepreneurs to move along with the trend of aging society in terms of social structural changes and varied consumer demands due to demographic factors of the newly emerging target group. In this regard, the local government agencies need to adjust their management plan to accommodate the options of life preferred by the elderly.

2. Major Concepts in the Study

2.1 The Concept of Marketing Factors 4P's

Kotler (2016) explained the four marketing factors as follows:

(1) Product: Goods or services are intended to be sold. The business owner is needed to add value and differentiation for greater advantage.

(2) Price: The amount of money to be paid as trade-off for a product and willingness to afford.

(3) Place: The channel for the product to be delivered from the business to the customer.

(4) Promotion: The message and content that the business needs for the client to recognize in the value of the product. The intention of promotion is for the customer to buy the product.

2.2 The Concept of Decision-Making Process

The decision-making process is in five stages:

(1) Data Recognition: The first step is for the customer to perceive the information in varied channels. The business owner is concerned with how to make the targeted audience recognize the presented data.

(2) Data Searching: After data recognition, the customer will find out more details both online and offline. This is important for the business owner to know what the customer

is looking for to be able to do a strategic plan on how to provide sufficient information for the customer to have alternatives [chosen products].

(3) Alternative Assessment: In general, the customer would concentrate on specific information of each alternative by comparing the benefits of all alternatives to reach a suitable outcome.

(4) Purchase Decision: For this stage, the customer will select the alternative that gives the best benefits.

(5) Satisfaction after Purchase: It is feedback from the customer after buying the product and utilizing its benefit. This stage is important as a direct impact on the branding of business.

2.3 The Concept of the Elderly

The United Nations (UN) defined the elderly or older persons as people both male and female aged 60+ years old and customized three levels of the aging society as follows; (Sukhothai Thammathirat Open University, 2014):

(1) Aging society - Country or society with people aged 60 years old and above more than 10% of the total population, or people aged 65 years old and above more than 7% of the total population.

(2) Aged society - Country or society with people aged 60 years old and above more than 20% of the total population, or people aged 65 years old and above more than 14% of the total population.

(3) Super-aged society - Country or society with people aged 65 years old and above more than 20% from total population.

3. Literature Review

This section gives a brief literature review on research on marketing mix, customers' decision and satisfaction with products or services.

Erlina & Hermawan (2021) investigated the effect services ive marketing mix of customer loyalty at coffee shops in Bandung. The researchers collected primary quantitative data from 80 respondents. The importance of the marketing mix is to maintain customers' loyalty to a particular product or service. Entrepreneurs or marketers consider major factors, such as product, price, place, promotion, service, atmosphere, and presentation process. The results pointed to the physical evidence factor as the main impact on the customer loyalty and price as the lowest impact factor.

Viet & Anh (2021) studied the role of selected marketing mix elements in consumer-based brand equity creation in the milk industry in Vietnam. The researchers collected both qualitative and quantitative primary data by focus group discussion with 10 consumers and a survey questionnaire with 477 consumers. The objective was to define and measure the factors of marketing mixes that determine the consumer's brand decision. The research results show brand awareness, brand associations, perceived quality, brand trust, and brand loyalty as affecting brand equity. Particularly, brand awareness and brand trust affect brand loyalty.

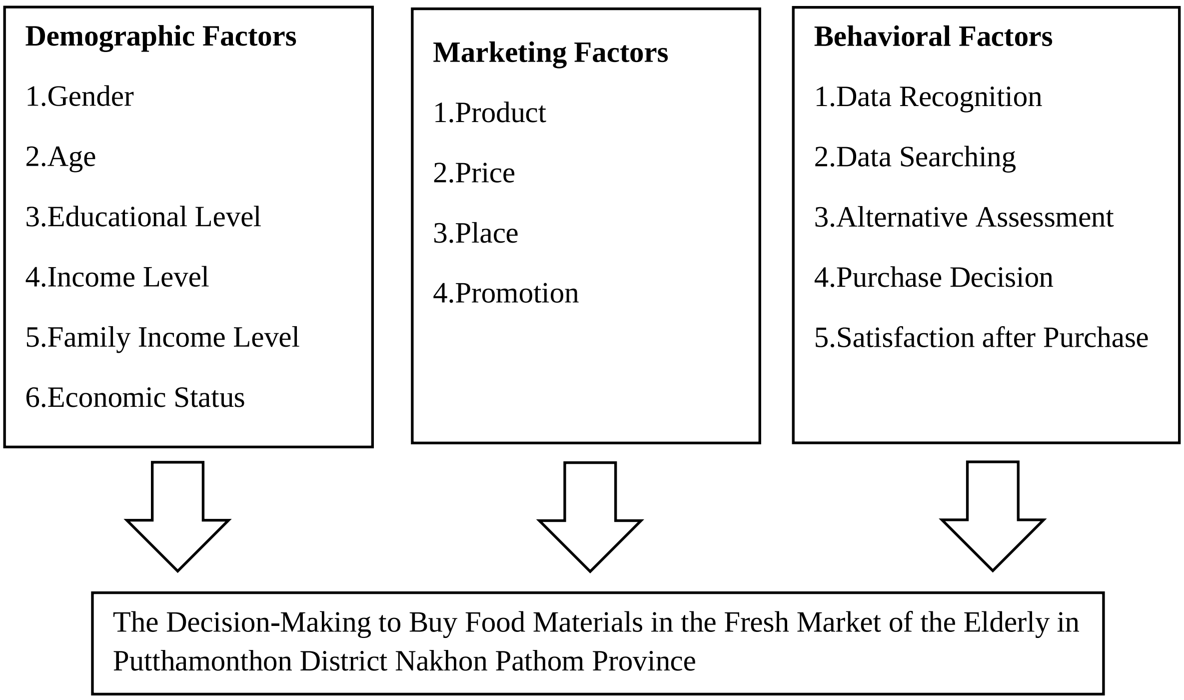
As for related local research on customers' satisfaction with products and services in recent years, there have been numerous studies in customers' satisfaction as a determinant for decision-making on a product, service, or an environment of preference. Here are three examples of such studies, to name but a few current ones. Sriboonnark (2020) asserted that modern business operations require effective innovation and change management. In this regard, both public and private organizations need to adjust their business operations in response to their customers' needs and preferences. Organizations need to develop new goods and services, new production and operating systems to meet the needs of their customers. Ratchavieng et al. (2021) proposed an innovative organization model for efficient business operations in the digital era under the new normal condition in Thailand. Two of eleven elements in the model emphasized appropriate hardware, software and digital platforms for service as well as uniqueness of atmosphere and innovative ecosystem. Phakdeephirot (2021) studied customers' satisfaction with products, services, and quality development of the service provider in wellness tourism in Thailand. The researcher reported the customers' satisfaction with service and environmental management as the main factor determining their decision on selecting the service provider.

4. Research Objective

This research aimed to study three factors--demographic, marketing, and behavior—that affect consumers' decision-making on buying food materials in the elderly fresh market in Putthamonthon District, Nakhon Pathom Province, Thailand. It was expected that the obtained findings would be useful to business operators in delivering the types of products and services in accordance with food quality and good nutrition for the elderly.

5. Conceptual Framework

Figure 1: Research Conceptual Framework



6. Research Methodology

6.1 Populations and Samples

The population in this study was the elderly aged 60-75 years old (still physically able to manage purchasing food materials by themselves) whose home registered in Putthamonthon District, Nakhon Pathom Province in a total of 2,940 persons, divided into 1,249 males and 1,691 females (The Bureau of Registration Administration, 2022) as shown in Table 1.

Table 1: Population of the Elderly in Putthamonthon (January 2022)

Age	Male	Female	Total
60	122	156	278
61	129	181	310
62	124	171	295
63	112	135	247
64	104	148	252
65	69	116	185
66	87	115	202
67	87	104	191
68	79	98	177
69	73	76	149
70	42	102	144
71	68	63	131
72	55	75	130
73	39	57	96
74	24	49	73
75	35	45	82
Total	**1,249**	**1,691**	**2,940**

The number of samples was concluded by Taro Yamane method determined at 95% of confidence interval, an acceptable error of 5%. The total number of samples collected was 352. Since the researchers were concerned with the accuracy and sufficiency of data to be analyzed, they therefore set the samples at 400 for data collection.

6.2 The Tools Used for Data Collection

The survey questionnaire was divided into three parts: (1) Demographic Factors as Gender, Age, Religion, Marital Status, Educational Level, Income Level, Family Income Level and Occupation; (2) Marketing Factors as Product, Price, Place, Promotion, People and Process; and (3) Behavioral Factors as Data Recognition, Data Searching, Alternative Assessment, Purchase Decision and Satisfaction after Purchase. The first part in the questionnaire was a checklist and the other parts were responses on a rating scale of 1-5 with meanings as follows.

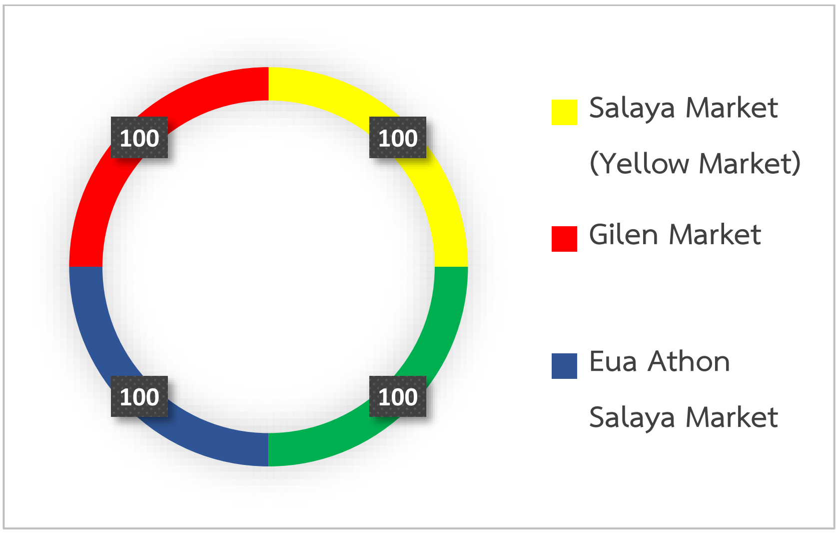
1 - Strongly Disagree
2 - Disagree
3 - Neither Agree nor Disagree
4 - Agree
5 - Strongly Agree

The accuracy and consistency of the constructed questionnaire were by experts' opinions using the IOC: Index of Item-Objective Congruence method. The five experts' rating of IOC was at 0.84. and those question items rated lower than 0.5 were excluded.

7. Data Collection

The researchers used the validated survey questionnaire to collect data from the selected respondents. There were three sub-districts in Putthamonthon District--Salaya, Khlong Yong and Maha Sawat. Four popular fresh markets in three sub-districts were selected as the areas under study: 100 samples each were collected from four markets: (1) Salaya Market (Yellow Market) and (2) Gilen Market in Salaya Sub-district, (3) Eua Athon Salaya Market in Maha Sawat Sub-district, and (4) Khlong Yong Market in Khlong Yong Sub-district. The total of 400 samples is shown in Figure 2.

Figure 2: The Proportion of Samples Collected in Each Market Area



As seen, the samples were diversified in four specific areas with the purposive sampling method. The researchers collected data from the respondents who came to buy food materials in the specified areas between January-May 2022.

8. Data Analysis

The data analysis was in two parts as descriptive analysis and quantitative analysis. As for the descriptive analysis, the researchers used frequency, percentage, mean, and standard deviation for data on (1) the respondents' demographic variables, (2) their behavior in purchasing food materials, (3) the marketing factors affecting their decision-making, and (4) the problems, obstacles and recommendations identified by the respondents in their decision-making on purchasing the food materials. The researchers used a chi-square test for the relationship between social and economic factors (independent variables) and the behavior in purchasing food materials (dependent variable).

9. Results and Discussion

9.1 Demographic Variables

The respondents' demographic variables were as follows;

(1) Gender

The samples were female at 59% and male at 41%.

(2) Age

The samples were between 60-65 years old at 38%, followed by 33% between 66-70 years old, 29 % between 71-75 years old, with an average of 67.67 years old.

(3) Educational Level

The samples' educational backgrounds were: Bachelor's degree (33.75%), followed by high school (25.75%), diploma (19.50 %), graduate degree (14.50%), and lower secondary school (6.50%).

(4) Income Level

The samples' monthly income was: 15,001-20,000 baht/month (32.50%), followed more than 30,000 baht/month (21.75%), 20,001-25,000 baht/month (16.25%), 25,001-30,000 baht/month (15.50%), less than 15,000 baht/month (14.00%), with the average income of 23,778.90 baht/month.

(5) Family Income Level

The samples' family income was: more than 50,000 baht/month (28.60%), followed by 20,001-30,000 baht/month (27.10%), 30,001-40,000 baht/month (22.50%), less than 20,000 baht/month (15.50%), and 40,001-50,000 baht/month (6.30%).

(6) Economic Status

The samples with more income than expenses accounted for 36.50 %, followed by income equal to expenses at 42.30 % and more expenses than income at 21.20%.

9.2 The Marketing Factors Affecting Decision-Making

The marketing factors affecting the elderly respondents' decision-making on buying food materials in the fresh market were in four: Product, Price, Place, and Promotion with details as follows.

(1) Product

The results of the study revealed six product factors affecting the respondents' decision on buying food materials in the fresh market. The highest level was the quality of food (freshness, cleanliness, no bad smell) (Mean=4.73). The rest were higher than the average of 3.5: more cleanliness of the packaging (Mean=4.21), packaging decent and easy to carry on (Mean=4.16), product certification standards (such as FDA), fresh food safety products (Mean=4.31), famous brand (Mean=3.92), and product labels indicating nutritional value with production date and expiration date (Mean=3.97). These findings are important for entrepreneurs to identify relevant components of a marketing mix for their operations with the elderly as their customer group (Viet & Anh, 2021). In addition, food providers in the fresh market need to be well aware of new product adjustments to meet with various needs of their customers (Sriboonnark, 2020).

(2) Price

The results of the study indicated that all price factors affecting the respondents' decision on buying food materials in the fresh market at a high level: the price suitable for the quantity of the product (Mean=4.12), the price commensurate with the quality of the product (Mean=4.11), and the price tag clearly shown (Mean=4.05). The findings on price can help the fresh food market operators to pay attention to reasonable price of the food items as well as provide discount prices for most needed items, like eggs and on-season vegetables, for customers' loyalty (Erlina & Hermawan, 2021).

(3) Place

The results showed all place factors affecting the respondents' decision on buying food materials at a rather high level: convenient and adequate parking spaces of the fresh market (Mean=3.96), overall cleanliness of the fresh market (Mean=4.39), delivery services (Mean=3.99), product category zone (Mean=4.11), security systems (Mean=4.41), and convenience for the elderly (Mean=3.97). As known to shoppers for grocery and home supplies, the place factor is vitally important, for it can provide good facilities and pleasant atmosphere that have a strong psychological impact on customers' purchasing decision, satisfaction, and loyalty (Kotler, 2016). Moreover, uniqueness of the shop environment—friendly and pleasant--can certainly attract customers to enjoy their shopping time (Ratchavieng et al., 2021; Phakdeephirot, 2022).

(4) Promotion

The results revealed all promotion factors affecting the respondents' decision on buying food materials at a high level: advertising/public relations through various media channels (Mean=3.75), billboards easily recognizable and visible from afar (Mean=3.70), and discounts and rewards offered to buyers (Mean=3.85). It should be noted that the first three marketing factors—Product, Price, Place—deserve priority in business operations to make Promotion possible or workable to create loyalty among customers, particularly the elderly group (Kotler, 2016; Erlina & Hermawan, 2021; Lee et al., 2022). Also important to business operators is the channel of communication with customers via digital platforms/ social media for services, particularly for product/ service promotion as well as pre-order and home delivery (Ratchavieng et al., 2021)

9.3 The Relationship between Demographic and Behavioral Factors

The researchers analyzed the relationship between demographic variables and behavioral factors of the respondents in buying food materials in the fresh market. The analysis by a chi-square test included purchasing quantity. (Number of days of consumption), purchase cost (baht per time), purchase method (pre-ordered / buy fresh in-store), and eating behavior (single or with family). The details are as follows:

(1) The relationship between demographic variables and purchasing quantity. (Number of days of consumption).

The demographic variables include gender, age, and educational level. There was no statistically significant relationship between these variables with purchase quantity of food materials at $\alpha = 0.05$ and family income.

(2) The relationship between demographic variables and purchase cost (baht per time).

The researchers found that two demographic variables—gender and educational level--had no relationship with the purchase cost of food materials at the statistically significant level at $\alpha = 0.05$. Age was related to the cost of purchasing raw materials, statistically significant at $\alpha = 0.05$; those aged over 70 years old had expenses less than 500 baht per time, more in proportion with those aged under 70 years old. This could be taken as those in the group over 70 years were careful about food intake. Therefore, their reduced consumption due to the body's readiness for food or appetite tended to decline (Department of Older Persons, 2021). The researchers also found that personal income and family income had no relationship with the purchase cost of food materials at the statistically significant level $\alpha = 0.05$.

