

Structural Equation Model Development of Factors Affecting Users' Participation in News Reporting on Thai Crowdsourcing Platforms

Kultida Sayprom^{1*} and Patchanee Cheyjunya¹



¹ Graduate School of Communication Arts and Management Innovation, National Institute of Development Administration, Bangkok, 10240

* Corresponding author: E-mail address: kultida.say@stu.nida.ac.th, kultida.s@rmutp.ac.th

(Received: June 2, 2022; Revised: August 8, 2022; Accepted: August 9, 2022)

Abstract

The research is aimed to develop a structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms. The model 7 latent variables: personal motivation, perceived benefits, perceived ease of usage, interaction between a process/content manager or crowdsourcer and users, organizational factors, determination to participate, and users' participation. Quantitative research was conducted by survey questionnaires with 100 samples who were members of C-Site and Hatyai City Climate Platforms. The findings showed that the developed structural equation model was congruent with the empirical data by having 7 pass the determined statistical criteria, namely 1) Chi-Square: $\chi^2 = .170$ ($> \text{or} = 0.05$), 2) $\chi^2/\text{df} = 1.122$ ($< \text{or} = 3.00$), 3) Comparative Fit Index (CFI) = .988 ($> \text{or} = 0.95$), 4) Tucker Lewis Index (TLI) = .984 ($> \text{or} = 0.95$), 5) Root Mean Square Residual (RMR) = .028 (< 0.05), and 6) Root Mean Square Error of Approximation (RMSEA) = .035 (< 0.05). From the analysis of direct, indirect, and total effect of variables in the structural model, it is found that the causal model of users' participation in news reporting on Thai crowdsourcing platforms, developed by the researcher, is congruent with the empirical data, and only one causal variable, namely intention to participate, has a positive direct effect on users' participation in news reporting at a statistical significance level of 0.01.

Keywords: Crowdsourcing, Participation, News Reporting, User, Structural Equation Modeling

Introduction

Crowdsourcing, in the context of news reporting, is a systematic process of online information gathering from the masses by investigating and verifying facts towards information correctness and accuracy. Masses of people function to report their collected information and help to clarify all complicating issues without necessarily being trained [1]. Besides, from the empirical study of Aitamurto [2], it was found that news reporters could use information from mass citizens for their investigation and also sought additional information from these people too, which led to the rapid discovery of knowledge. Moreover, news reporters can invite people in the community to participate in their investigative journalism process whose purpose is to gain quality information sources and make use of the collective wisdom of the civic sector. It thus means they can draw collaboration and wisdom of people in a community to help solve problems or conduct any activity as their news reporting covers inclusive and diverse perspectives. Especially, it enables the ignored voices to have a sphere for their expression [3-4].

To illustrate this, the PetaJakarta.org platform in Indonesia allowed Indonesian citizens to participate in reporting their current situations, helping to surveillance, and forewarning

about flooding from 2013 to 2016 through a system that collected all reported flooded sites and events by citizens. A map of real-time flooding situations in Jakarta thus was drawn and used to provide information about the level of flooding. Similarly, the Sinsai.info website was introduced in Japan four hours after the gigantic earthquake in the eastern part of Japan. In 2011, it was found that digital volunteers helped to proceed and investigate the correctness of information reported via Twitter and emails, including recording information on online warning maps. The information included official government announcements, lists of the deceased and missing persons, requested help, information about contemporary residences, etc. All information helped the public to be informed of the damages and needs of each area rapidly and inclusively [5-6]. In Thailand, JS 100 radio station started to let the public sector participate in reporting current traffic jams in 1991 by phone-in and live to report, including notifying accidents, needed assistance, and collaboration. During the initial period, it was criticized that participation was limited only to middle-class people. However, later, a more variety of groups of people have participated and news content has been expanded to cover more diverse news, i.e., accidents, public hazards, civil services, etc. The expanded communication channels do not only reflect people's curiosity about information sharing, but also horizontal communication in which people and professional news reporters can collaboratively gather and disseminate useful news for society [7]. Accordingly, it does not only bring about innovation to the mass media circle, but also increases mass media's awareness of the shared agenda to which a society should give importance, pay attention, and enhance the collaborative gathering and the creation of useful information for public benefits. Hence, it will arouse more attention to information sharing, including inducing a transparent and auditable system [4].

www.thaiflood.com or an information center for helping flood victims is an example of an effort in developing a platform for online news producers. These organizations collaboratively prepared a platform for providing basic and needed information during the big flood crisis in 2011. They also display a crisis map and gather information, including assistance, from the public sector, in the form of information notification, pin location, mobilization of all forces, ignition of new ideas or issues, and problem resolution during natural disaster situations happening in Thailand. Although all these platforms are easy to use, contain a clear reporting format, and reflect the power of people's participation in public hazard situations, they tend to be discontinued and close themselves later.

From the survey of Thai crowdsourcing platforms, it was found that there have not so many permanent platforms. Most of them are online platforms designed for a certain period or particular situations only. To illustrate this, VOTE 62 (<https://vote62.com/>) was a platform

providing services in checking the database of the House of Representatives applicants and reporting the informal election results throughout the country in 2019. Likewise, the platform called “Mask Map Thailand “(<https://maskmapthai.web.app/>) was introduced during the shortage of surgical masks that were highly needed at that time due to the epidemic of COVID-19 in 2020.

However, the abovementioned platforms differ from the C-Site platform, developed by public media organizations like Thai PBS, which opens an opportunity for the public sector to participate in news reporting continually on various issues, i.e., incidents, disasters, lifestyles, the epidemic of COVID-19 in the form of texts, still pictures, video clips, hashtags, and map pins. All information will be coded in a geocode form and the results will be displayed on a map. Users can access to see where each piece of news happens or which issue it involves. Thus, it helps general people to communicate with their society timely, especially during a public hazard or disaster. Besides, it encourages collective thinking and content design, up to the level where general people can generate their news or co-create news with TV stations.

On the part of people as the civic sector (civil society), new community platforms are also created with similar functions. An example is the Hatyai City Climate Platform for flood surveillance and forewarning in the area of Hat Yai District, Songkhla Province, and the lowland of the U-Tapao Canal. The platform is operated by the civic sector of Hat Yai District under the management of the Southern Cities Climate Change Resilience Networks Foundation (SCCCRN) in collaboration with other related organizations and agencies, such as Asian Cities Climate Change Resilience Network (ACCCRN), Thailand Environment Institute (TEI), Rockefeller Foundation, Hat Yai City Municipality Office, the Department of Disaster Prevention and Mitigation, the Southern Eastern Meteorological Center, the Songkhla Chamber of Commerce, Public Relations Department of Thailand, etc. Normally, people reported situations occurring in their areas all the time, in both normal situations with no flood-related activities and during the surveillance of flooding and flooding situations. After opening the said platform for a year (from July 2011), there were 800,000 visitors or approximately 2.5 visits. Such a platform played a part in supporting the success of Hat Yai Municipality in forewarning and operation during the flood situation at the end of 2011 and early 2012.

Although in the process of crowdsourcing, competency in technology is a tool for raising the level of collaboration in news reporting that has never happened before, or it is used as a center for information and knowledge sharing among people of different backgrounds and from different areas, “the online masses” are the key elements of a crowdsourcing process [8]. Besides, from the study by Sharma [9], the masses’ motivation (or expectation towards operation outcome), the expectation of the effort, social influence, and operation

support conditions were found to be key factors of successful crowdsourcing, whereas vision and strategies, human capital, infrastructure, connectivity and credibility, and external environment were found to be external factors. Moreover, Hossain [8] found that proper motivation for driving the masses to participate in the crowdsourcing platform were both internal and external motivations (i.e., monetary, social, and organizational motivation), which is similar to the findings from the study of Sukthong [10], which found that both internal and external motivations affect the use of crowdsourcing. Besides, it was found that crowdsourcing facilitates users' learning as it is convenient for use and can respond quickly, provides flexibility, and is reliable. All of these factors affect the masses' intention in applying to crowdsourcing.

Another remarkable and interesting issue of a crowdsourcing process is its potential in mobilizing a large number of people to participate in establishing a prosperous, strong, and united society, or so-called network society, which means a society with a connected structure operating through information and communication technology. Hence, it can provide benefits for human resources through the use of the internet [1, 11]. Additionally, the overwhelming work in hand can be distributed to several small sectors for collaborative working, which affects management and problem-solving at various levels: community, social, and national levels. Most of all, it does not only make potential work to be successful but also brings about amusement while working.