(3) The relationship between demographic variables and purchase method (pre-ordered / buy fresh in-store)

It was found that gender had no statistically significant relationship with the purchasing method, age and education level.

The results showed that age is related to the method of purchasing food materials, statistically significant at $\alpha = 0.01$ in that people under 70 years old had a method of self-purchase through online channels and were able to access shopping technology without going to the market in person. The respondents' education level correlates with the purchasing method, statistically significant at $\alpha = 0.01$ in that those who with a bachelor's degree or higher would pre-order to limit the purchased amount according to their needs. As for the personal income level, there was no relationship with the method of purchasing food materials in the fresh market statistically significant at $\alpha = 0.05$ in all personal income ranges. Family income was related to food materials, statistically significant at $\alpha = 0.01$ in that those with family income not exceeding 20,000 baht purchased in person at the food store. The pre-order method was not used by those with family incomes of less than 20,000 baht; this group of limited income needed to plan for their spending in advance.

(4) The relationship between the demographic variables and consumption behavior (single or with family).

The results of the analysis revealed that all factors, including occupation, personal income family income, had no statistically significant relationship with the consumption behavior at the level of $\alpha = 0.05$. These relationship findings definitely emphasize the significance of the factors of marketing mix that need to be relevant to the customers' needs to make business operations successful as well as winning the customers' loyalty back for regular shopping (Kotler, 2016; Viet & Anh, 2021; Erlina & Hermawan, 2021; Lee et al., 2022).

10. Suggestions

The obtained findings were to generate constructive implications for all stakeholders of the fresh food market concerned. Based on the results on the elderly's consumption behavior as related to their demographic variables, the researchers would like to suggest the following:

(1) Food Materials Entrepreneurs

Food materials entrepreneurs need to focus on the quality of fresh food materials according to the standards specified by government agencies. Particularly, perishable food requires high quality in content and reasonable price. In addition, service providers need to be attentive to customers and provide good assistance.

(2) Fresh Market Entrepreneurs

Cleanliness is the main concern of the customers. The market operators must keep the floor clean and dry at all times both inside and outside the building without garbage being dumped around to send out foul smell. The use of security camera can help the management to monitor the conditions of the market floor and the nearby areas to prevent customers slipping on the wet floor surface. Facilitation for the elderly should be sufficiently provided, such as adding handrails along the curb, a large font size on the notice board, and chairs in the waiting area.

(3) Government Agencies

The government agencies should monitor and inspect the quality of food materials to meet the specified standards to ensure no harmful contaminants in the food content as well as the reasonable price level in the market. This is to safeguard quality of life for incoming customers both young and old to enjoy fresh food shopping in good quality markets in Phutthamonthon areas.

Along with these suggestions, the researchers also expected that fresh food market entrepreneurs would be able to identify the relevant components of the marketing mix and incorporate them into their business operations to suit their customers' needs in particular contexts.

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Performance Pressure, Workplace Anxiety, Emotional Exhaustion, and Job Performance: An Empirical Research on Chinese Public Universities

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Abstract

This research surveyed the public universities in Sichuan Province of China, adopting the PlS-SEM for data analysis to verify (1) the different influences of performance pressure on teaching and research performance, (2) the role of workplace anxiety and emotional exhaustion on the relationship between performance pressure and teachers' job performance, and (3) the influence of performance-related pay size on the relationship between performance pressure, job performance, and workplace anxiety. The researchers selected by experts' consultation 9 public universities in Sichuan Province, and obtained responses from 407 university teachers via online data collection. The results show that: (1) Performance pressure directly affects university teachers' teaching performance but has no significant effect on research performance; (2) Workplace anxiety and emotional exhaustion have a suppressing effect on the relationship between performance pressure and teaching performance; and (3) Performance-related pay size has no significant influence on the relationship between performance pressure, teaching performance and research performance. The research findings reveal the influence of performance pressure in the higher education field, and provide the theoretical basis and work suggestions for performance management in universities.

Keywords: *University teachers, performance pressure, workplace anxiety, emotional exhaustion, performance-related pay size, job performance*

1. Introduction

Since "New Public Management" reform in the 1970s, the performance appraisal system has been introduced into the education system of many countries. The general trend was to pay more attention to school performance and make teachers take more direct responsibility through rewards and punishments (Andrew & Zhang 2009). However, performance appraisal cannot only stimulate teachers' work engagement and improve their work performance (Li, Lin & Su, 2018) to a certain extent (Liao, Wen & Wang, 2010). It may also harm teachers' work motivation (Kallio & Kallio, 2014) and destroy their creativity (Ter Bogt & Scapens, 2012). Take China as an example, some colleges unilaterally pursue performance and use one-size-fits-all quantitative methods to evaluate teachers. The number of SCI papers, citation times, highly cited papers, and impact factors become the core indicators for teachers' academic and professional title evaluation. On the one hand, teachers' pressure keeps rising, and job burnout appears (Zheng, Chen & Yang, 2021). On the other hand, teachers publish papers and textbooks crazily to complete the task performance and even take the number of published SCI papers, papers with high impact factor, and papers with high citation as the fundamental goal (Ministry of Education, China, 2012).

Since performance appraisal is required in higher education, many scholars have researched performance appraisal-related issues in universities. These studies focus on the construction of teacher performance appraisal system, teacher performance appraisal, and evaluation methods (Xie, Wang & Hu, 2019). However, there is not much research on the performance appraisal of university teachers. There is a gap in research on the relationship between performance pressure (PP), workplace anxiety (WA), emotional exhaustion (EE), teachers' teaching performance (TP) and research performance (RP), as well as its mechanism. It is necessary to understand further why colleges "do not please painfully [in Chinese expression]" difficulties and make teachers feel "stressed out." It helps universities improve the quality of teachers' performance appraisal and teachers' work performance. This study focused on the impact of performance pressure and performance-related pay size on teachers' task performance [teaching and research performance/ job performance], emotional exhaustion, and psychology [workplace anxiety] to understand comprehensively the impact of performance requirements and material incentives on employees' task performance.

Performance pressure is the subjective perception that employees must improve performance to avoid adverse consequences (Mitchell, Baer, Ambrose, Folger & Palmer, 2018). It is a disturbing perception of the need for high performance arising from a solid commitment to goals and the availability of goals (Eisenberger & Aselage, 2009). When individuals perceive their performance lags behind, the pressure on expected performance will increase (Zimmerman & Kitsantas, 1996). Such pressure may motivate employees to act proactively and produce better job performance and cause employees to react negatively; such pressure also negatively affects job performance (Zhang, Nie & Wang, 2020).

Goal-setting theory and the Job Demands-Resources Model provide a robust framework to explain performance pressure's "double-edged sword" effect. The theory of goal setting holds that goal setting has a positive effect on job performance (Locke, Saari, Shaw & Latham, 1981). When individuals have a strong focus on goals and knowledge and the ability to achieve goals, goal setting is directly proportional to job performance (Locke & Latham, 2006). According to the Job Demands-Resources Model (JD-R), job requirements, namely the physical or psychological efforts required in work, will lead to physical and mental consumption (Qi & Wu, 2018a) as well as emotional exhaustion. In comparison, job resources are those factors that can reduce the physical and psychological costs of work requirements (Ma, Zhang & Yang, 2020). They can stimulate employees' work motivation and promote work efficiency (Bakker & Demerouti, 2007). Therefore, this study proposes that performance stress can promote the job performance of university teachers but also cause their workplace anxiety and job burnout, thus reducing their job performance.

Performance-related pay mainly reflects employees' performance and contribution (Ma & Shan, 2013). Many universities use part of the salary as incentive performance-related pay. It is a resource for those who can get above-average performance-related pay. For those who expect performance-related pay to be less than their paid off, it is considered a "demand." Therefore, the researchers have an assumption that performance-related pay size will strengthen the impact of performance stress on work anxiety, emotional exhaustion, and job burnout. It can also strengthen the impact of performance stress on job performance. The greater the performance-related pay size, the more significant the impact of performance pressure on workplace anxiety, emotional exhaustion, and job performance.

To sum up, the main contribution of this study lies in two aspects. First, based on the goal-setting theory and the Job Demands-Resources Model, university teachers' job performance, workplace anxiety, and emotional exhaustion are introduced simultaneously to explain the "double-edged sword" effect of performance pressure on employees' work performance (Gardner, 2012). Second, this study views that pay-for-performance size will affect the relationship of performance pressure on job performance, workplace anxiety, and emotional exhaustion. The researchers were to construct a mediation model to analyze the influence of performance pressure on employees' performance mechanism and boundary conditions to enrich the university teachers' performance appraisal theory and help to enhance university management.

2.Theoretical Basis and Research Hypothesis

2.1 Theoretical Basis

2.1.1 Goal Setting Theory

The goal-setting theory was proposed by Locke in 1968， which is an essential theory in the field of organizational behavior research (Miner, 2003). This theory reveals the relationship between conscious performance goals and task performance levels (Li & Zhang, 2006) and assumes that motivated employees in an organization will focus or mobilize their attention toward the goal until it is finally achieved (Jeffrey, 2017). Goal setting has a positive effect on job performance (Locke, Saari, Shaw & Latham, 1981). When individuals have a strong focus on goals and knowledge and the ability to achieve goals, goal setting is directly proportional to job performance (Locke & Latham, 2006).

2.1.2 Job Demands-Resources Model

The Job Demands-Resources Model (JD-R) is a theoretical framework for studying job characteristics and individual work stress and emotional exhaustion. It has been widely used to predict emotional exhaustion (Bakker, Veldhoven & Xanthopoulou, 2010). The model classifies various job characteristics into job demands and job resources. Job demands refer to the factors of physical or psychological efforts that need to be paid during work; they relate to physical and mental consumption (Qi & Wu, 2018b). Work resources are factors that can reduce the physical and psychological costs of work requirements and promote individual learning, development, and growth, such as organizational support, job control, and career opportunities (Ma, Zhang & Yang, 2020). Many studies have shown that there are two pathways in the JD-R model: the process of health impairment and the process of motivation stimulation. Job demands are the main predictor of health impairment. Long-term and intense job demands will lead to health impairment and emotional exhaustion. Adequate work resources can serve as a motivational potential to promote work engagement while alleviating emotional exhaustion (Bakker & Demerouti, 2007).

2.2 Research Hypothesis

2.2.1 Performance Pressure and Workplace Anxiety

According to the Job Demands-Resources Model, job requirements relate to employees' physical and mental consumption (Qi & Wu, 2018a). Many universities usually carry out teachers' performance appraisals once a year in China. Performance pressure is a common and persistent source of pressure on teachers. Task performance is a job requirement for teachers. Inadequate performance may mean that they will be "punished" by the organizational system. At the same time, they may feel that their status in the organization has declined. They could be despised or rejected by the organization (Mitchell, Baer, Ambrose, Folger & Palmer, 2018). Workplace anxiety is a unique manifestation of anxiety in the workplace, usually accompanied by pressure or specific tasks. Li, Wang, Zhu & Zhan (2018) found that performance pressure influences employees' pro-organizational non-ethical behaviors through workplace anxiety. Based on the above understanding, this study proposes:

Hypothesis 1: Performance pressure positively affects workplace anxiety.

2.2.2 Performance Pressure and Emotional Exhaustion

Emotional exhaustion is one of the three critical components of job burnout (Leiter, 1991), which is a response to stress (Fullerton, 1983), and a state of mental exhaustion (Schaufeli & Bakker, 2004). Studies have shown that work overload, lack of job autonomy, and low social support can lead to emotional exhaustion and negative emotions (Enzmann, Schaufeli, Janssen & Rozeman, 1998). According to the Job Demands-Resources Model (Demerouti, Bakker, Nachreiner & Schaufeli, 2001), emotional exhaustion occurs when a job relates to highly demanding, but with limited work resources (Demerouti et al., 2001). Excessive work requirements will lead to excessive consumption of employees' physical and mental resources and even harm health. Insufficient work resources will damage employees' work motivation, cause cynicism at work, and reduce out-of-role performance (Bakker, Demerouti & Verbeke, 2004). Based on the above understanding, this study proposes:

Hypothesis 2: Performance pressure positively affects emotional exhaustion.

2.2.3 Performance Pressure and Job Performance

In the teachers' performance appraisal, universities usually formulate corresponding performance objectives and tasks according to teachers' ranks and positions. According to the goal-setting theory, goal setting positively affects job performance (Eisenberger & Aselage, 2009). Research shows that individuals will continuously monitor their progress in pursuing desired goals, and performance pressure will increase when they perceive their performance lags (Zimmerman & Kitsantas, 1996). The more significant the gap between actual and target performance, the more likely performance pressure will occur (Chen & Yang, 2017). Such pressure will motivate individuals to adopt more professional knowledge and skills and focus on the current task, thus generating greater internal motivation and creativity for work (Eisenberger & Aselage, 2009). Based on the above understanding, this study proposes:

Hypothesis 3: Performance pressure positively affects teaching performance.

Hypothesis 4: Performance pressure positively impacts research performance.

2.2.4 Workplace anxiety and emotional exhaustion

Anxiety is a signal that indicates the detection of danger and the perception of a threat to survival, which is usually accompanied by a threat (Muris, Luermans, Merckelbach & Mayer, 2000). Workplace anxiety is a unique manifestation of anxiety in the workplace, usually accompanied by pressure or specific tasks. Employees' workplace anxiety can make them lose their work enthusiasm and reduce their job satisfaction (Xu & Li, 2019), which may cause emotional exhaustion. Allen, Herst, Bruck & Sutton (2000) found that workplace anxiety caused by work-family conflict seriously affects employees' job satisfaction. Green, Wu, Whitten & Medlin (2006) found that after a financial crisis and economic recession, employees would feel anxious about work and life and have lower job satisfaction and job engagement. They are more likely to have work deviation behaviors, such as dismission and absenteeism. Gao et al. (2022) found that occupational stress positively correlates with anxiety, and anxiety positively collects emotional exhaustion. Based on the above understanding, this study proposes:

Hypothesis 5: Workplace anxiety positively affects emotional exhaustion.

2.2.5 Emotional Exhaustion and Job Performance

Motivation has a guiding effect on people's behavior. It can encourage employees to devote themselves to work with enthusiasm. Job motivation positively promotes job performance, while occupational stress reduces job performance (Bakker & Demerouti, 2007). As a state of one's mental exhaustion (Schaufeli & Bakker, 2004), emotional exhaustion generates a chronic tiredness and cynical, negative attitude (Maslach, Schaufeli & Leiter, 2001). Emotional exhaustion negatively correlates with job performance (Taris, 2006). Employees with a high degree of emotional exhaustion are difficult to complete tasks with the whole spirit. Based on the above understanding, this study proposes:

Hypothesis 6: Emotional exhaustion negatively affects teaching performance.
Hypothesis 7: Emotional exhaustion negatively affects research performance.

2.2.6 The Mediating Role of Workplace Anxiety and Emotional Exhaustion

From the above analysis, the performance pressure of university teachers affects their work performance. Performance stress positively affects workplace anxiety and emotional exhaustion, and emotional exhaustion negatively correlates with job performance (Taris, 2006); too much stress can affect work productivity (Latthasaksiri, 2021). This research proposes the following hypotheses:

Hypothesis 8: Workplace anxiety and emotional exhaustion relate to performance pressure and teaching performance.

Hypothesis 9: Workplace anxiety and emotional exhaustion relate to performance pressure and research performance.

2.2.7 Moderating Effect of Performance-Related Pay Size

Performance-related pay is performance-oriented variable pay (Gerhart, Rynes & Fulmer, 2009), which has attracted much attention in management research and practice due to its ability to link employee performance with salary (Zu et al., 2010). Many studies have shown that performance-based pay is an effective tool for improving employee performance. It has a positive incentive effect on employees and forms a compelling incentive for their work efforts (Chen & Shen, 2018). However, performance-related pay does not always improve employee performance (Bowman, 2010), for it may also lead to vicious competition among employees. Widening the income gap may lead to unfairness, frustration, and a low sense of achievement (Green & Heywood, 2008) and increase work pressure and job burnout (Godard, 2001). Eisenberger & Aselage (2009) proved that employees' expectation of bonuses brought by high performance is positively correlated with performance pressure and correspondingly with employees' interest in work. The performance bonus for college students increases their performance pressure and affects their inner interest and creativity by performance pressure. In the relationship between performance pressure and job performance, if the performance-related pay increases, employees are more likely to work harder to meet the performance requirements. In other words, performance-related pay will strengthen the impact of performance pressure on job performance. Therefore, this research proposes:

Hypothesis 10: Performance-related pay size has an effect on the relationship between performance pressure and teaching performance.