Accordingly, this study aims to answer which factors can predict users' participation on the crowdsourcing platform in Thailand, which will lead to the design of participation development in a crowdsourcing process for the masses as citizens. As a result, it will lead to social mobilization through the use of information and knowledge, based on collective intelligence, including quality and reliable news reporting to increase people's adaptation and resilience capabilities to any coming public hazard, which are crucial indicators of human survival amidst such a risky society.

Research Objective

To develop a structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms.

Methodology

Population and Samples: The study is quantitative research conducted by survey questionnaires. The population of the study is 13,098 people who subscribed to be members of the C-Site platform and 2,124 of the Hatyai City Climate platform, a total of 15,222 (Information

as of April 20, 2021). The criterion for determining the sample size for the analysis of the structural equation model is based on the criteria of Bentler and Chou [12], which say that sample size can be reduced to 5:1, which is the proportion between sample units and observed variables. For this study, there are 19 observed variables; thus, at least 95 samples will be a proper and sufficient size for the analysis by structural equation modeling. However, Ding, Velicer, and Harlow [13] and Schumacker and Lomax [14] offer that the lowest acceptable number of samples should be no lower than 100, the samples of this study are 100. Besides, non-probability and quota sampling were conducted purposively with persons who subscribed for C-Site or Hatyai City Climate platform membership. The number of samples of both groups was based on the number of each platform's population proportionally, namely 70 samples from C-Site platform members and 30 samples from the Hatyai City Climate platform.

Research variables: The variables for this study, which were synthesized from a literature review, i.e., the concept of crowdsourcing in the context of news reporting, the concept of participatory communication, public mind, and public space or sphere, motivation theory and personal motivation concept, technology acceptance model and related theories and in-depth interviews with groups of key informants or interviewees: 1) Crowdsourcers, 2) experts or scholars in the field of digital journalism, and users who were members and used to participate in news reporting on either the C-Site or Hatyai City Climate platforms, are as follows: 1) Exogenous variables: 5 variables, namely Personal motivation, perceived usefulness, perceived ease of use, the interaction between crowdsourcer and users, and organizational variables, and 2) Endogenous variables: 2 variables, namely users' intention to participate in news reporting on Thai crowdsourcing platforms and users' participation in news reporting on Thai crowdsourcing platforms.

Research Tools and Quality Validation: Questionnaires were research tools used for this study, which were validated for 1) content validity by 3 experts. Then, the Index of Item-Objective Congruence (IOC) was tested and the result passed the determined criteria or the IOC is over .50. 2) Reliability of the improved questions with rating scales in Part 3-4 was tested by Cronbach's Alpha Coefficient to find the congruence of the questions in the questionnaire with 30 samples who were not actual samples. The size of the samples was found to be appropriate and sufficient for a statistical test since the level of reliability is between 0-1. 0 means the measurement tool is unreliable while 1 means the measurement tool is 100% reliable or has no variance at all. Nevertheless, it is very difficult to have any measurement tool that can reach 100% reliability. Thus, a reliability coefficient of 0.7 (or 49%) or higher is considered acceptable [15-16]. From the reliability test of the questionnaire of this study, the coefficient alpha of each part is as follows: Personal motivation .939, perceived

benefits of system application .857, perceived ease of usage .845, the interaction between a crowdsourcer and users .874, organizational factors .944, determination to participate .861, and users' participation in news reporting .952. Accordingly, the questionnaire is acceptable and reliable.

Data Analysis: Statistics for analyzing the constructed structural equation model to verify the congruence between the structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms with the empirical data was applied. From the statistical test, 9 indices are found to be congruent with the empirical data as follows: 1) Chi-Square: $\chi^2 > 0.05$, 2) $\chi^2 / df < 3.00$, 3) Goodness of Fit Index (GFI) > 0.95 , 4) Adjusted Goodness Fit Index (AGFI) > 0.95 , 5) Comparative Fit Index (CFI) > 0.95 , 6) Normal Fit Index (NFI) > 0.95 , 7) Tucker Lewis Index (TLI) > 0.95 , 8) Root Mean squared Residual (RMR) < 0.05 , and 9) Root Mean Square Residual Error of Approximation (RMSEA) < 0.05 . In principle, if more than 3 indices pass the determined criteria, it means the model is congruent with the empirical data [17].

Findings

Before the analysis of the structural equation modeling, the following was validated: 1) Valid data by examining the completeness of the coded data to avoid missing data. It was found that all variables were coded completely, 2) data normality by analyzing its skewness and kurtosis, and the skewness was found to be from 1.073 to 0.076, and the kurtosis from -0.598 to 3.092. The overall result is from 2 to +2. In brief, almost all manifest or observed variables are normally distributed [18]., 3) the analysis of the relationship between variables by Bartlett's test. It was found that all variables are related at a statistically significant level of .05. After testing the appropriateness of variables that would be applied for confirmatory factor analysis by the Kaiser-Meuer-Olkin test, it was found MSA of the overall variables is .834, while from Barrett's Test of Sphericity, Chi-square is 1340.199 at a significance level of .01. From analyzing each variable, the correlation is between .673-.913, which is higher than .50 [19]. Thus, the studied variables are suited for confirmatory factor analysis.

Besides, from analyzing the measurement model, it was found that 1) the measurement model of all personal motivation variables is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is internal motivation. 2) The measurement model of all perceived benefits of system application variables is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is perceived use for work. 3) The measurement model of all variables of perceived ease of usage is congruent

with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is the perceived ease of the system. 4) The measurement model of all variables of the interaction between a crowdsourcer and users is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is participation in working. 5) The measurement model of all variables of organization factors is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is the credibility of an organization. 6) The measurement model of all variables of determination to participate is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is determination in news reporting. 7) The measurement model of all variables of users' participation in news reporting is congruent with the empirical data as it passes 7 from 9 determined congruency criteria, and the observed variable that has the highest factor loading is news reporting. Moreover, from the analysis of the construct reliability, Average Variance Extracted (AVE), and Cronbach's alpha coefficient, all measurement models were found to have construct validity at an appropriate level.

From the analysis of the structural model, it was found that the structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms is congruent with the empirical by having 6 indices pass the determined criteria: 1) Chi-Square (χ^2) = .170 (> or = 0.05) with no statistical significance, which means that the model is suited and congruent with the empirical data, 2) χ^2/df = 1.122 (< or = 3.00), 3) Comparative Fit Index (CFI) = .988 (> or = 0.95) 4) Tucker Lewis Index (TLI) = .984 (> or = 0.95) 5) Root Mean Square Residual (RMR) = .028 (< 0.05), and 6) Root Mean Square Error of Approximation (RMSEA) = .035 (< 0.05). From analyzing the direct, indirect, and total effect of all variables in the structural model, it was found that the developed causal model of users' participation in news reporting on Thai crowdsourcing platforms is congruent with the empirical data, but only one causal variable, namely determination to participate, is found to have a positive direct effect on users' participation in news reporting at a significance level of 0.01, as illustrated in Figure 1.