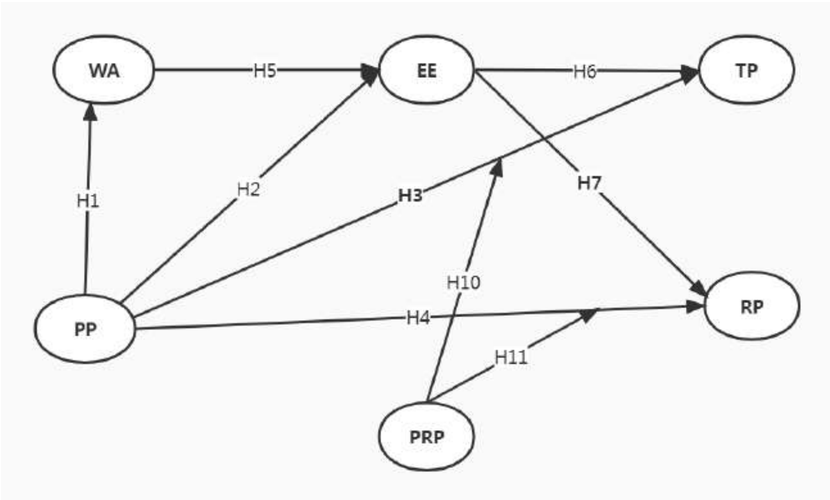
Hypothesis 11: Performance-related pay size has an effect on the relationship between performance pressure and research performance.

3. Research Design and Variable Measurement

3.1 Model Construction

Based on the above analysis of the effect of performance pressure, the researchers considered the advantages of the PLS-SEM model in dealing with variable measurement errors and its ability to predict more complex models. It is appropriate in exploratory and explanatory studies (Zhang, Jiang & Zhou, 2016). According to the goal-setting theory and Job Demands-Resources Model (Lin, Xie, Wang & Wei, 2016), as well as the current research results and Partial Least Square (PLS) SEM model research method, the researchers constructed a research model (Figure 1). The purpose is to investigate further the relationship between performance pressure and workplace anxiety, emotional exhaustion, teaching and research performance, and its mechanism.

Figure 1: Research Model



3.2 Sampling and Data Collection

Public undergraduate universities of Sichuan were selected as the sampling university because Sichuan is a central province in education on the country's fifth educational scale (Zhu, 2019). There are 39 public undergraduate universities in Sichuan Province (Liu, 2018a). Over ten years, universities in Sichuan Province have implemented the performance-related pay system and conducted standardized employee performance appraisals since October 1, 2010. Sichuan Province's university faculty, as the research object of performance appraisal, represent the national higher education system for desirable characteristics of performance appraisal at the higher education level.

As for the population of this research--the full-time instructors engaged in teaching and research work. The researchers obtained the number of full-time teachers from the official websites of relevant universities. In addition to 7 universities, the profiles of the other 29 universities show the number of full-time teachers. Since the number of full-time teachers has been kept organizationally confidential, and the number of full-time staff is relatively stable, the researchers adopted the data of the number of full-time teachers in each university in Sichuan province published in 2018 for these 7 universities. To date, there are 47,086 full-time teachers in public universities in Sichuan Province (Liu, 2018b). According to the calculation formula of Krejcie & Morgan (1970), when the desired confidence level is 0.95 and the confidence interval is 0.05, the required sample size is 384. Considering that it would not be possible to recover 100%, the researchers distributed the questionnaires up to 150% of the required sample size. It should be noted that the research object or the faculty were appraised last year. The researchers used one initial criterion for their participation in the study: willingness to respond to the questionnaire with their true feeling about the appraisal system.

In this research, 39 public universities in Sichuan province were divided into double-first-class universities and ordinary universities by a stratified sampling method. According to experts' consultation, two double first-class universities and seven ordinary universities were selected to carry out the investigation. The online survey was used for convenience flexibility in data collection. This type of survey is conducive to access to samples with different backgrounds at a lower cost, and reduces data input errors (Chen & Shen, 2018). The researchers distributed 65 to 70 questionnaires to each university through an online platform. A total of 600 questionnaires were distributed; 410 questionnaires were recovered and screened as valid at 407. The sample distribution is shown in Table 1.

Table 1: Sample Distribution Frequency

Variables	Items	Frequency	Percentage
Gender	Men	216	53.07
	Women	191	46.93
Age	Under the age of 34	111	27.27
	35 and 44	173	42.51
	45 to 54	90	22.11
	More than 55	33	8.11
Education background	Undergraduate and below	61	14.99
	Master	208	51.11
	PhD and above	138	33.91
Working age	Within five years,	102	25.06
	6-10 years	74	18.18
	11 to 15 years	65	15.97
	16-20 years	66	16.22
	21 years or above	100	24.57
Title	Teaching Assistants and below	66	16.22
	Lecturer	169	41.52
	Associate professor	124	30.47
	Professor	48	11.79
Performance-related pay size	0-5%	56	13.76
	6% - 15%.	66	16.22
	16% - 30%.	102	25.06
	31% - 50%.	89	21.87
	51-69%	45	11.06
	More than 70%	49	12.04

3.2 Measuring Tools

The variables involved in this research include performance pressure, workplace anxiety, emotional exhaustion, teaching performance, research performance, and performance-related pay size. The scale design is based on the existing mature scale. In order to better suit this research, some items were modified through expert discussion. According to the research content, the researchers selected the performance pressure scale developed by Mitchell et al. (2018), and slightly adjusted it. The Workplace Anxiety Scale was the one developed by McCarthy, Trougakos & Cheng (2016). Job performance was measured by the scale developed in 2005 by Hu & Mo (2005) specifically for the work of college teachers. The Likert seven-level scale was used for all variables, from 1 to 7 indicating "completely inconsistent" to "completely consistent," respectively. After the practice of Du（2009), the performance-related pay size was measured by one question: "What is the proportion of your performance-related pay in your total income last year?" Please choose one option according to the following criteria: (1) 0-5%, (2) 6-15%, (3) 16-30%, (4) 31-50%, (5) 51-69%, and (6) more than 70%. (See Appendix 2 for the measurement items.)

4. Data Statistics and Analysis

4.1 Control and Test of Common Method Deviation

In order to avoid common method deviation, all responses to the questionnaire in this study were filled in anonymously (Zhou & Long, 2004). In statistics, this research adopted Harman's one-factor method to test common method deviation. The variance contribution of the first principal component was 31.367%, indicating that there was no serious common method bias in the questionnaire data.

4.2 Scale Reliability and Validity Test

Since all scales in this study were mature scales, confirmatory analysis was used to test their reliability and validity.

First, the researchers adopted the suggestion of Chen & Shen (2018) that the scale's reliability was measured by the internal consistency of the items by testing the Composite Reliability and Cronbach's Alpha (α) coefficient. The Cronbach coefficients of the five latent scales were all above 0.86, and the combined reliability was higher than the base value of 0.70. The factor loadings of all items were above 0.7. The scale had good reliability. Specific indicators are shown in Table 2.

Table 2: Reliability Index of the Scale

Variables	Cronbach's Alpha (α)	Combination Reliability (C.R)	Factor Loading	Items
PP	0.86	0.90	0.83	PP1
			0.88	PP2
			0.89	PP3
			0.74	PP4
WA	0.94	0.95	0.78	WA1
			0.84	WA2
			0.88	WA3
			0.83	WA4
			0.85	WA5
			0.79	WA6
			0.86	WA7
			0.85	WA8
EE	0.94	0.95	0.88	EE1
			0.92	EE2
			0.90	EE3
			0.91	EE4
			0.89	EE5
TP	0.91	0.93	0.73	JP8
			0.87	JP9
			0.92	JP10
			0.91	JP11
			0.83	JP12
RP	0.92	0.94	0.85	JP13
			0.83	JP14
			0.90	JP15
			0.87	JP16
			0.80	JP17
			0.82	JP18

The main indexes of the questionnaire validity are convergence validity and discriminative validity. The Average Variance Extracted amount (AVE) must be greater than 0.5. The square root of the AVE value must be greater than the correlation coefficients of other latent variables (Peng & Lai, 2012). In this research, the average extraction variation (AVE) of the five scales were 0.697, 0.702, 0.717, 0.728, and 0.806, respectively, which were all higher than the baseline value of 0.50. The square roots of AVE were all greater than the correlation coefficients between latent variables, indicating that the scale had good discriminative validity. See Table 3 for specific data.

Table 3: Correlation Matrix of Latent Variables and Square Root of AVE

	WA	PP	RP	TP	**EE**
WA	**0.835**				
PP	0.702	**0.838**			
RP	0.098	0.1	**0.847**		
TP	0.133	0.211	0.462	**0.853**	
EE	0.493	0.473	0.013	0.075	**0.898**

Note: The elements on the diagonal represent the square root of AVE and the other elements represent the correlation coefficients between latent variables.

The variable cross load table was also constructed in this study. The load values of all 28 item loadings in the set latent variables were higher than those in other latent variables (see Appendix 1 for the table of item loadings and cross loadings), which further proved that the scale had good convergence validity and discriminative validity (Gefen, Straub & Boudreau, 2000).

4.3 Variable Description Statistical Analysis

The variable description statistical analysis is shown in Table 4 below.

Table 4: Variable Description Statistical Analysis

Variables	**Samples**	**Minimum value**	**Maximum value**	**Mean**	**Standard deviation**
PP	407	1	7	4.62	1.11
WA	407	1	7	4.43	1.22
EE	407	1	7	4.18	1.24
TP	407	1	7	5.12	0.96
RP	407	1	7	4.23	1.13

Statistically speaking, the self-rated performance pressure, workplace anxiety, and teachers' emotional exhaustion in public universities in China are all higher than the median of 4, and the mean value of performance pressure is the highest, reaching 4.62. Teachers' self-rated teaching performance is much higher than scientific research performance, and the standard deviation is rather small.

4.4 Evaluation of Prediction Ability of the Model

In the PlS-SEM model evaluation, the explainable variation (R^2) of the endogenous structure was used to represent the explanatory degree of the independent variable of the current model to the dependent variable variation, the Stone-Geisser’s Q^2 was used to represent the prediction correlation of the model, and the calculated goodness of fit is used to characterize the relationship between the quality of all measurement models and the quality of all structural models (Lin, Xie, Wang & Wei, 2016), where GoFsmall = 0.1, GoFmedium = 0.25, and GoFlarge = 0.36 (Tenenhaus, Esposito Vinzi, Chatelin & Lauro, 2005). In this research, the calculated goodness of fit (GoF) value is 0.386, indicating that the model has high goodness of fit (Wetzels, Odekerken-Schroder & Van Oppen, 2009). Relevant indicators are shown in Table 5.

Table 5: Index Data of Model Prediction Ability Evaluation

Variable	R^2	Communality
WA	0.493	0.609
PP*		0.501
PRP*		1
RP	0.023	0.597
TP	0.103	0.591
EE	0.275	0.697

Note*: In the model of this study, PP is the independent variable and PRP is the regulating variable. They're all exogenous variables without R^2.

4.5 Hypothesis Verification

In this study, Smart-PLS bootstrapping calculation was used to verify the research hypotheses. The results are shown in Table 6.

Table 6: Hypothesis Testing Results of the Model

Hypotheses	The paths	Path coefficient	T	Confidence interval 0.025	0.975	Results
Hypothesis 1: Performance pressure positively affects workplace anxiety.	PP -> WA	0.702	19.739	0.633	0.772	Support
Hypothesis 2: Performance pressure positively affects emotional exhaustion	PP -> EE	0.249	2.864	0.067	0.406	Support
Hypothesis 3: Performance pressure positively affects teaching performance.	PP -> TP	0.306	5.329	0.194	0.419	Support

Hypotheses	**The paths**	**Path coefficient**	**T**	**Confidence interval**		**Results**
				0.025	**0.975**	
Hypothesis 4: Performance pressure positively impacts research performance.	PP -> RP	0.125	1.412	0.082	0.258	Does not support
Hypothesis 5: Workplace anxiety positively affects emotional exhaustion.	WA -> EE	0.318	3.843	0.159	0.486	Support
H6: Emotional exhaustion negatively affects teaching performance.	EE -> TP	0.225	3.497	0.351	0.094	Support
H7 Emotional exhaustion negatively affects research performance.	EE -> RP	0.038	0.421	0.189	0.157	Does not support
H8: Workplace anxiety and emotional exhaustion relate to performance pressure and teaching performance	PP -> WA -> EE -> TP	0.05	2.601	0.094	0.018	Support
H9: Workplace anxiety and emotional exhaustion relate to performance pressure and research performance.	PP -> WA -> EE -> RP	0.008	0.394	0.046	0.041	Does not support
H10: Performance-related pay has an effect on the relationship between performance pressure and teaching performance.	Moderating effect 1 -> TP	0.064	1.929	0.041	0.119	Does not support

Hypotheses	The paths	Path coefficient	T	Confidence interval 0.025	0.975	Results
H11: Performance-related pay has an effect on the relationship between performance pressure and research performance.	Regulatory effect 2 -> RP	0.05	0.846	0.123	0.096	Does not support

5. Research Conclusions and Discussion

Based on the goal-setting theory and job demand-resource model, the researchers adopted smart-PLS3.3 to analyze the survey data of 407 university teachers by introducing workplace anxiety and emotional exhaustion as mediating variables and performance-related pay size as moderating variables. The research finds that the influence of performance pressure on teaching performance is significantly negatively and indirectly influenced by teachers' workplace anxiety and emotional exhaustion. In other words, performance pressure can promote teachers' teaching performance and trigger teachers' workplace anxiety and emotional exhaustion, which can offset the positive promoting effect of performance pressure on teaching performance to a certain extent. Performance-related pay size has no significant moderating effect on the relationship between performance pressure, teaching performance, and workplace anxiety. These conclusions partly support the original idea of this research.

5.1 Performance pressure positively impacts university teachers' workplace anxiety, emotional exhaustion, and teaching performance but has no predictive effect on research performance. Performance pressure is one of the characteristics of performance appraisal and is also a typical concern of teachers with performance appraisal in universities. Exploring its influence on teaching and research performance will not only help to deepen the theory of performance appraisal further but also help to improve the practice of performance appraisal in universities. This research found that performance pressure positively affects teaching performance, workplace anxiety, and emotional exhaustion of university teachers. This conclusion supports previous research results that performance pressure can improve employee task performance (Bu, 2013). However, it can also lead to workplace anxiety (Li, Wang, Zhu & Zhan, 2018) and emotional exhaustion (Jia & Lin, 2013; McCarthy et al., 2016). Regarding this "double-edged sword" effect, Mitchell, Greenbaum, Vogel, Mawritz & Keating (2019) proposed that performance pressure is a dynamic work pressure source. Individuals' different evaluations of pressure sources will produce different coping styles. Suppose performance pressure is evaluated as a challenge, individuals tend to focus on the potential positive results of high performance, such as promotion and salary increases. Such a focus will trigger individuals to turn their attention to the opportunity to complete tasks more effectively and efficiently, stimulate exploration and learning, and promote work performance. However, when performance pressure is evaluated as a threat, individuals tend to focus on the difficulty of improving performance and the possible negative consequences while trying to meet performance requirements. The threat consumes individual self-resources and ultimately leads to individual negative behaviors.

As for why performance pressure can affect the teaching performance of university teachers but has no predictive effect on the research performance, the researchers this study considered that scientific research has its own academic standing for teachers' ability, quality, and technical level. According to the goal-setting theory, goal-setting does not necessarily improve the employees' work performance. Only when individuals strongly focus on goals and have the knowledge and the ability to achieve the goals. Goal-setting is directly proportional to performance (Locke & Latham, 2006). At present, the scientific research ability of some Chinese university teachers still needs improvement. At the same time, scientific research requires more innovation and cooperation, while performance pressure has been proved to have a destructive effect on colleague relationships in organizations and evaluative performance appraisal negatively affects employees' innovation performance (Qiu, 2016).

5.2 Workplace anxiety positively affects emotional exhaustion and negatively affects teaching performance but has no significant predictive effect on research performance. Workplace anxiety is often accompanied by emotional exhaustion, which leads to problems, such as job dissatisfaction and absenteeism (Xu & Li, 2019). Numerous studies have shown that workplace anxiety can harm employee performance, but there is no consensus on this conclusion. Zhang, Powell & Bonaccio (2021) found that the correlation between employee anxiety and job performance was close to zero in interview responses. The correlation between workplace anxiety and job performance in assessment was also close to zero. That is, anxious employees performed as well as their less anxious colleagues. In this research, the influence of workplace anxiety on university teachers' job performance was further detailed in that workplace anxiety has a significant negative effect on teaching performance. However, the prediction effect on scientific research performance was not significant. This could stem from the subjects’ reported performance on research work significantly lower than teaching performance, which was consistent with the characteristics of teachers' performance in Chinese universities. The result indicated that universities have been under tremendous pressure on the performance of teachers' scientific research work (Li & Li, 2019). In this context, no matter whether they were anxious or exhausted, teachers perceived their research performance as not high enough, and the survey revealed no significant effect of other factors on research performance.

5.3 Workplace anxiety and emotional exhaustion have suppressing effects on the relationship between performance pressure and teaching performance. This study found that performance pressure positively impacts the teaching performance of university teachers, and the path coefficient is 0.306. Performance pressure significantly influences teaching performance through workplace anxiety and emotional exhaustion, but the path coefficient is -0.05. That indicates that in the path of performance pressure— workplace anxiety— emotional exhaustion — teaching performance, workplace anxiety, and emotional exhaustion have a covering effect on the impact of performance pressure on teaching performance (Wen & Ye, 2014). On the one hand, the existence of the "suppressing effects " of workplace anxiety and emotional exhaustion proves an indirect mechanism in that performance pressure influences teaching performance through workplace anxiety and emotional exhaustion. This finding responds to the study by McCarthy, Trougakos & Cheng (2016) that found emotional exhaustion mediating the relationship between workplace anxiety and job performance. It also indicates that there are mediating variables with greater effects between performance pressure and teaching work performance. There are mediating mechanisms with greater effects that have not been included in this research, and the issues need further investigation. These would provide a reference for setting goal performance tasks and teacher development support for university teachers.

5.4 Performance-related pay has no significant moderating effect on the relationship between performance pressure, teaching work performance, and research performance. In this research, the influence of performance-related pay is different from that reported in the previous studies. To the researchers, there could be two possible reasons. The research object of this study was the teachers in universities where the knowledge workers pay more attention to mental health and self-value realization ways of incentive. They pay little attention to material incentives (Song & Li, 2021). Their intrinsic motivation and interest tend to influence their work enthusiasm in the job. In addition, the research samples are all from Chinese universities of which the performance-related pay size remains roughly the same.

6. Closing Points and Suggestions

This research explored the impact of performance pressure on the teaching and research task performance of university teachers. Empirical data were collected to verify different impacts of performance pressure on teaching and research performance. The results revealed the negative impact of performance pressure on teachers' task performance through workplace anxiety and emotional exhaustion. However, the effect of performance-related pay size was indistinctive in the relationship between performance pressure and university teachers' task performance and workplace anxiety. It was expected that the obtained findings would enrich the research on the influence mechanism of performance pressure in universities with implications for the current performance management practice.

Based on the research findings, the researchers would like to suggest the following:

First, it is necessary to reasonably make performance assessment indicators and control the performance pressure level. The workload and quality requirements of teaching and scientific research should be reasonably determined according to the nature of the school, the development goals, the teachers' ability, and the characteristics of disciplines and specialties. It is also necessary to strengthen training to improve teachers' scientific research ability and their overall working performance.

Secondly, it is necessary to identify and monitor performance pressure sources. As far as possible, universities need to assign teachers in their proper position and let them "make the best." It is not appropriate to "kidnap" teachers to participate in all kinds of work, resulting in the "no effort to please [in Chinese expression]" phenomenon—meaning using a lot of energy for a little result, and the negative effects of workplace anxiety and emotional exhaustion.

Thirdly, it is necessary to care about teachers' mental health status. Universities need to evaluate teachers' occupational stress levels and investigate their mental health status from time to time. Furthermore, provision of counseling and consultation can help prevent teachers' health damage caused by workplace anxiety and emotional exhaustion.

Finally, authorities concerned need to scientifically understand performance appraisal and performance management as two separate entities. Importantly, performance-related pay should not be treated as the only incentive.

There are also some limitations in this research. First of all, the researchers investigated only the mediating role of workplace anxiety and job burnout in the relationship between performance pressure and teachers' job performance, but did not include the influence of different performance pressure levels. Besides, the reasonable extent of performance pressure still needs to be further verified. Secondly, the research samples were taken from only nine of 39 public universities in Sichuan Province of China. Future research could include more types of colleges, and if possible cross-cultural aspects of university staff performance appraisal systems. Such investigation could generate findings in support of the performance appraisal theory. Thirdly, individual personality traits could have a particular impact on work anxiety and burnout—the issue not included in this research. Specific relevant variables should be investigated for a conclusive picture of the impact of performance pressure and personality traits on anxiety and burnout to benefit decision-makers in the areas of performance appraisal and related issues.

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9. Appendix 1

Project Load and Cross Load Table

	WA	PP	PRP	RP	TP	EE
JP8	0.135	0.107	0.015	0.342	**0.725**	0.08
JP9	0.132	0.199	0.009	0.286	**0.866**	0.062
JP10	0.096	0.183	0.08	0.377	**0.918**	0.084
JP11	0.118	0.211	0.057	0.422	**0.91**	0.055
JP12	0.098	0.179	0.025	0.554	**0.831**	0.045
JP13	0.114	0.15	0.048	**0.85**	0.488	0.011
JP14	0.061	0.091	0.001	**0.826**	0.51	0.06
JP15	0.075	0.094	0.054	**0.903**	0.383	0.024
JP16	0.114	0.046	0.015	**0.874**	0.285	0.033
JP17	0.061	0.051	0.018	**0.804**	0.317	0.008
JP18	0.053	0.017	0.008	**0.82**	0.281	0.066
EE1	0.398	0.436	0.014	0.004	0.017	**0.875**
EE2	0.394	0.385	0.079	0.008	0.103	**0.915**
EE3	0.465	0.407	0.023	0.016	0.096	**0.9**
EE4	0.473	0.445	0.017	0.003	0.017	**0.908**
EE5	0.474	0.444	0.038	0.037	0.101	**0.892**
PP1	0.518	**0.828**	0.002	0.052	0.2	0.452
PP2	0.667	**0.882**	0.052	0.124	0.169	0.423
PP3	0.661	**0.892**	0.014	0.039	0.153	0.445
PP4	0.48	**0.739**	0.04	0.132	0.199	0.232
WA1	**0.78**	0.632	0.006	0.147	0.094	0.358
WA2	**0.837**	0.511	0.074	0.03	0.054	0.353
WA3	**0.882**	0.632	0.029	0.066	0.111	0.405
WA4	**0.829**	0.642	0.082	0.057	0.141	0.428
WA5	**0.851**	0.614	0.098	0.093	0.094	0.485
WA6	**0.792**	0.518	0.047	0.055	0.161	0.381
WA7	**0.858**	0.56	0.025	0.106	0.133	0.408
WA8	**0.846**	0.557	0.044	0.091	0.096	0.46

Note: The loads corresponding to latent variables are marked in bold.

10. Appendix 2

Data Collection Tools and Measurement Items

Variables	Items	Source or basis
PP	The pressures for performance in my workplace have been high. I feel that if I don’t produce at high levels, my job will be at risk. I feel tremendous pressure to produce results. My workplace has felt like a results-driven environment.	**Mitchell et al. (2018)**
WA	I am overwhelmed by thoughts of doing poorly at work. I’m worried that my work performance will be lower than that of others at work. I feel nervous and apprehensive about not being able to meet performance targets. I’m worried about not receiving a positive job performance evaluation. I often feel anxious that I will not be able to perform my job duties in the time allotted. I’m worried about whether others consider me to be a good employee for the job. I’m worried that I will not be able to successfully manage the demands of my job. Even when I try as hard as I can, I still feel worried about whether my job performance will be good enough.	**McCarthy, Trougakos, & Cheng (2016)**
EE	Work makes me feel exhausted. When I get up in the morning and have to face the work of the day, I feel very tired. Working all day is really stressful for me. Work makes me feel like I'm about to break down. I felt exhausted by the time I left work.	**Li & Shi (2003)**
TP	I always actively use teaching methods that can develop students' thinking ability and teach students the skills to distinguish the key points of the textbook. I always well prepare for class, and give the students sufficient homework and correct them carefully. I always stake the initiative to enrich the content of the course, with a large amount of information of practical connection and appropriate examples, using advanced textbooks. I can fully mobilize the students' enthusiasm for the course learning, and the students have strong ability to solve practical problems. I am good at identifying the direction in the new information of the subject, and actively carry out the construction of new courses	**Hu & Mo (2005)**

RP	I take the initiative to carry out scientific research exchange activities and often participate in academic conferences at home and abroad.	
	I strive to make the scientific research results have good application prospects and can create social wealth and economic benefits	
	I always actively carry out research work and have a considerable number of high-level papers or treatises	
	I always put a lot of energy into scientific research and won a high level reward for my scientific research achievements.	
	I always take the initiative to take part in social work, have high-level social part-time jobs, and have social visibility.	
	I always take the initiative to participate in scientific research projects, and the number and level of scientific research projects were much higher than the average.	
PRP	What percentage of your total income is your performance-related pay last year?	**Du (2009)**

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Integration of Quality Function Deployment into Green Marketing: A Case Study of Green Paving Bricks Utilizing PET Waste

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Abstract

This study applies the well-known Quality Function Deployment (QFD)-based ecodesign method for integrating the ecological consideration into the green marketing mix (4Ps) at the upstream stage of the product design process. The researchers proposed the QFD-based ecodesign method in support of the marketing personnel and product designers in identifying a green product, green price, and green place based on the environmental aspects--material and energy efficiency. In addition, the output of this method would underline the activities or specifications of the marketing mix (4Ps) to create impacts on environmental improvement. In this study, the researchers proposed the QFD-based ecodesign method and guideline via a case study of 100 voluntary customers exposed to green paving bricks utilizing polyethylene terephthalate (PET) waste. The obtained findings revealed green marketing specifications to be applied to the environmental-friendly production process.

Keywords: *Ecodesign, Quality Function Deployment for Environment (QFDE), green marketing mix, paving bricks, Polyethylene Terephthalate (PET)*

1. Introduction

Climate change, global warming, and environmental degradation are urgent global problems (United Nations, 2021). The increasing awareness and stricter legislation of environmental issues have brought about many ecological concepts, methods, and tools to support manufacturers in producing more environmental-friendly products. Ecodesign, one of the well-known and impactful environmental approaches, provides a guideline to design more environmental-friendly products by integrating the ecological consideration into the early stage of the product design process, in which the environmental impact can be potentially reduced (Puglieri et al., 2020). In the context of product development, Quality Function Deployment (QFD) is a well-known ecodesign method widely used by product design engineers to translate customer needs into a product specification. Besides, QFD has also been developed for other applications in a product development process, i.e., identifying marketing mix (4Ps) during the early stage (Huang & Toma, 2010), specifying the production process at the downstream stage (Soheylinia, Kashan & Soheyliniya, 2020), or supporting decision making on a supply chain aspect (Cui et al, 2021). To mitigate the present environmental issue, designers concerned have extensively proposed various QFD-based ecodesign methods in the past two decades (Fargnoli & Sakao, 2017). Puglieri et al. (2020) have listed and analyzed 29 QFD-based ecodesign methods and highlighted the present difficulties of these implementations, such as application time, software requirement, and training cost. Still, there is a further need to develop a QFD-based ecodesign method that is easy to use, low in application cost, and time-efficient in the process stage.

Moreover, only a few studies developed QFD-based ecodesign methods for an upstream application, such as marketing mix (product, price, place, and promotion) identification which is essential to determine the ecological implementation in a manufacturing organization to the target customers. Therefore, this study suggested a simple and inexpensive approach for integrating the ecological consideration into the marketing mix (4Ps) by using the Quality Function Deployment for Environment (QFDE) method. The researchers briefly reviewed the methods used in this research, including QFD, QFDE, and a green marketing mix. For this preliminary study, the researchers used a case study of 100 paving-brick customers participating on a voluntary basis and corporate accessibility. It was expected that their responses could provide a pattern on desirable specifications for the green marketing mix. Their collected responses to the proposed model should also shed light on the designed method application of QFDE for green marketing (4Ps) via green paving bricks using PET waste.

2. Literature Review

This section gives a brief review of quality function deployment regarding its major phases, deployment for environment, and green marketing

2.1 Quality Function Deployment (Pugh, 1991)

Quality Function Deployment (QFD) is a well-recognized design method that comprises four stages, as shown in Figure 1.

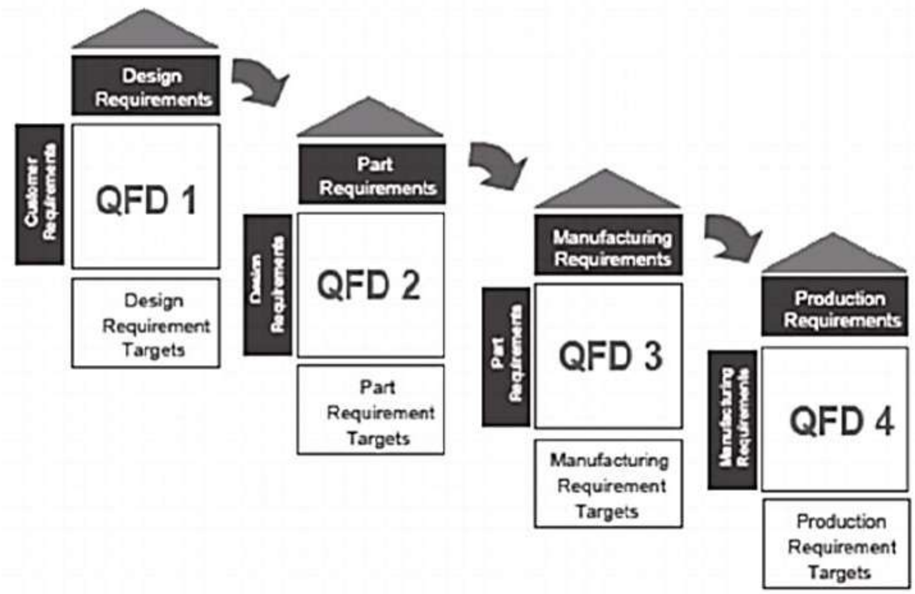
- Design Requirements: The voice of the customer or customer need is translated into product design specifications.

- Part Requirements: Product design specifications are converted to product parts and components' characteristics.

- Manufacturing Requirements: The design and process parameters are identified based on product parts and components' specifications.

- Production Requirements: Production operators' instruction is finally generated for the process and quality control plan.

Figure 1: A traditional QFD of Four Phases (Gupta & Srivastana, 2011)



2.2 Quality Function Deployment for Environment
(Masui, Sakao & Inaba, 2001)

Quality Function Deployment for Environment (QFDE) is generally developed to embed environmental aspects into a traditional QFD method. The QFDE objective is to identify the product characteristics that crucially impact an environmental improvement. The significant environmental aspects used in this method include the context of Voice of Customer (VOC) and Engineering metrics, as briefly described below:

- Environmental VOC (EVOC) comprises less material use, ease of transport, ease of production, less energy consumption, lengthening product lifecycle, ease of reuse, ease of disassembly, ease of maintenance, ease of recycling, safety in incineration, safety in landfilling, low emission and non-toxicity.

- Environmental engineering metrics include product weight, product volume, number of parts and components, number of material types, product durability, part hardness, product lifetime, energy consumption, recyclability, noise, vibration and electromagnetic wave, air pollution, water pollution, soil pollution, biodegradability, and toxicity of materials.

2.3 Green Marketing (Vaibhav, Bhalerao & Deshmukh, 2015)

Green marketing involves various manufacturing industry activities in providing environmental-friendly products and services to the consumer. These primary activities are related to environmental changes in product, production process, packaging and label design, transportation, advertisement, and other activities related to price, place, and promotion decisions. Vaibhav, Bhalerao & Deshmukh (2015) described the four key elements of green marketing as follows:

- Green Product: The product should be environmental-friendly during the whole lifecycle. The designer should focus on both environmental and traditional considerations, e.g., effective function, user-friendly, and high aesthetic quality as well as cost-effective. The main aspects for defining a green product are the design of a product, environmental-friendly technology, product usefulness, product value, convenience in use, product quality, and packaging.

- Green Price: A product price is generally based on material and production cost, market share, the value of the product itself and market competition. In practice, the cost of many new green products nowadays appears to be more expensive than the original one due to several causes, i.e., the absence of economies of scale or the high development cost of new technology. However, it has been suggested that green costs should be affordable to all typical customers to motivate the consumption of the environmental-friendly product.

- Green Place: Green places can be both physical and virtual stores. Nowadays, the Internet has unlocked a green marketplace, since it has removed several steps transporting a product from a manufacturing factory to a consumer, which in turn helps to minimize an environmental impact along a product lifecycle. Therefore, a green place should be any location that minimizes environmental impact and the efforts of customers and manufacturers in selling products.

- Green Promotion: Three aspects of advertisement consideration have been suggested to improve the environmental aspect of promotion activities. These are a selection of green promotion partners, the use of environmental-friendly material, and a consideration of environmental and societal impact in the advertising message.

3. The Proposed QFDE for Green Marketing Identification

This section describes how the researchers proposed application of the quality function deployment for the environmental aspect of creating a green marketing mix. The method included the following steps:

3.1 VOC Data Collection

The first step was to collect input data using for green marketing identification. In detail, the ranked customer need related marketing mix (4Ps) was collected from 100 consumers on a voluntary basis and corporate accessibility. The score of environmental considerations, which is based on Environmental VOC (Masui, Sakao & Inaba, 2001) and impacts of the focus product, price, place, and promotion, was ranked by the design and development engineers. These ranked scores were determined and presented in terms of an average weight of VOC and environmental VOC (Scores 1-5).

3.2 Rating Impact of VOC and EVOC on Green Marketing Specification

The second step was to rate the impact of VOC and EVOC on a product, price, and place specifications based on a consideration of a particular product.

The rating score for evaluating an impact varies as follows:

- 1 represents VOC quite important with a low impact on the 4P specification
- 3 represents VOC important with a medium impact on the 4P specification
- 9 represents VOC highly important with a high impact on the 4P specification

3.3 Estimating Relative Weight of 4P Specification

This step highlights the significant specifications of the marketing mix (4Ps), which have a high impact on the general VOC and Environmental VOC. The significant specification is represented by its total relative weight (1-5).

The total relative weight can be calculated by multiplying consumer weight with impact rating and divided by the total impact rating of a considered specification. The specification, which has a high value of the total relative weight, reflects the high impact on VOC and requires an implementation of an environmental-friendly solution.