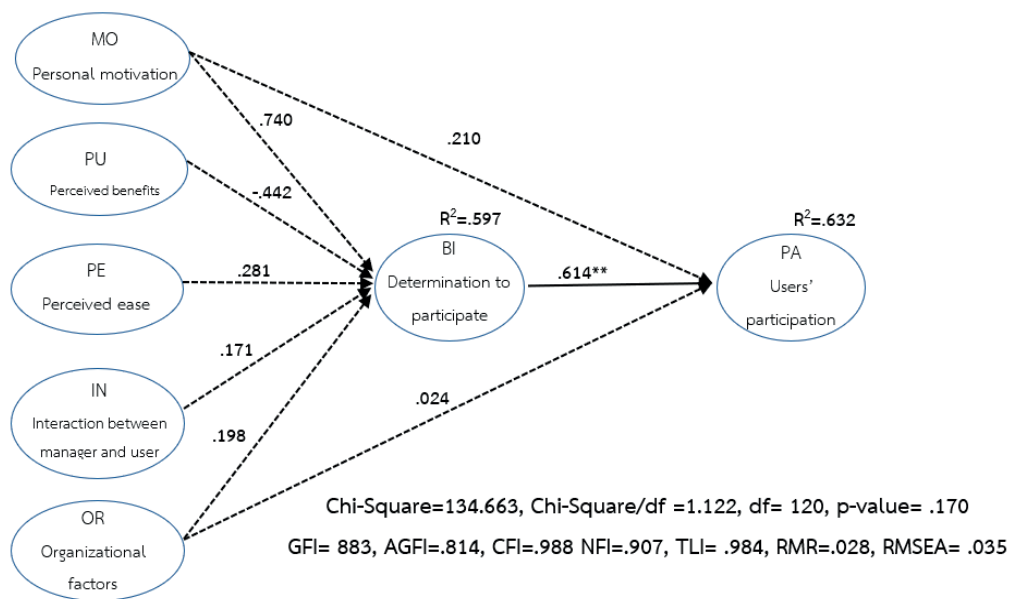


Figure 1. The analysis of the structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms

Discussion

From the study, it was found that the measurement model of all latent variables is congruent with the empirical data, which indicates that the model of all seven latent variables can measure each variable. Interestingly, each measurement model reflects latent variables of different levels of significance based on its factor loading which can be discussed as follows:

1) The measurement model of all personal motivation variables is congruent with the empirical data as it passes all determined congruency criteria, and the observed variable that has the highest factor loading is internal motivation. The finding accords with the study of Alam and Campbell [20], which found that the major drive that affects users' participation in text correction on Australian newspaper websites in a not-for-profit GLAM context (Galleries, Libraries, Archives, and Museums) is internal motivation. Such motivation is personal motivation comprising personal interest or volunteers' goal, trust, task orientation, commitment to help, challenging work, and interesting topics. Personal and community motivations are found to be initial and of utmost importance for users' participation in correcting texts. Furthermore, the study also confirms the finding of the study of Bhatti, Gao, and Chen [21], which points out that internal motivation arouses crowdsourcing operators since they do not always seek monetary rewards, but entertainment and self- skill improvement, including expressing their humanity for helping others in disasters and emergency incidents. Besides, they want to

alleviate or better their society. Similarly, the study of Nontapan [22] found that the appropriate internal motivation that can drive the masses or volunteers to participate in content creation for preparing a network map to surveillance and assist disaster victims in Songkhla Province is their pride to contribute benefits to their community. Thus, understanding what is the masses' motivation to participate enables an organization or any program planner to draw people to participate.

2) The measurement model of all perceived benefits of system application variables is congruent with the empirical data, and the observed variable that has the highest factor loading is perceived use for work. The finding accords with the study of Kiatpanont [23], which found that users accept the technology of “an innovative process for managing crowdsourced information” at a high level and one of the major factors enhancing their acceptance is the perceived benefits from the system, which helps them to work faster, increases work effectiveness and increase capabilities in yielding outcome and achieving goals, including being beneficial for their work.

3) The measurement model of all variables of perceived ease of usage is congruent with the empirical data, and the observed variable that has the highest factor loading is the perceived ease of the system. The findings accord with the study of Kiatpanont [23], *“An innovative process for managing crowdsourced information during disaster response,”* which found that users, who were practitioners of the Information Office, the Department of Disaster Prevention and Mitigation, Disaster Surveillance Center, Friend in Need of Pa Foundation, the Bureau of Disaster Prevention and Mitigation of BMA, and the Thai Red Cross Society, accepted the adoption of technology at a high level and one of the major factors inducing such an acceptance was the perceived ease of usage, the clarity, and understandability of the system. Likewise, Nontapan [22] found that the main principle for designing a surveillance network map and assistance for disaster victims program based on the crowdsourcing concept requires convenience and ease, which supported the study of Sukthong [10], which found that users' perceived quality of a system affects the determination in applying to crowdsourcing. The perceived quality of a system covers the convenient and easy use and can access to general web browsers.

Moreover, perceived benefits of the system application are found to be associated with the perceived ease of a system, as per the Technology Acceptance Model (TAM) modified from Model 1. The study found that factors influencing directly the determination of technology adoption are perceived benefits of the application and perceived ease of usage [24].