Figure 2: QFDE for Green Marketing Identification

Voice of Customer (VOC)		Average Weight	Product Metric											Price Metric	Place Metric				Promotion Metric			
			Weight	volume	Variety	Product lifespan	Functionality	Material	Packaging and label	Production	Transportation	Maintenance	Branding		Location (Online/Onsite)	Retail cost	Transportation	Product presentation	Advertising material	Advertising Method	Advertising Massage	Advertising partner
Product	Aesthetics	Weighting from consumer Score:1-5	9	...																		
	Product strength		3																			
	light weight		1																			
	...		...																			
Price														...								
Place															...							
Promotion																						
Environment	Less material use																					
	Environmental-friendly material use																					
	Ease of transport																					
	Ease of production																					
	Less energy consumption																					
	Lengthening product lifecycle																					
	Ease of reuse																					
	Ease of maintenance																					
	Ease of recycling																					
	Safety in incineration or landfilling																					
	Low emission																					
	Non-toxicity																					
VOC Relative weight																						
Environmental Relative weight																						
Total relative weight																						

Impact Rating:
1 - Low impact on a specification
3 - Medium impact on a specification
9 - High impact on a specification

4. Research Methodology

4.1 Participants and Data Collection

In this study, the researchers specified the customer need as input data for demonstrating the implementation of the QFDE for Green Marketing Mix (4Ps). The use of green paving bricks utilizing polyethylene terephthalate waste was selected as a green product case study, since various research studies have reported developments and experiments with this product ready for implementation (Meng, Ling & Mo, 2018). Hence, VOC primary data were collected from 100 voluntary participants who have experience in purchasing paving bricks, to detect patterns in their responses. The online questionnaire was used to obtain the needed data. The questions used in the survey were classified into five categories: product, price, place, promotion, and environmental aspects related to paving bricks using PET waste.

4.2 Green Marketing Identification

The proposed QFDE for the green marketing mix was used to identify the impactful green marketing activities based on the customers' data obtained in the previous step. The researchers expected to detect the customers' consideration of the environmental aspects while maintaining their original economic perspective.

5. VOC of a Green Paving Brick Using PET Waste

The results of the distributed questionnaires on the characteristics of respondents are presented in Table 1. The data were from 100 respondents who have experience in purchasing paving bricks. More than half of the respondents were female (56.1%), employed in a business or government organization (69%), and with higher education qualifications (60.2%).

Table 1: Respondents' Characteristics

Respondents' characteristics	*Collected data*	*Percentage*
Gender	Male	43.9%
	Female	56.1%
Age	20-30 years	46.5%
	31-40 years	29%
	Over 40 years	24.5%
Education	High school	28%
	College	11.8%
	University	49%
	Graduate school	11.2%
Occupation	Employee	53%
	Self-employed	18%
	Government staff	16%
	Others	13%
Monthly income	Less than 15,000 THB	17%
	15,000-20,000 THB	22%
	20,000-30,000 THB	35%
	Higher than 30,000 THB	26%

Furthermore, the questions related to product, price, place, and promotion of green paving bricks using shredded PET were concluded and translated into the voice of customers. Then, the result on customer ratings (using a five-score level) was determined as the average weight. These average weights of the VOC of 4Ps and environmental aspects presented in Table 2 showed that the highest average weight of the product aspect was the strength of paving brick (4.11). From a price perspective, the price should be reasonable with a quality of a product in which the average weight is 3.69. Considering the place aspect, the consumers preferred purchasing paving bricks from a construction shopping mall (4.01), where customers can purchase various types of products. According to the promotion results, the customers searched for the product information from the Internet and online source (3.83). As for the environmental aspect, the customers considered environmental-friendly material the most crucial VOC, and ranked it at 5.00.

Table 2: Survey Results of Product, Price, Place, Promotion, and Environment Aspects

Key aspects	Voice of customers	Average weight
Product	Aesthetics	3.77
	Product strength	*4.11*
	Lightweight	3.94
	Easy to install	3.94
	Durability	3.86
	Easy to clean	4.01
	Water absorption	4.05
	Flame retardant	4.06
Price	Suitable for product size and properties	3.60
	Suitable for product quality	3.67
	Price variety	3.59
Place	Sales agency	3.53
	Online purchasing, e.g., website and shopping application	3.35
	Local Construction store	3.83
	Construction shopping malls, e.g., HomePro, Global House and Thaiwatsadu	*4.01*
Promotion	Radio advertising	2.75
	Television advertising	3.26
	Billboard	3.32
	Paper-based advertising, i.e., newspaper or magazine	2.91
	Internet or Online advertising	*3.83*
	Others, i.e., consumer communication	3.47
Environment	Less material use	4.01
	Environmental-friendly material use	*5.00*
	Ease of transport	4.21
	Ease of production	4.00
	Less energy consumption	3.00
	Lengthening product lifecycle	4.50
	Ease of reuse	4.42
	Ease of disassembly	N/A
	Ease of maintenance	4.01
	Ease of recycling	4.42
	Safety in incineration or landfilling	4.32
	Low emission	4.45
	Non-toxicity	4.40

6. The Application of QFDE for Green Marketing Identification Method

The high impact VOC and EVOC on the marketing mix (4Ps) was defined at this step through the QFDE method. Then, according to the green paving brick using PET waste, the relative weight of each product specification, price, place consideration aspects, and promotion elements were determined as displayed in Table 3.

Table 3: QFDE for Identifying Green Marketing of Paving Bricks using PET Waste

Voice of Customer (VOC)		Average Weight	Product Metric												Place Metric				Promotion Metric			
			Weight	volume	Variety	Product lifespan	Functionality	Material	Packaging and label	Production	Transportation	Maintenance	Branding	Price Metric	Location (Online/Onsite)	Retail cost	Transportation	Product presentation	Advertising material	Advertising Method	Advertising Massage	Advertising partner
Product	Aesthetics	3.77			3		9	3	9	3			9									
	Product strength	4.11	9	3		9	9	9		9	3	3	3									
	light weight	3.94	9					9	9		3											
	Easy to install	3.94	9	3			9	1														
	durability	3.86				9	9	9			3	9	3									
	Easy to clean	4.01				9		9		1		9	1									
	Water absorption	4.05					9	9		1		9	1									
	Flame retardant	4.06				3	9	9		1			1									
Price	Suitable for product size and properties	3.6												9								
	Suitable for product quality	3.67												9								
	Price variety	3.59												3								
Place	Sale agency	3.53													9	9		9				
	Online purchasing e.g. website, shopping	3.35													9	3	9	1				
	Local Construction store	3.83													9	9		3				
	Construction shopping mall e.g. HomePro	4.01													9	9		9				
Promotion	Radio advertising	2.75																	1	9		
	Television advertising	3.26																	3	9		
	Billboard	3.32																	3	9		
	Paper-based advertising i.e. newspaper or	2.91																	9	9		
	Internet	3.83																	1	9	3	3
	Others i.e. consumer communication	3.47																				
Environment	Less material use	4.01	9	9	9			9	9	9		9	3	9	9	3	9	9	9	9		3
	Environmental-friendly material use	5.00	9		9	9		9	9				3	9		3			9	9	1	3
	Ease of transport	4.21	9	3	9		9		9		9			9	9	3	9	3	3			3
	Ease of production	4.00	9	3	9					9				9								
	Less energy consumption	3.00		1				3		9	9	9	3		9	9	3	9		9	1	3
	Lengthening product lifecycle	4.50	9			9		9				9										
	Ease of reuse	4.42			9			9						3					9			
	Ease of maintenance	4.01	3	3			9					9		3							1	
	Ease of recycling	4.42	3		9									3					9			
	Safety in incineration or landfilling	4.32						9														
	Low emission	4.45						1		9	9			9	9		3		9	9		3
	Non-toxicity	4.40						3		9				9								
	VOC Relative weight		4.00	4.03	3.77	4.00	3.97	3.99	3.86	4.03	3.97	3.99	3.89	3.63	3.68	3.75	3.35	3.76	3.09	3.21	3.83	3.83
	Environmental Relative weight		4.33	3.99	4.34	4.75	4.11	4.36	4.41	3.97	3.88	3.88	4.00	4.34	3.92	3.70	4.01	3.61	4.45	4.12	4.00	4.13
	Total relative weight		4.21	4.00	4.31	4.28	4.00	4.17	4.19	3.99	3.91	3.93	3.93	4.16	3.80	3.73	3.83	3.68	4.09	3.61	3.92	4.08

As shown in the results, the QFDE implementation highlights the hotspot activities or impactful specifications that have an essential impact on VOC and EVOC. These are product variety, product weight, and product lifespan for specifying product aspects. Similarly, when considering the place and promotion aspects, the researchers could recommend with confidence the focus on transportation and advertising material based on environmental material use.

As for environmental consideration, the researchers identified the relative weight of packing & label and the material of paving bricks as vitally important. Therefore, these specifications are worth considering to achieve the focused environmental voice of customers, such as using environmental-friendly materials and lengthening product lifespan.

7. Conclusion

This study proposed the application of QFDE in support of the green marketing mix specifications. This application can be verified by VOC data collection, rating of the impact of VOC and EVOC on green marketing specifications, and highlighting the high score marketing or 4P specifications, which can potentially impact substantial VOC and environmental improvement. The implementation of the proposed QFDE for green marketing was demonstrated through the use of paving bricks utilizing PET waste as a case study. In responding to the specified VOCs and VOCs, the researchers suggested a focus on product variety, product weight, product lifespan, price setting, transportation aspects, and advertising material.

After all, it should be noted that these identified green marketing specifications still require further research work for its feasibility of the environmental-friendly production process. The use of green paving bricks utilizing PET waste as a case study was meant to support the application of green products in the industries concerned.

8. The Authors

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Needs Analysis of English Skills at Ban Manik Community in Phuket as an International Community

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Abstract

The purpose of this research was to analyze the needs for English language by the members of Ban Manik Community in Phuket as an international community. They need English to create media to inform the public of their community and local products. The researchers used a questionnaire and semi-structured interview to collect data from 60 participants on a voluntary basis. Their responses of the questionnaire were analyzed by frequency, percentage, mean scores and standard deviation. The data derived from the open-ended questions and the interviews were coded and analyzed by categorized contents. The results indicated that the members of Ban Manik Community need English skills for communicating with tourists or foreign customers, ranked first from speaking, followed by listening, reading, and writing, respectively. They preferred speaking practice in class with native English teachers. In addition, they also wanted to have picture books of objects and products displayed in the learning center labeled with both Thai and English words.

Keywords: *Needs analysis, English language, speaking skill, community-based tourism, Ban Manik Community*

1. Introduction

Communication in English has been required since Thailand joined the ASEAN Community in 2015 to cope with the members' local cultures, identities, and languages, as stated in ASEAN Charter Article 34: "The working language of ASEAN shall be English." This requirement does not only cover the use of English in the government sector but also the increasing use of English in all sectors of each country under the ASEAN Association (Onwimol, 2012). Therefore, the need in improving English skills is an urgent agenda for all sectors—in the public and private sectors all alike. One of the industries that have a strong need for English is undoubtedly the tourism industry.

Tourism industry in Thailand plays an important role in developing the country's economy. Thailand has been recognized for its beautiful cultural attractions, historical sites, eco-tourism and mountain-to-sea scenery appealing to Thai and foreign tourists. Tourism in Thailand helps the country's economy to grow as planned and in turn brings in money and good living to the communities concerned. Therefore, the Thai tourism industry has received continuous support from various government and private agencies to assure the economic growth as well as people's well-being, particularly in community-based tourism (Ministry of Tourism and Sports, Thailand, 2018; Jetjiroj, 2021).

As known, the new tourism trend deals with "the Free Independent Travelers." This is when a tourist or a small group of tourists travel to tourist attractions by themselves. The Free Independent Travelers will allow tourists to experience the lifestyle of people in small communities closely and as a result, they boost the community's income directly by buying local products. This type of tourism allows both Thai and foreign tourists to immerse themselves in the Thai way of living in small communities. In order for tourists to gain full traveling experiences, people in the community need to be able to use English to communicate with guests or visitors in their local environment. Local people should be able to communicate and recommend the community and its signature products to foreign tourists fluently (Ministry of Tourism and Sports, Thailand, 2018).

Each year, a large number of tourists from various countries come to the southern part of Thailand as one of the most beautiful destinations. Particularly, Phuket has been known as the pearl of Thailand for its white beaches and beautiful sea-sand scenery, local house architecture, Thai food, relaxing atmosphere, and friendly locals (Thai AirAsia, 2015).

Since 2020, the Covid-19 pandemic has been a threat to the tourism industry in Phuket and affected other socio-economic aspects of Thailand. The province has to work under the government's Sandbox Project to revive tourism. The vital issue of English proficiency required of service providers has still lingered for concrete improvement to facilitate contacts between the locals and foreign visitors in Phuket.

One community in Phuket, named Baan Manik has merged as a community-based tourist destination. This community of a thousand households is located at Si Sunthon Subdistrict in Thalang District. The community has grown economic crops under the scheme of sufficiency economy initiated by King Bhumibol for six years. Under the guidance of Phuket Rajabhat University, the community has developed and processed products from plants grown in the community to generate income for its members. In 2018, Ban Manik Community was selected by the province to join the OTOP Inno-life tourism-based group as a model tourism community for incoming Thai and foreign tourists. The community's various products are promoted to strengthen its economy for sustainability (Ban Manik School, 2019).

2. Ban Manik Community

Ban Manik Community is located at Moo 7, Si Sunthon Subdistrict, Thalang District in Phuket, Thailand. In the past, Ban Manik was known as Manikram, a name in Tamil language used by Chola people, the first group of people residing around this area. “Mani” means ruby and “Kram” from “Nagaram” meaning “City”; therefore, Maniram means “a city of ruby.” Later on, the name was diluted to “Ban Manik.” However, according to the agricultural area evidence, this place has been known among the inhabitant as “Ban Muang Yai” or “a big city” (Ban Manik School, 2019).

The community leader, Songyos (2016) reported that nowadays, the social surrounding has been changed from a local to an urban society. People in the community no longer farm, but turn to labor work for several kinds of local business. They have no time to take care of their health, eat instant food and, toxic products in the area. Therefore, a group of people in Ban Manik tried to find ways to prevent eating intoxicated food and improve their health. They agreed to form a group to grow non-toxic plants for their diet. This project was guided by the principles of King Bhumibol’s sufficiency economy philosophy, by which 10-30 people from the community have united and formed a group to work collectively. Each member put 1,000 baht to set a fund for the project; the members took care of each other and exchanged their agricultural knowledge and local wisdom, particularly using herbs to eliminate pests instead of using chemical pesticides, and producing organic fertilizers. This project has become a unique characteristic of Ban Manik that signifies sufficiency economy philosophy in its implementation stage. The Learning Center was established by Suparoth Songyos as the founding leader since then (Department of Non-Formal Education in Kaodin Subdistrict, Kaopanon District, Krabi, 2018; Ban Manik School, 2019).

Once established, Ban Manik Sufficiency Economy Philosophy Learning Center has been known for New Agriculture Theory of King Bhumibol. In 2019, the Center was chosen to be one of OTOP Inno-life Tourism-based Communities. It should be noted that the government agent--Phuket Rajabhat University helped the Center develop products made from okra, which is the main plant grown at the Center. The developed okra products make an income of 150,000 baht per month for the community members (The Government Public Relation Department, 2019; Ministry of Tourism and Sports, Thailand, 2018; National News Bureau of Thailand, 2019).

The researchers recognized the goal of the community and its urgency in improving English proficiency to communicate with incoming tourists. It is a must for the researchers to assess the community members’ needed skills in English to plan for (1) a short training course prototype, (2) writing a basic English guidebook to provide information on the community’s products, and (3) making product-price labels and English signs for visiting points in the community’s area. In so doing, the researchers aimed at transforming Ban Manik into an international community for tourism purposes.

3. Literature Review

This section briefly reviews (1) definitions of needs, (2) needs analysis, and (3) English language and community-based tourism, for clear understanding of the research background.

3.1 Definitions of Needs

Need is a condition that something must be fulfilled for maintaining or completing the desire (The Free Dictionary, 2011). In the same way, need is the effort which forces action for its fulfilment. Needs which are satisfied by necessities ranging from general living needs to cultural, intelligent, and social needs (altered by places and ages). Needs are limited while wants (occur from desires and wishes) are boundless (Business Dictionary, 2016). According to Brindley (1989: 65), it is hard to find the utilize meaning of “needs” in the second language learning contexts. Hence, it is beneficial to take some from the field of adult education in which need is identified as “the gap between what it is and what it should be.” The crucial note is that what it should be must be designed by someone. It can be said that the definitions of needs are open to situational interpretation and involve value judgement. Kaufman & English (1979) pointed out that need can be defined as a gap between current outcomes or outputs and desired (or required) outcomes or outputs. In the educational context, needs refer to the gap between the entry and exit of students' skills, knowledges, and attitudes. Also, they are gaps between existing and requested of students' skills, knowledges, and attitudes, but ones would be much higher priorities in order to accomplish educational achievement.

3.2 Needs Analysis

Needs analysis is the term commonly known to language practitioners for many years. It takes an important part in the field of English for Specific Purposes (ESP) because it is the tool leading to the development of courses and syllabus designs which can fulfil what target learners need or lack. Needs Analysis is the way to analyze and assess the needs of the group of people. Analyzing needs can explain the problems of particular learners and plausible resolutions to their problems (Titcomb, 2000). McCawley (2009) claimed that the target people can identify the status of their knowledge, ability, profession, attitude or learning style or their desire from a needs analysis. Also, the analysts will be able to illustrate the gap between what the target people have and what they need by processing data. Filling the gap serves as the purpose of academic work on course design and instruction. In addition, needs analysis consists of all activities employed to compile the information concerning learners' learning needs, wants, desires, wills, and the like. Sometimes, the methods include searching for the anticipation of other concerned factors; for example, teachers, managers, financial supporters. Needs analysis can be both official--expanded and time consuming, and unofficial--narrowly emphasized and fast (Casper, 2003).

3.3 English Language and Community-based Tourism

The expansion ratio of tourism in Thailand is 5.7 per year. Also, Thailand was ranked as the 21st out of the top 40 countries visited by most tourists around the world. There were 10.6 million tourists in Thailand, 20.3 million in 2012, and 38.27 million in 2018; therefore, the income from tourism in Thailand was 2 trillion baht (Ministry of Tourism and Sports, Thailand, 2018). Recently, in order to attract foreign tourists, Thailand has promoted internal tourism especially community-based tourism, together with OTOP Inno-Life Tourism-based Communities. The OTOP Inno-Life Tourism-based Communities are the project to promote and develop local products from the communities in the designated areas, using natural resources in the communities identified as the tourists' destinations (Kakham 2020).

Accordingly, English serves as a vital tool to develop both community-based tourism, and OTOP Inno-Life Tourism-based Communities. Both government agencies and private organizations have organized English language training programs for several communities in Thailand to improve English language skills of local people in those communities. For example, Khon Kaen University as the government agency held a workshop on the topic of "The Development of English and Chinese Communication Skills for Groups of Community Leaders." The workshop focused on basic knowledge of English and Chinese. As for English, there was additional training on the topic of English for Fun 1 and 2 on four skills: listening, speaking, reading, and writing (Communication Affair Division, Khon Kaen University, 2018).

The Department of Non-Formal Education in Kaodin Subdistrict, Kaopanom District, Krabi (2018) organized a short course of 30 hours, on the topic of "English Language and Tourism" for local people living in Kaodin Community and the nearby areas. The course emphasized the use of English expressions in giving information about tourist attractions, restaurants, and accommodation.

Moreover, Thai AirAsia was well aware of the importance of English in community-based tourism and therefore organized English for its Community-based Tourism Project. The emphasis was on four basic English language skills for communication. The project was for local people in three communities: Baan Huathung (Chiang Dao District, Chiang Mai), Ban Kukasing (Roi-Ed), and Ban Phrom Lok (Nakhon Si Thammarat) (Thai AirAsia, 2015).

As mentioned above, it is obvious that all sectors are fully aware of the importance of English language development for community-based tourism. There were various training courses and workshops organized by the government agencies and private organizations to improve English language skills of local people in the target communities. Those courses and training programs were meant to support the government's policy on community-based tourism. It was expected that language training for vocabulary and language patterns for specific situations serves as the key to success in communication between local people and foreign tourists.

4. Research Objectives

There were two objectives in this study:

1. To assess English language skills for communication as needed by the members of Ban Manik Community, and

2. To identify English language problems encountered by the members of Ban Manik Community.

It was expected that the obtained results can generate a guideline for the researchers to create a short training course prototype, medias to inform the public of the community and products, a basic English guidebook about the local products, and product-price labels and signs on visiting points for the community.

5. Methodology

5.1 Participants

The participants of this study were 60 local people at Ban Manik Sufficiency Economy Philosophy Learning Center. Their participation was on a voluntary basis. They provided both quantitative and qualitative data for the study.

5.2 Instruments

- Questionnaire: The questionnaire with closed- and open-ended question items was based on the results of a preliminary study. The questionnaire contained four parts on (1) Personal Information and Levels of English Proficiency of the participants (8 items), (2) Problems in English language use at Ban Manik Sufficiency Economy Philosophy Learning Center (4 items), (3) their most needed English skills (4 items), and (4) critical aspects for language improvement (1 open-ended question).
- Semi-Structured Interview: Ten participants were willing to give data for semi-structured interviews. The interview of 12 questions for each participant lasted for 15-20 minutes and all responses were digitally recorded with permission from the participants.

6. Data Collection

After getting permission from the leader and the members of Ban Manik Sufficiency Economy Philosophy Learning Center, the researchers arranged to meet with the voluntary participants to explain the objective and details of the research, and to distribute a questionnaire to each member. The researchers collected the questionnaires three days after the distribution and prepared for data analysis.

As for the semi-structured interviews, only ten participants were willing to give data on their experience and problems in using English at the Center. The interview of each participant lasted for 15-20 minutes and was digitally recorded with consent from the participants. The researchers transcribed and classified the obtained data according to the research objectives.

7. Data Analysis

The researchers analyzed the participants' responses to the questionnaire by frequency, percentage, mean scores and standard deviation. The data derived from the open-ended question and the interviews were coded and analyzed by categorized contents.

8. Research Results

This section reports the participants' levels of English proficiency, English skills needed at Ban Manik Sufficiency Economy Philosophy Learning Center, and the problems in English language use encountered by the members of Ban Manik Learning Center.

8.1 Participants' Levels of English Proficiency

The participants' levels of overall English proficiency were at a fair level (Mean=1.83, S.D.=0.53). It was found that their proficiency levels in four skills were at a fair level: Listening (Mean=1.95, S.D.=0.46), Speaking (Mean=1.71, S.D.=0.61, Reading (Mean=1.95, S.D.=0.59, and Writing (Mean=1.70, S.D.=0.46), respectively. The results are shown in Table 1.

Table 1: Participants' Levels of English Proficiency

Levels of English Proficiency	**Mean**	**S.D.**	**Meaning**
Listening skill	1.95	0.46	Fair
Speaking skill	1.71	0.61	Fair
Reading skill	1.95	0.59	Fair
Writing skill	1.70	0.46	Fair
Total	1.83	0.53	Fair

8.2 Needed English Skills

The participants identified their most needed skill as Speaking (Mean=4.45, S.D.=0.49), followed by Listening (Mean=4.28, S.D.=0.60), Writing (Mean=4.26, S.D.=0.89), and Reading (Mean=4.03, S.D.=0.57), respectively. The results are presented below in Table 2.

Table 2: Needed English Skills at Ban Manik Sufficiency Economy Philosophy Learning Center

Needed English Skills	Mean	S.D.	Meaning
Listening skill	4.28	0.60	High
Speaking skill	4.45	0.49	High
Reading skill	4.03	0.57	High
Writing skill	4.26	0.89	High
Total	4.25	0.63	High

8.3 Problems in English language Use

The participants specified their overall problems in English language use at a high level. The most problematic skill was Listening (Mean=4.52, S.D.=0.48), followed by Speaking (Mean=4.50, S.D.=0.45), Writing (Mean=4.42, S.D.=0.48), and Reading (Mean=4.23, S.D.=0.40), respectively.

Table 3: Problems in English language Use at Ban Manik Sufficiency Economy Philosophy Learning Center

Problems in English Skills	Mean	S.D.	Meaning
Listening skill	4.52	0.48	Very high
Speaking skill	4.50	0.45	Very high
Reading skill	4.23	0.40	High
Writing skill	4.42	0.48	High
Total	4.42	0.45	High

8.4 Critical Aspects for Language Improvement

The researchers analyzed the contents of the participants' responses to the open-ended part of the questionnaire and the interview data, and found similar results that the participants lacked the key vocabulary in conveying the intended message to foreign visitors. They were also worried about grammatical errors made in their speech. In this regard, the first critical aspect for language improvement happened to rest upon listening and key vocabulary learning to facilitate their communication in English. It should be noted that drills of formulaic expressions could help alleviate their anxiety over pronunciation and grammatical errors. For language improvement, the participants need to express themselves in language training via intensive drills to gain confidence in communicating with foreigners. In addition, they need clarifying technique as well as nonverbal features or gestures to convey their intended meanings to the visitors.

9. Discussion and Conclusion

This research identified the English language needs of the community members of Ban Manik in Phuket Province (Ban Manik School, 2019). Sixty participants joined the study on a voluntary basis, and they perceived their language skills at a fair level (Mean=1.83, S.D.=0.53), while requiring practice in listening and speaking skills in priority for language training. These results were not a surprise to the researchers for the fact that the community members rarely use English in daily life. Currently, frequent exposure to visitors will prompt their use of English and their proficiency will definitely improve with time (Communication Affair Division, Khon Kaen University, 2018; Kakham, 2020). The Learning Center and the project on OTOP INNO-life Tourism-based Communities developed about six years back have now provided them with good local products and agro-production activities that could attract more tourists and hence give an ample opportunity for the host members to use English for daily communication. Language training courses and workshops can serve as a good platform for language training preparation (Brindley, 1989); this is meant for the growth of community-based tourism in the area and its vicinity.

The participants rated the speaking skill at the forefront for training (Mean=4.45, S.D.=0.49), followed by listening (Mean=4.28, S.D.=0.60), writing (Mean=4.26, S.D.=0.89), and reading (Mean=4.03, S.D.=0.57). They explained that the limitation in language use prompted them to turn to translation applications to facilitate face-to-face communication with tourists (Business Dictionary, 2016). However, the participants wanted to improve their speaking and listening skills to be able to perform well in interacting with their foreign visitors. They preferred speaking practice in class with native English teachers. They also wanted to have picture books of objects and products displayed with Thai and English labels at the Learning Center. The results of the study can help the local university to provide language training directly responsive to the identified needs of the target learners (Casper, 2003).

10. Implications and Future Research

As for implications of the study, the researchers expected to use the obtained information to plan for a short training course prototype, a basic English guidebook to provide information on the community’s products, and product-price labels and English signs for visiting points in the community’s area. In so doing, the researchers meant to provide assistance in transforming Ban Manik into an international community for tourism purposes.

In future research on community-based tourism, researchers could consider the topics in the areas of specific training techniques, evaluation of language performance in the traditional or digital mode, and the issues on learner autonomy and characteristics of spontaneous speech data. A future study should include a larger sample size--people in the community and tourists--to ensure validity and reliability of the concluded findings.

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Academic Paper

The Metaverse in Education: The Future of Immersive Teaching & Learning

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Abstract

The metaverse connects social media to virtual reality and augmented technologies. Their collaboration unleashes creativity and promises transformation ranging from industrial sector to distance/online education. New style of meta-education and metaverse-powered online distance education have emerged to provide formal and informal blended learning experiences in a virtual 3D online campus. Online learning in the metaverse is to break the last frontier of social connection and informal learning. Physical presence in the classroom will be a privileged educational experience. Telepresence of gestures and feelings, avatar body language and the precision of facial expressions will help make participation equally effective. In addition, social mixed reality in the metaverse enables blended active pedagogies that fosters profound and lasting knowledge. More importantly, it can become a democratizing factor in education, enabling world-wide participation around the world without geographic constraints. This academic paper presents six aspects of the metaverse applied to education: (1) the meaning and definition of the metaverse, (2) technologies empowering the metaverse, (3) concepts of the metaverse for education, (4) concepts of the metaverse for education, (5) potentials of the metaverse in education, and (6) its future in education. These aspects of the metaverse and its applications are essential for educators to deliver forefront teaching and learning.

***Key**words*: Metaverse, *digital technology, education, immersive teaching and learning*

1. Introduction

Innovations in computer science have a big impact on people's everyday lives because they change and improve how people interact, communicate, and do business with each other. From the point of view of end users, three major technological waves have been centered on the introduction of personal computers (PC), tablets, the Internet, and smart phone devices, in that order. At the moment, spatial and immersive technologies like

Virtual Reality (VR), Augmented Reality (AR), Mixed Reality (MR), and applications are driving the fourth wave of computing innovation. (Kamenov, 2022). This wave is expected to create a further widespread computing paradigm that has the potential to transform, training, healthcare, sport, business, entertainment and everyday human use, especially its applications to improve education for humanity. This new paradigm is the metaverse. The word “metaverse” is a closed compound word with two components: Meta and universe. The metaverse is the next iteration of the internet, supporting ongoing online 3D virtual environments where the world’s publicly accessible virtual experiences, real-time 3D contents and other related media are connected and accessible through VR/AR, as well as through classic devices, such as PC and smart phone devices. In other words, the metaverse is a post-reality universe, a perpetual and continuous multi-user environment that merges physical reality with digital virtual reality. As for online distance education, the metaverse has great potential to seamlessly resolve the fundamental limitations of past web 2D e-learning tools (Mystakidis, 2022).

Education is a critical field for learning and growing people in society as well as for economic development both nationally and globally, where the main method of operation remains unchanged; it is related to content development in classroom and textbook despite the vast innovations in educational technology (Phakamach et al., 2021a). Petchroj (2022) asserted that prompt actions are required for teaching via web/e-learning tools, accelerating teachers’ need to create a new body of knowledge, and increasing online innovations. Universities in the digital age need modern technology networks, digital media center, and digital skills development for faculty members, students and support personnel. In this regard, educators often use technological resources to enhance the classroom learning experiences. Below are several examples of the metaverse being used in education. First, it has been found that meaningful learning through the virtual world has the potential to provide numerous educational opportunities. One study in particular explored the various advantages and disadvantages of the virtual world in an academic environment with the aim of strengthening the curriculum using this technology. Second, as a result of researching whether AR technology can contribute to informing and educating elementary school students regarding the COVID-19 outbreak, it was found that it improves students’ cognitive abilities around knowledge retention, as well as their creativity. It has also been confirmed that learners can develop self-learning through the combination of rational learning styles using these technologies. Moreover, based on past research from various case studies of the word metaverse, it is important to be accurate. The results confirm that the metaverse can provide additional meaning to teachers, educators and educational policymakers. Third, there is also an education on the use of AR math games for elementary school students using MathBuilder, and the use of AR-enabled storybooks to reduce the anxiety of young people learning math (Jeon, 2021).

Currently, there is fierce competition in building the infrastructure, protocols, and standards that will govern the metaverse. Large organizations are trying to build their own closed proprietary hardware and software ecosystems to attract more user groups and it could be the de facto end of the metaverse (Kesselman & Esquivel, 2022). However, different systematic approaches and strategies contradict concepts, such as openness and privacy. The outcome of this competition determines the level of user privacy rights. Like whether the metaverse covers informal students and school students. Both issues have significant implications for the study. This will determine whether the metaverse can become mainstream in e-learning. Educators must continue to search for answers. Jeon (2021) has argued that inside the metaverse 'sub-verses' are being born as seen in the presence of a globally inclusive learning platform. Educators are developing a virtual world called the Eduverse, based on Web3, aiming to bring learners together as avatars. The magic of Web3 is heavily promoted by industry leaders in technology and modern innovation. Its outstanding benefit is Web3's equal goal of creating opportunities for development for all human beings. This is an important step in the path toward creating equality in education for learners.

For this purpose, this academic paper is structured in seven sections: (1) Meaning and definitions of the key concepts, (2) Technologies empowering the metaverse, (3) Concepts of the metaverse for education, (4) The metaverse changing the world of education, (5) potentials of the metaverse in education, (6) Metaverse future in education, and (7) conclusion and recommendations.

2. Meaning and Definition

The term "metaverse" was coined in Neal Stephenson's 1992 science fiction novel Snow Crash, in which humans interact with each other as avatars within a 3D virtual world. In this novel, just like in real life, the metaverse is a 3D virtual extension of the Internet. It gives users a lot of freedom when it comes to real-time interactions, while also allowing them to create any online environment imaginable. (Mystakidis, 2022).

Initially, the metaverse can be defined as the post-reality universe. It is a perpetual and continuous multi-user environment that combines physical reality with digital virtual reality. It is based on the convergence of technologies that enable multisensory interactions with virtual environments, digital objects and people, such as VR and AR. Hence, Thus, the metaverse is an interconnected web of networked social environments in a persistent multi-user platform. This allows seamless communication with figurative users in real-time and dynamic interactions with digital artifacts. People's use of the metaverse assumes that the first iteration is a web of virtual worlds where avatars can move between them. The contemporary iteration of Metaverse is delivered from a socially immersive VR platform that is compatible with online multiplayer video games. It is an open game world and is a virtual collaboration spaces with AR itself (Zhao et al., 2022).

Finally, the metaverse can be defined as a virtual world, a simulated world where users with the same interests come together to form a society. "Social" is the second world where humans spend their real-world time making share experiences with other users without borders in 4 dimensions: media, real world, interaction and social. In the name of practical use, the metaverse is an imaginary world filled with the responsiveness of the human mind that is not the real world. The metaverse world has no limits on who you can meet. This is the world where we can rebuild ourselves to go out and learn what we don't know via a digital mode.

3. Technologies Empowering the Metaverse

The technologies empowering the metaverse are in four types: Virtual, Augmented, Extended and Mixed Reality.