4) The measurement model of all variables of the interaction between a crowdsourcer and users is congruent with the empirical data, and the observed variable that has the highest

factor loading is participation in working. It is because online media attributes facilitate an interaction more easily, conveniently, and rapidly at all places and times. Such a finding is congruent with the study of Burarak and Nilaphatama [25], which found that journalists tended to interact with news owners by either asking for permission or asking for additional information. The delivery of broadcast news to owners is the way to establish relationships with citizens by using civic-sector news as a tool while working together. Furthermore, the study of Karlsson and Martinsson [26] reviewed the concurrent findings. Namely, participants' motivation occurred during the interaction between work proposers and participation in the crowdsourcing process. Besides, the relationship occurring at all stages of the process affected the participation in crowdsourcing activities. Thus, it indicates that the relationship at work is very essential. Moreover, the study pointed out that no relationship at work could induce a negative relationship and might affect participants' work quality as well. Therefore, work proposers have to suggest and coordinate with participants during the process. However, if the level of interaction between work proposers and participants is increased after the process, it may not heal the damaged relationship occurring during the process. Therefore, the lack of interaction can relatively affect participants' satisfaction negatively.

5) The measurement model of all variables of organization factors is congruent with the empirical data, and the observed variable that has the highest factor loading is the credibility of an organization, which is accepted and trusted by general people. Typically, public perception relates to what an organization acts and expresses, which affects its reputation. Per the study of Bhatti, Gao, and Chen [21], practitioners participated more in the crowdsourcing system if the requesters were honest and famous, especially during a crisis where people needed information provision and assistance. Thus, if initiators or work proposers are credible organizations, users will be confident that such organizations are ready for assisting disaster victims. Additionally, from the study by Sharma [9] entitled, "Crowdsourcing Critical Success Factor Model: Strategies to Harness the Collective Intelligence of the Crowd," it was found that credibility and proper connection might increase the masses' trust highly. For instance, the Ushahidi Platform, which was the popular crowdsourcing platform during the crisis, was supported and assisted by the Harvard Humanitarian Initiative (HHI) or the project relating to humanity and human rights projects of Harvard University, and the Organization for Economic Co-operation and Development (OECD). The external support received from world-class organizations helped to enhance the platform's credibility as it is the elevation that lets the whole world perceive and know the organization increasingly.

6) The measurement model of all variables of determination to participate is congruent with the empirical data, and the observed variable that has the highest factor

loading is determination in news reporting. According to Tankittipaporn [27], one of the key factors that can drive human behaviors is “determination.” Determination is found to affect the success of any activity. Highly determined persons tend to be motivated to do activities more than those with low determination. Similarly, the study by Zheng, Li, and Hou [28] found that the determination to participate was a key success indicator of participation in problem-solving via crowdsourcing platforms in the Republic of China.

7) The measurement model of all variables of users’ participation in news reporting is congruent with the empirical data, and the observed variable that has the highest factor loading is news reporting due to the growth of internet networks in Thailand, especially when websites have been developed fully towards Web 2.0 era, which enables internet users to participate in generating and transmitting their content into the system, including being able to share all kinds of information: texts, sound, still, pictures, moving pictures or video clips, etc. easily [29]. According to the study of Díaz et al. [30], Web 2.0 plays a role in supporting people’s participation as citizens widely, especially in the emergency context where people alter their behaviors towards more curiosity (positive view) in the form of participation freely. It is thus the fusion of citizens into a process of sorting and evaluating situations, goal setting, and strongly coordinated working for reducing the impact of a crisis [31]. This kind of participation in news reporting follows the goal of the crowdsourcing platform development for news reporting, which gives high importance to the public sector in collaboratively sharing their information, knowledge, and experience. Thus, it will lead to mobilizing issues for seeking ways to solve problems, which is the second level of people’s participation as news transmitters or generators [32-33]. Generally, in a process of open journalism, the public sector can participate in news reporting, not only in monitoring or drawing information from online media only [34].

For this study, the finding shows that the developed structural equation model is congruent with the empirical data; however, the overall relationship between variables was found to have no effect or influence before the model modification. However, from analyzing the effect of each variable in the model, it is found that only users’ determination to participate is found to have a positive effect on users’ participation in news reporting on the Thai crowdsourcing platforms. Hence, it indicates that users’ determination to participate in the main factor inducing people or users who are members to participate in news reporting on the Thai crowdsourcing platforms. Tangkitipaporn [27] states that determination affects the success of any activity. Persons with high determination can do activities more than those with low determination. Therefore, “determination” is a variable that can explain and predict human acts and behaviors. Furthermore, a determination is a criterion for judging if a person will or will not perform or act. If persons are determined to do something useful or that suits

their ability, he/she will have the determination to do such a thing successfully [35]. The notion accords with the study of Zheng, Li, and Hou [28], which found that determination to participate is a successful predictor of participation in problem-solving via the crowdsourcing platforms in the Republic of China.