3.1 Virtual Reality (VR)

The term "virtual reality" refers to a technique known as "virtual reality," in which a computer mimics a virtual environment. The majority of a virtual reality experience comprises visualization, which can be exhibited on a computer monitor or a 3D display device. Users are able to engage with the virtual environment through the use of conventional importing gadgets (Jeon, 2021). It is possible to build a simulated environment very similar to the real world, such as a simulation used for training pilots. On the other hand, a simulated environment can also be very different from the real world, such as in games that are being developed by game developers nowadays. Because of technical constraints, such as those regarding processing power and visual resolution, it is extremely challenging to produce a virtual reality experience that is as realistic as possible in practice. On the other hand, it is anticipated that such limits will be eliminated in the not-too-distant future as a result of developments in technologies relating to visual and data communication as well as processing power (Slater & Sanchez-Vives, 2016; Yadav, 2022). Two examples of VR are shown in Figure 1.

Figure 1: Virtual Reality (Yadav, 2022)

a) b)

3.2 Augmented Reality (AR)

Augmented Reality (AR) is a new technology that combines the real world with the virtual world through the use of various devices, such as webcams, mobile cameras, computers, combined with the use of various software. This makes it possible to see images that look like objects, such as people, animals, things, and spaceships, displayed on the screen as 3D objects floating above the actual surface. Augmented Reality (AR) was created by combining the real world with the virtual world (Pellas et al., 2020). Additionally, augmented reality can be incorporated in virtual reality headsets with the capacity of pass-through mode by showing input from integrated camera sensors. This will give viewers the impression that they are participating in a "real" event. Two examples of AR are shown in Figure 2.

Figure 2: Augmented Reality (Yadav, 2022)

a) b)

3.3 Extended Reality or Cross Reality (XR)

Extended Reality or Cross Reality (XR) is a generic term that combines a set of realistic technologies: electronics, communications, digital environments in which information is displayed and projected. XR technology will be a collaboration of VR, AR and MR (Mystakidis, 2022). In every aspect of the XR mentioned above, humans observe and interact in all or part of the synthetic digital environment created by these technologies. Two examples of XR are shown in Figure 3.

Figure 3: Extended Reality (Kamenov, 2022)

a) b)

3.4 Mixed Reality (MR)

Mixed Reality (MR) combines the strengths of VR and AR technologies and takes it to the next level by creating visualizations that users can interact with in an environment that combines real with virtual worlds. Using next-generation touch and imaging technology, MR allows us to see and experience the world around us even when interacting with virtual environment with the user's own hands without having to remove the glasses. This technology allows users to place one foot or hand in the real world and put the other side in the virtual world. It breaks down the fundamental concept between reality and imagination in providing experiences that can change the way people play games and work in modern times (Kamenov, 2022). The rationale behind this decision is the long-term technological evolution and maturation of AR to include interactive affordances. Therefore, AR and VR remain the two fundamental technologies and MR their combination (See Figure 4).

Figure 4: Mixed Reality (Kamenov, 2022)

a) b)

c)

In order to appreciate and illustrate how these immersive technologies interact with their surroundings, we point to Milgram and Kishino's one-dimensional reality–virtuality continuum. The best way to depict this continuum is as a line that is straight and has two points at either end. The natural and physical environment are located on the leftmost end of the line. The right end denotes the transition into a completely fabricated and virtual environment, which the user will encounter instead of the real one. As a result, augmented reality (AR) is located toward the left end of the spectrum, whereas virtual reality (VR) is located on the right extremum. Both SR and MR are contained within MR. The metaverse is founded on technologies that make it possible to interact in a variety of sensorial ways with digital items, digital settings, and other people. A three-dimensional depiction that is capable of conveying a sense of depth is what makes the XR system's visual fidelity possible. This is made feasible by simulating one's vision in a real-world setting using two displays, one for each eye, which are distinct from one another and somewhat different from one another. The high-resolution XR display may be viewed by the user from a wide angle, which can range from 90 degrees to 180 degrees. When compared to 2D, 3D, spatial, or binaural audio systems, the XR system provides a greater auditory experience. This allows users to create sound landscapes that are more realistic than what is possible with VR and AR. In addition, users are able to orient themselves and pinpoint the location of the audio stream thanks to the usage of spatial broadcasting. It is an effective tool for navigating the metaverse as well as attracting the attention of those who utilize it (Pellas et al., 2020).

In addition to the previously mentioned passive sensory inputs, the XR system also enables interactive interaction with virtual elements through the utilization of motion controllers. Handheld input devices include those with grips, buttons, triggers, and thumb sticks. Users have the ability to touch, hold, manipulate, and operate virtual items while employing the controls that were discussed earlier. Because of this skill, they become enthusiastic agents in each and every user experience. The user experience will also be improved by the introduction of a totally manual tracking system, which will make the experience feel more natural. Researchers are currently concentrating their efforts on movable electronic devices that may be worn, such as touch-sensitive suits and gloves. The digitization and simulation of smells has been investigated further within the realm of sensory research.

Pellas et al. (2020) detail interactions that take place in XR environments in which the user is immobile throughout the experience. The user has control over the entirety of the body. Tracking of position and rotation is enabling the transmission of a user's actual movements into an augmented reality setting. Either a permanently mounted external camera (outside-in) or headset sensors and an internal camera that detects position changes in respect to the physical world can be used to track motion. One of these two methods is referred to as "inside-out" tracking. The supported degree of freedom (DoF) of the XR headset is a needed specification that reflects its motion tracking capabilities. This specification was required after the XR headset was utilized in a standalone wireless headset. The cutting-edge and high-fidelity headgear provides support for a total of 6 degrees of freedom (DoFs), which includes lateral body movement along the x, y, and z axes. The translation of motion over time, which is essentially a highly strong treadmill moving in just one direction, is one of the limitations associated with closed virtual reality spaces.

4. Concepts of the Metaverse for Education

The technological capabilities connected with each facet of the metaverse for education can create a clear picture of how the metaverse can revolutionize education. This is the impression of how the metaverse can promote education and learning for humanity (Weilage & Stumpfegger, 2022; Suh & Ahn, 2022).

4.1 AR Uses in Education

The use of AR technology enables the creation of digital overlays on top of real-world objects, which can then be rendered as three-dimensional. Users are able to investigate a variety of applications of the metaverse for educational purposes or for learning in augmented reality by utilizing educational impact. For instance, AR can assist in locating otherwise unseen components and finding solutions to problems in a more expedient manner. Augmented reality can be used to power in-depth material overviews. Because of this, observing and comprehending text is much easier. In addition, interactive activities like reading and writing can help generate interesting experiences and promote learning that is participatory.

4.2 Lifelogging Uses in Education

Lifelogging focuses on documenting everyday life and thoughts with a focus on effective results. It can help drive the use of the metaverse for education with a focus on self-learning experiences. Users will be able to review and reflect on the daily events of each person’s life very well. Thus, the metaverse can offer an essential tool for expressing and implementing feedback and learning from one’s life. It also opens a way to explore different types of data from a critical perspective including helping to reflect on learning experiences, stories and real experiences along with improving the creation of new information creatively.

4.3 Mirror World and Education

The world reflected in the mirror is yet another significant aspect to take into consideration. The question "How will the metaverse alter education?" comes up because it has the potential to provide an immersive online learning environment. When it comes to learning and education, the mirror world can help overcome space constraints as well as other physical limitations. For example, online video conferencing tools can be used as a virtual world for real-time online classes to enter quality virtual learning.

4.4 VR in Education

When searching for knowledge regarding the appropriate educational uses of the metaverse, educators should also take into account the educational implications of virtual reality. A computer-generated simulation of a hands-on demonstration taking place in a digital setting. Training sessions on risk management, for instance, that focus on the management of fires and flight training for airplanes. In the actual world, it often comes at a high cost. Having a virtual reality (VR) fire training simulator as well as a flight simulator, on the other hand, can easily be a more cost-effective solution.

If teachers are planning on introducing the metaverse into their classroom soon, it is important to have a firm grasp on what XR is. XR is an umbrella term that encompasses a few different digital experiences (VR, AR, and MR). In VR, students enter a simulated, 3D reality through a head-mounted display. Their real-world audio and visual stimuli are replaced by digitally-generated counterparts. As they move around, they can interact directly with nearby digital objects. In AR, students view digitally-generated content through a see-through and head-mounted display. They remain grounded in the physical world, but can interact with digital elements (i.e., hiding behind a virtual rock). In MR, students can use mobile devices or see-through, head-mounted displays to view digital elements superimposed on their physical surroundings. After all, MR has little interaction between the digital and physical elements but can be incredibly realistic.

In addition, metaverse field trips use 360° technology to turn mobile devices, such as tablets and smartphones into virtual experiences. This allows young students to enjoy the learning benefits that augmented reality can offer in a safe and harmonious way. Using virtual field trips can help students learn and grow quickly. (Phakamach et al., 2021b). They can learn the following:

Critical thinking: Students are analyzing the environment around them and making timely and holistic decisions to move to the next stage of a game or a virtual field trip.

Creativity: Students are imagining new uses of space to create new ideas and experiences. When they come in contact with artists, monuments, historical sites that they shouldn't have been exposed to at a young age.

Cross-collaboration and teamwork: The metaverse is designed to connect people, places, and ideas. Students can learn, collaborate and meet new heroes, people, and work together to solve problems of interest.

Social-emotional learning: While students are dealing with real situations or important moments in the past. They have to take on the role of someone else and understand their own emotions. They also can develop compassion for one another at an early age which is key to developing relationships later in life, career paths and peaceful coexistence in society.

5. The Metaverse Changing the World of Education

For a few years now, some video games allow users to interact with each other and attend events such as parties and concerts through avatars. However, gaming is not the only industry that can benefit from the metaverse with the growing popularity of online learning. Educators, teachers, and institutions are constantly looking for ways to make distance learning more engaging and interactive (Pellas et al., 2021). Let's look at a few ways the metaverse can help with that.

5.1 Creating an Engaging and Life-like Online Classroom

The main benefit that eLearning can reap from using the metaverse is its ability to liven up the online learning environment. Educators can create rooms to suit their educational needs where their only limitation was imagination. At the same time, fully customizable avatars allow learners to interact with realistic objects and put theory into practice. It adds a special sense of realism to the virtual classroom in order to make learners more involved in the learning process, build more life skills, and more satisfied.

5.2 Promoting Communication

It should come as no surprise that learning how to interact with others and communicate effectively online can be challenging at times. Both learners and instructors might experience feelings of isolation and loneliness when they are separated by physical distance. In order to combat these feelings and encourage participants to communicate with one another, the metaverse enables classroom teachers to construct rooms in which they can have meetings. These meetings can then take place within the classroom. At the same time, students have the ability to build study rooms in which they can socialize with one another, work together, and learn. Everyone has the ability to communicate with one another face-to-face, share files, interact with the same object, or play the game easily using their avatar. Learners are encouraged to connect with their teachers and classmates through the use of these elements. The overall quality of the educational experience will consequently improve as a direct result of this.

5.3 Supporting Immersive Learning

AR and VR in particular are the primary technologies that are helping to enable the metaverse. Users enter the virtual world by donning headsets and/or glasses that grant them access to the environment. Online students have a lot to gain from participating in virtual learning since it enables them to study the appropriate theory until they are able to put it into practice, improves their ability to retain information, and boosts their engagement through participation in virtual interactions. Learners can have the experience of participating in simulations and games as if they were physically present thanks to virtual reality and augmented reality technology. For instance, 3D graphics can assist people comprehend how a particular piece of machinery operates or what a certain mathematical concept looks like when it is applied in the real world.

5.4 Enriching Gamification

The benefits of gamified learning have been known for years. It makes learning fun and effortless, improve problem solving skills, analytical thinking real-time feedback, and improve the overall learning experience. With the metaverse, gamification is more alive than ever because users are not just playing games but they are in the game. Combining VR/AR devices with the endless possibilities of the metaverse, teachers can also create game-based activities that students can perform in a thoroughly realistic environment with active learning that resembles real-life situations.

The advantages of learning through game-like activities have been recognized for many years. It makes learning entertaining and easy, improves problem-solving skills, analytical thinking, and the overall learning experience, and it provides feedback in real time. Gamification is more alive than it has ever been because to the metaverse, which allows users to not only play games but also participate as characters in those games. Teachers are also able to create game-based activities for students to perform in a thoroughly realistic environment with active learning that resembles real-life situations by combining VR/AR devices with the endless possibilities of the metaverse. Students will be able to perform these activities in the classroom.

The metaverse is the next step of the Internet and it’s already here. The game industry is exploring its capabilities more quickly, but soon the gaming industry will enter other aspects of our lives. eLearning is also expected to gain substantial benefits from the metaverse, using its immersive capabilities to make the virtual learning environment more realistic, and learning by itself is more engaging and experiential. Although at this point we can only imagine what the future holds, it is exciting to see that change happen (Weilage & Stumpfegger, 2022).

6. Potentials of the Metaverse in Education

Hirsh-Pasek et al. (2022) suggests that the final aspect in understanding how the metaverse will influence future studies. It focuses on possible ways in which the metaverse affects learning. Here are some featured metaverse applications in education that will change the way we perceive the value of the metaverse.

Engaging Guides: Teachers no longer have to display images or videos or read books in the metaverse. As a matter of fact, teachers can show students how to create specific machines or processes that occur at the molecular level. The immersive experience in the lesson ensures that more students remember the lesson.

Freedom to Create and Share: Students do not have to think of the metaverse in education as merely an educational form of online gaming. They can fulfill the mission objectives of the game. On the contrary, students can create and share their own experiences and designing learning experiences that extend the freedom and flexibility of learning.

Integrated Learning: The educational use of the metaverse also relies heavily on metaverse opportunities to be able to move between virtual spaces. For example, you don’t need to worry about undoing how electrons flow in our bodies when understanding conductivity. The metaverse provides opportunities for improvement for the combination of multiple subjects in a single learning environment for holistic learning experience (Phakamach et al., 2021c).

Developing Values of Responsible Usage: There is no doubt that the metaverse offers many formidable values, especially bringing different ideas to life. However, there are other important concerns related to unauthorized use with the use of blockchain identity, students can discover new opportunities to use the metaverse responsibly over the long term.

7. Metaverse Future in Education

As experts continue to create new types of connected devices, the metaverse will become increasingly accessible to the world. At the moment, mobile IoT and 5G network infrastructure have received substantial investments and are expected to grow rapidly over the next decade. As the metaverse concept starts to integrate Web3 technologies enabled through blockchain technology, the future metaverse will be something similar to our real world in many ways and even replace some real world activities (Suh & Ahn, 2022; Kraus et al., 2022).

Li and Xiong (2021) described the metaverse not as a technology, but an idea and concept that needs to be integrated into new technologies, social communication style, and digital living spaces that combine the virtual space and the visual world. The emergence of the metaverse represents how humans will change the way of future development through science and technology. It has a great impact on the teaching shown by digital media arts disciplines, and may change the teacher’s original teaching content design. For instructional design, the impact of changes in the technological environment must also be considered in order to achieve the goal of training applied design talent. Therefore, interest in the metaverse is of great importance to the professional development of digital media.

With all of the above, it can be said that the future ahead of the metaverse also encompasses the concept of open work creation, with almost no disruption from a single person, community or company. This is because creator contributions come from all over the world. Because various business brands want to bring customers to the wider metaverse world just like today's internet usage (Hirsh-Pasek et al., 2022).

8. Conclusion and Recommendations

From the foregoing, it can be concluded that the metaverse is a digital landscape that participants can use to create their own virtual environment. The metaverse offers a great way to learn interactively with others around the world. Anyone from anywhere can wear a VR headset or use a web browser to log in to the virtual space and communicate with others face-to-face. It is best to think of the metaverse as a virtual game in the real world which users and developers can customize to suit their content. Educators can develop metaverse schools or virtual stadiums on the property they own. Combined in the world that is being geographically divided by pandemics and other disasters, it is a way for families and friends to interact in digital ways.

The metaverse is currently a well-known entity that serves as a source of inspiration throughout the web or within applications for novel aspects of education. The impact of the COVID-19 epidemic has resulted in significant reforms being implemented in both the working environment and educational institutions. People are getting used to the idea that team meetings should replace socializing in the classroom and the office. The metaverse makes available endpoint hosting tools that are able to function in both a virtual and a social setting. Students are able to use VR when on school field trips, particularly during museum visits, therefore the metaverse also has a lot of educational potential. The finest part is that even their buddies who live in other places can participate in the education. By providing students with an experience that is both immersive and engaging, these metaverse tours can help students improve their learning journey by significant leaps and bounds. Students get the opportunity to discuss their experiences based on their cultural backgrounds and opinions. By exchanging ideas with their classmates from various nations and trying to see the world from their points of view, they can gain an understanding of how cultural differences are connected. The ability to mimic an endless amount of learning is the most beneficial aspect of education in the metaverse. In other words, pupils are able to learn without even being aware of it thanks to the collaborative efforts of their virtual characters while they focus on the job of the metaverse. When education is combined with enjoyment, it is most likely to be retained. Because of this, the metaverse can easily be incorporated into a school setting. After all, educational institutions that utilize the most recent digital advances stand out from the rest of the competition. It is anticipated that the introduction of the metaverse would lead to a more engaging learning experience for students, which will in turn assist drive their learning in online courses and lead to an increase in enrolment in institutions.

This article is meant for readers to understand the metaverse in terms of meanings, definitions, related technologies, advantages of metaverse in education, educational world change via the metaverse, potentials of the metaverse in enhancing learning capacity in the 21st century, and the future of the metaverse in educational applications. The authors concluded the metaverse's strengths for education with in-depth empirical research into its developments in support of learning. In this regard, educators, school administrators, teachers, technologists, educational innovators, evaluators and learners are all involved in the modern education systems for learners' knowledge and competencies as the ultimate goals.

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Sharing Professional Viewpoint: Digital Marketing Ethics in Tourism

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1. Introduction

The Covid-19 pandemic is currently affecting economic conditions worldwide. As international countries have varied their lock-down measures to control the outbreak, Thailand's tourism and hotel businesses have been slowed down in generating the main revenue for the country (Marketing Association of Thailand, 2022). Tourism operators have been severely affected by the covid-19 pandemic for over two years. As known to the public, the landscape of tourism in the future would take more time to fully recover after the pandemic crisis.

Thailand's tourism conditions have become fragile and volatile in tourism sector income in the post COVID-19 world, as they rely on the number of foreign tourists. Meanwhile, the recovery period will witness fierce competition among tourism business operators via digital transformation processes and channels to win over potential customers. The entire digital functioning of the tourism business has accelerated technology-based services from those providers concerned—ranging from the widespread use of the Internet for information search and reservation to experience sharing models.

2. Digital Marketing Ethics in Tourism

Since the use of social media for travel planning over the Internet is common among tourists in scheduling itinerary, booking travel tickets and accommodation, and arranging for desired activities. As known, online booking businesses are growing rapidly in support of customers' selection of tourist attractions and tour programs on digital platforms without space and time constraints. In such a scenario, digital marketing via websites marketing is meant to increase the number of website viewers, as well as to encourage their transactions through website channels for access to tour products and markets online. Their main purpose is to add likes, shares, and chats to create "life" in an online image. Customer relationships are currently managed on digital media transactions—resulting in the creation of promotional advertising programs, which increases the potential to market and target customers by audio and video communication via smartphones. Creating a good customer experience or "brand experience," primarily aims at strengthening customer relationships with target audiences. The most important thing for digital marketers is to build good relationships through attractive content for the target audience (Marketing Association of Thailand, 2022). Tourism businesses need to offer new marketing content that meets their customers' needs. Business operators are to create, mention, post and share contents accessible to recipients, particularly images or infographics and videos displayed to the public on various online media, especially Facebook, Instagram, Twitter, and YouTube.

The current problem facing Thai tourism—fragile because of the pandemic at the moment—appears to lie in over advertising expenses for those business operators who are still not quick enough to switch to digital marketing on a full scale. For those who have already been in the arena need to observe digital marketing ethics in tourism business. That is to say, the credibility of the brand in providing tourism services relies on professional ethics (Marketing Association of Thailand, 2022). The service brand can be trusted with business operators' honesty and fairness in providing tour packages that support customers' desired itinerary with reasonable accommodation, food services and trip activities of good quality. Tour operators could provide vaccination and hygiene care for tourists, but not tricking them with "free" additional packages that charge extra fees later on. Tour packages advertised via online media need specific information that would not be subject to interpretation; this is to avoid complications in service provision that may arise and negatively affect the brand image or credibility of the service provider. These issues are sensitive to trust and credibility of service providers in the tourism industry.

3. Action on Digital Marketing Ethics

Digital marketing can be operated ethically with business operators' awareness of the messages and illustrated pictures in that they be legal and fulfill customers' needs as promised. Honor, honesty, truth, and morality need to be expressed in marketing contents reflecting social responsibility and the principles of fair competition that are generally accepted in the tourism industry. And under the enforcement of the law, business operators are not able to display advertisements that cause misleading significance in essence regarding goods, services, performances or otherwise, or exaggerate their properties to mislead consumers. Distractions about the product or service may bring a detriment to professional dignity, because ultimately, a business or career essentially requires "ethics" and "social responsibility" in all created contents for dissemination to the public. Digital and creative advertising has its essence in professional ethics in accordance with the principles stated in the Act of Tour & Guide Business B.E. 2551 (2008) and Code of Conduct of Advertising Professions, Advertising Association of Thailand, B.E. 2554 (2014) (Office of the Council of State Law, 2008; Marketing Association of Thailand, 2022). These documents certainly guide tourism entrepreneurs to operate ethically in providing good quality products and services for all customers concerned in the sustainable direction of the tourism industry.

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- The latest date for submission of the first draft of the manuscript to be published in *RJCM* each year: (1) Number 1 in February, (2) Number 2 in June, and (3) Number 3 in October.

3. For Authors

Arrangement and Style of Manuscript

3.1 Paper and Page Setup:

Paper size: Standard A4

Top margin: 1 inch	Bottom margin: 1 inch
Left margin: 1.25 inches	Right margin: 1 inch
Header: 0.5 inch	Footer: 0.5 inch

3.2 Manuscripts of Original Articles, for both print and online versions, should be submitted in a WORD file of the A4-sized paper, using the Times New Roman (12-point font). Symbols used should be of a similar size and typed on the corresponding lines of text used in each section. Manuscripts of the original article should contain the following sections: title, author's name, author's workplace, abstract and keywords, the main text/ body text, acknowledgements, references, tables, figures, captions/legends and illustrations. Each page should be clearly numbered in the bottom center of each sheet. Authors should carefully edit and proofread their manuscripts before submission.

3.2.1 The title: The **title of the article** must not exceed 2 lines. A title itself has to be informative and indicates the main topic in the article. The title should be set in the center of the page, using upper and lower case letters of Times New Roman 12 points and printed bold. If there is any symbol, its size must be the same as the text in that line.

3.2.2 Author's name: The author's name and last name are in Times New Roman 11 points in upper and lower case letters in the center of the page below the title of the article. In the case of multi-authorship, identify each author by superscript numbers at the end of the author's last name.

3.2.3 Author's workplace: The workplace (address of the institution) of the author and/or the group of the authors, are in regular Times New Roman 10 points in upper and lower case letters in the center of the page. In case of multi-authorship, please superscript numbers in front of the entire author's name. The e-mail address and telephone number of the corresponding author should also be included here.

3.2.4 Abstract and Keywords: The abstract and key words are in Times New Roman 11 points. They must be single-spaced under the author's workplace and separated from the bottom line of the author's workplace.

3.2.4.1 Abstract should be informative and state what was done, obtained and concluded. It should be accurate, self-contained, concise and specific, coherent and readable, and reflect only what appears in the original paper. An abstract should contain the following basic components: (1) purpose/motivation/problem statement, (2) methods/design/procedure/approach, (3) results/findings/products, (4) conclusion/applications/research limitations/implications (if applicable), practical implications (if applicable), pedagogic or social implications (if applicable), and (5) originality/value. The length of the abstract should be about 150 words and not exceed 200 words. Type the word "**Abstract**," using Times New Roman 11 points and print bold, left-hand justified. The abstract should be written in one single-spaced paragraph under the heading.

3.2.4.2 Keywords: Type the word "Keywords," using Times New Roman 11 points and in italics, left-hand justified, separated by a colon (:) followed by keywords written in English not over five words, and separate words by a comma (,).

3.2.5 The main text: The main text of the manuscript must be typed in WORD using Times New Roman 12 points, under an abstract and keywords with single-spaced line and separated from the above section. The main text of your paper should be divided into eight sections (see below), each with a separate heading. Headings are in bold letters, left-hand justified in the column. The first line of each paragraph should indent 0.5 inch from the left margin (of the page/of the right-hand column). Scientific names are normally shown in italics, and symbols must be the same size as the text in that line. The body of the text includes: (1) Introduction, (2) Research Objectives, (3) Research Methodology, (4) Results and Discussion, (5) Conclusion, (6) Acknowledgement, (7) The Author, and (8) References.

3.2.6 In-text Citations: Authors are to give references to all the information obtained from books, papers in journals, websites, or other sources. The Author-Date System should be used to cite references within the paper by using the author's last name and date (year), separated by a comma in parentheses; for example, name(s), year.

3.2.7 Tables and Figures:

3.2.7.1 Tables: The large-sized table format should not be split into two columns but small-sized table can be fit into the column. Each table must be titled, numbered consecutively and complete with heading (title with a description that goes above the table). The word "**Tables**," including number should be typed using Times New Roman 11 points and bold, left-hand justified, and follow by regular 11 points Times New Roman for the heading.

3.2.7.2 Figures: Line-drawn graph or Figure (in black) is accepted. Also, in the case of photographs, glossy photographic prints, 3.5 x 5.0-inchs, should be submitted concurrently. Similar to tables, large-sized figure format should not be split into two columns but small-sized figure can be fit into the column. Each figure must be numbered consecutively and complete with caption under the figure. The word "**Figure**," including number should be typed using Times New Roman 11 points and bold, left-hand justified, and followed by regular 11 points Times New Roman for the caption.

3.2.8 Symbols and Units: Every used symbol must be defined in the text and written in the simplest possible way.

3.2.9 Numbering Pages: Manuscript pages must be consecutively numbered throughout the paper except the first page in the bottom center of the page, using bold Times New Roman 12 points.

3.2.10 Reference Lists: The final page contains a list of resources cited in the paper. The style of citations used in RJCM should conform to the American Psychological Association (APA). It is the author's responsibility to ensure the accuracy of all references cited in the paper. References should be listed in alphabetical order using regular Times New Roman 11 points.

3.3 Guideline to References

Abstract

Format:

Author.//(Year of publication).//Title of Abstract (abstract).//*Journal Title, Year,Volume(*Number), /Page number.

Example:

Osti, L. & Cicero, L. (2018). Tourists' perception of landscape attributes in rural tourism (abstract). *Worldwide Hospitality and Tourism Themes, 2018, 10*(2), 211.

Books

Format:

Author.//(Year of publication).//*Title*.//Edition (if any).//Place of publication: Publisher.

Example:

Wallace, M. & Wray, A. (2016). *Critical Reading and Writing for Postgraduates.* Third edition. Thousand Oaks, California: Sage Publications Inc.

Book Articles

Format:

Author.//(Year of publication).//Article Title.//Editor(s) (if any).// *Title of book*.//Edition (if any).//Place of publication:// Publisher,/Page Numbers.

Example:

Hickman, G.R. (2010). Concepts of leadership in organizational change. In Preedy, M., Bennett, N. & Wise, C. (Eds). (2012). *Educational Leadership: Context, Strategy and Collaboration.* Thousand Oaks, CA: SAGE Publications Inc., 67-82.

Conference and Seminar Proceedings
Format:
Conference or Seminar Organizer.//(Year of publication).//*Name of conference,/ Conference date.*//Place of publication (if any):/Publisher (if any).

Example:
Jareonsubphayanont, N. (2014). The international student policy in Thailand and its implication on the 2015 ASEAN Economic Community. *Southeast Asian Studies in Asia from Multidisciplinary Perspective International Conference*, March 2014, Kunming, China.

Dissertation or Thesis
Format:
Author.//(Year of publication).//Title of dissertation or thesis.//Type of Thesis.//Awarding Institution.
Example:
Ua-umakul, A. (2017). The Effects of the Counseling-Based Method on Physics Learning Achievements of Upper Secondary School Students: An Area Focus on Momentum. A Dissertation for the Degree of Doctor of Education in Educational Studies. The Graduate School, Rangsit University.

Editorial
Format:
Author.//(Year of publication).//Title of Editorial (editorial).//*Journal Title,/Year (Volume if any),*/Page numbers.
Example:
Fisher, R.I. (2003). Immunotherapy in Non-Hodgkin's lymphoma: Treatment advances (editorial). *Semin Oncol 30, 2003* (2Suppl 4), 1-2.

Journal Articles
Format:
Author.//(Year of publication).//Article Title.//*Journal Title.//Year/Volume*(Number),/Page numbers. Doi number (if any).

Example:
Srichandum, S. & Rujirayanyong, T. (2010). Production scheduling for dispatching ready mixed concrete trucks using bee colony optimization. *American Journal of Engineering and Applied Sciences, 2010, 3*(1), 823-830.

Trongratsameethong, A. & Woodtikarn, P. (2019). Thai QBE for Ad Hoc Query. *Journal of Technology and Innovation in Tertiary Education, 2019, 2*(2), 1-24. doi 10.14456/jti.2019.7

Letter
Format:
Author.//(Year of publication).//Title of Letter (letter).//*Journal Title,/Year (Volume if any),*//Page number.
Example:
Enzensberger, W. & Fisher, P.A. (1996). Metronome in Parkinson's disease (letter). *Lancet, 1996, 347*, 1337.

Unpublished/In press Article
Format:
Author.//(In press Year).//Article Title.//*Journal Title./*(in press).
Example:
Veena, B. (2004). Economic pursuits and strategies of survival among Damor of Rajasthan. *J Hum Ecol*. (in press).

Websites
Format:
Author.//Title.//(Online).//the full address of the web page, accessed date.
Example:
Charlotte, B. Quotes about Action Learning. (Online).
http://www.goodreads.com/quotes/tag/action-learning, January 18, 2017.

3.4 Manuscripts of Brief Professional Viewpoints for Sharing

The length of Brief Professional Viewpoints for Sharing is about 8-10 typed A4 pages. Its content should be arranged as follows: **title**, **name of the author, name and address of the institution**, **3-5 keywords**, **body text**, **the author's biography** of 50-80 words, and **references**. The format, font, and font size used in each section correspond to those in the section of **3.2. Manuscripts of Original Articles**.

3.5 Reprints

During the first two years of publication (2020-2021), authors will receive one free copy of the journal.

RJCM Publication Ethics

RICE Journal of Creative Entrepreneurship and Management (RJCM) has policies on publication ethics after the guidelines given by Committee on Publication Ethics (COPE) <https://publication ethics.org>. Publication ethics policies mainly involve duties of (1) Authors, (2) Editors, and (3) Reviewers.

Authors:

Authors or paper contributors shall not submit simultaneous or duplicate manuscripts. It is imperative that authors submit work of original investigation and acknowledge concepts, research methodology and findings of preceding authors or researchers by giving proper references. If required, authors need to seek permission for the use of specific data or adaptation of research methodology as well as provide evidence on approval of professional ethics in the selected field of study. Plagiarism of all kinds is unacceptable and will result in paper rejection and permanent dismissal by *RJCM*. Authors shall be solely and fully liable for all viewpoints and research components used in published papers.

Editors:

The editors are to ensure transparency in the publication policies, communication with corresponding authors regarding submission, response on paper acceptance/ rejection, and notification of double-blinded review results for paper revision. In particular, the editors shall not consider multiple submission or redundant publication. The editors shall provide information on the *RJCM* website on ownership, editorial board, publication policies, publication schedule, data access and sharing, pre- and post-publication contacts—ranging from inquiries from paper contributors, correspondence, requests for clarification, comments for paper revision, to complaints or appeals, if any. The editors reserve the right not to deal with allegations of research misconduct from any party concerned under the condition that concrete evidence is found for the act of malpractice.

Reviewers:

Reviewers are in the double-blinded peer review process in evaluating submitted papers on the basis of criteria established by the editorial team. Reviewers shall remain anonymous to the authors whose papers are under review. It is imperative that reviewers' decision on paper revision or rejection be justified by constructive comments or suggestions, as guided by professional ethics in selecting scholarly work for publication. Given comments must be written in an objective and professional manner without sarcasm or severe criticism. Reviewers shall keep their reviews strictly confidential in all circumstances.

RJCM Call for Papers

RICE Journal of Creative Entrepreneurship and Management (RJCM) is an international journal for academics and scholars at the higher education level to communicate and share their viewpoints and academic work with fellow professionals in the areas of creative entrepreneurship and management as practiced in their fields of specializations in social sciences. Currently, it is classified as Tier 2 in Thai-Journal Citation Index (TCI).

RJCM publishes three numbers per volume annually and welcomes contributors to submit their manuscript in January, May, and September of each year. We accept both academic and research papers in social sciences from contributors. The papers are double-blind three-peer-reviewed in each volume and published online-plus-print thrice a year.

The length of the unformatted manuscript in WORD can be 15-25 pages in length including references. The contents of the manuscript should include (1) a title with the author's name, affiliate, email address and telephone contact, (2) an abstract of 150 words with 3-5 keywords, (3) an introduction, (4) a rationale and background of the study, (5) research objectives, (6) research methodology, (7) data collection procedure, (8) data analysis, (9) results and discussion, (10) research limitation (if any), (11) conclusion, (12) acknowledgement(s) (if any), (13) the author's biography of about 50-80 words, (14) references, and (15) an appendix or appendices (if any).

All interested readers and paper contributors please contact Editor-in-Chief: Ruja Pholsward, Ph.D., Associate Professor, Rattanakosin International College of Creative Entrepreneurship (RICE), Rajamangala University of Technology Rattanakosin (RMUTR) <rujajinda@gmail.com>, <ruja.pho@rmutr.ac.th>. Please check *RJCM* Publication Policy as guidelines to paper submission. Website submission will be advised after the first editorial screening.