Remarkably, the reason why most variables have no direct nor indirect effect on users' participation in news reporting on Thai crowdsourcing platforms may be that the model emphasizes the analysis of psychological factors, i.e., personal motivation, perceived benefits of system application, perceived ease of usage, and attitude towards an organization. Thus, the findings are as they were analyzed. However, when analyzing the external contexts that are social or surrounding factors of users, the following can be discussed:

1) The situational context during the data collection. Since the data collection of this study was conducted during the fourth period of the COVID-19 epidemic, which was a bad public health situation affecting human lives severely all over the world and people's emotions widely, especially negative feelings, i.e., anxiety, fear, sadness, anger, frustration, etc. These psychological states are the results of the confrontation with uncertainty, which is a drastic and dreadful threat [36]. From the study, although users perceived that the crowdsourcing platforms of both organizations could be used easily and useful, and they had a positive attitude towards the organizations who developed the platforms, they did not participate in news reporting. Possibly, it is because there are other more critical and urgent crises so users needed to evaluate the occurrences to see how and to what extent they would affect them and their surrounding people, including trying to seek ways to solve what happened. According to the Existence Relatedness Growth or ERG Theory of Clayton P. Alderfer, the more persons with low needs are responded to, the higher their needs will be [27, 37]. However, under such a circumstance, even a person's existence needs, which can be classified as the lowest level, are responded to slightly. Therefore, it makes the need for participation in news reporting on Thai crowdsourcing platforms, which is a need at a higher level, as it is social and growth needs, low too. Such a notion accords with the study of Nontapan [22], which found that key success factors of preparing a surveillance network map for helping disaster victims through a crowdsourcing process depend on the appropriateness of operation time based on the situation that can stimulate people to participate.

Notably, during early 2019 when a tropical storm or cyclone Papuk occurred, a lot of people participated in reporting the situation and map pinning on the C-Site platform vigorously, but it is different in the situation of the COVID-19 epidemic as it is a virus infection that has caused one of the largest epidemics in the world and has still been a puzzle that is analyzed in the laboratory. The United Nations Development Programme (UNDP) raises

this public health crisis as the most gigantic challenge human beings have ever faced since the second world war, and as a result, it leads to severe economic and social crises in human history [38]. Accordingly, people pay attention to following the occurring situations for their evaluation, decision-making, and expectation of possible impacts in the future rather than participate in news reporting of different issues. According to Walaisathian et al [39]; and Merrill-Sands (as cited in Pattanapongsa) [40], the economic and physical environment needs to facilitate people's participation.

Moreover, Hatyai City Climate Platform has been operated since 2011 as a communication channel during the floods; however, all through these 10 past years there have been no floods in Hat Yai, Songkhla again. Thus, from the quantitative research, it was found that most samples who had been platform members for more than 5 years so most of them have not participated in news reporting so much. Especially, during the COVID-19 epidemic where social distancing is required, the operation for arousing motivation in the target areas of both organizations is relatively little.

Hence, although users may have personal motivation, and perceive system application as easy and useful, including having a positive attitude towards organizations, the COVID-19 epidemic situation may cause the factors as predicting variables to have no association with users' participation. Based on the concept of Tangkittipaporn [27], situations in a different environment may cause different motivations. Some situations may make people excited or encourage people to do activities, while some situations may make people confused, dazed, or discouraged. Therefore, the situational context is a major component that motivators should consider when they want to mobilize people to express their behaviors.

2) The competitive context of crowdsourcing platforms. Though general people perceived the benefits and ease of the application on the crowdsourcing platforms of both organizations, some other platforms were performing similar functions that could respond to people's needs during the crisis as well. Thus, in the real situation, both C-Site and Hatyai City Climate did not stand alone but had to compete with other platforms in responding to people's needs simultaneously. Comparably, it was found that although both platforms are good and convenient, they may not be able to respond to people's needs during the COVID-19 epidemic due to their risky and uncertain conditions. From the study, it was found that there have been several developed crowdsourcing platforms that help to facilitate people to handle the COVID-19 effectively, including reducing risks in many aspects, such as the identification of coordinates and detailed information of the infected in Thailand, the display of risky areas, the verification of coordinates of important places (i.e., field hospitals, waiting or housing sites, COVID-19 test sites, temples, crematoriums, etc.), SOS, and volunteers

application, such as Jitasa. care platform (<https://www.jitasa.care/>) of the Care Project Foundation, Thailand, so users can ask for assistance (i.e. basic information, coordinates, and contact telephone numbers) Besides, they also provide help, i.e., Fight Covid Platform (<https://www.verblick.org/covid19/#>) for users to add information and coordinates of surgical masks and alcohol distribution places so that users can buy them directly from such places without wandering to find them. Correspondingly, both C-Site and Hatyai City Climate were not chosen for use during this epidemic period. Therefore, the main variable for users' participation is users' expectation of needs response that can satisfy them and further their use of the platforms.

Still, it should be aware that crowdsourcing platforms developed during the COVID-19 epidemic may not be permanent platforms that can draw users' participation in the long term like the platforms that are case studies of this study. Therefore, it is remarkable if and how personal motivation, perceived benefits of system application, perceived ease of usage, the interaction between crowdsourcer and users, and organizational factors will affect users' participation in news reporting on Thai crowdsourcing platforms during normal situations.

3) Perceived benefits and actual usability of big data in the crowdsourcing system. If the compilation of large-sized data is not analyzed for finding ways to solve problems or for community development, such big data seems to be useless. Therefore, initiating organizations must create an awareness that crowdsourcing platforms for news reporting are an important database that everybody should access and can make use of since they are the database that can identify coordinates that connect with local geographical and phenomenal information. Then, it can combine and reflect the problems and needs of people in each area. Hence, besides realizing the value of information from the civic sector, initiating organizations have to understand the uses of such information as well. Most of all, they have to ensure people that the collected big data will be analyzed for solving problems and developing the community and society. Without effective communication in creating people's conscience about their shared database as crucial resources, people will continue posting and sharing general information on social media as they perceive no value or benefits of participating in news reporting on the crowdsourcing platforms. Therefore, to buoy people to see the value of their work is one of the guidelines for creating participation as proposed by Walaisathian et al [39]; and Merrill-Sands (as cited in Pattanapongsa) [40].

Recommendation for further studies: The findings show that the structural equation model of factors affecting users' participation in news reporting on Thai crowdsourcing platforms is congruent with the empirical data as confirmed by the congruency of the measurement model of all variables (7 variables) with the empirical data. However, from analyzing each variable, it is found that only users' determination to participate has a positive effect on

participation. Therefore, it is recommended that the position of exogenous latent variables and mediators be adjusted or switched to test which variable or factor can yield a direct or indirect effect on users' participation in news reporting on Thai crowdsourcing platforms to confirm the findings of this study and to achieve more inclusive findings.

References

- [1] Howe, J. (2011). *Crowdsourcing: Million clicks to change the World*. Translated from crowdsourcing. Srinual Lueksirinukul (Trans.). Matichon.
- [2] Aitamurto, T. (2016). Crowdsourcing in open journalism: Benefits, challenges, and value creation. in *The Routledge Companion to Digital Journalism Studies* (pp. 185-193). Routledge.
- [3] Disayawattana, C. S., & Permpool, C. (2014). *Principles of convergence journalism*. Double Click. (In Thai)
- [4] Ramasoota, P., & Tongnok, T. (2020). *The fifth estate: From civic media auditors to online citizens*. Foundation for Democracy and Development Studies.
- [5] Song, Z., Zhang, H., & Dolan, C. (2020). Promoting disaster resilience: Operation mechanisms and self-organizing processes of crowdsourcing. *Sustainability*, 12(5), 1862.
- [6] Chantra, T. (2021). Digital volunteers and disaster management: Experiences from the great East Japan earthquake. *Journal of Liberal Arts, Maejo University*, 9(2), 238-253. (In Thai)
- [7] Charoenwong, M. (2019). *Citizens create media, media creates citizens*. Parbpim. (In Thai)
- [8] Hossain, M. (2012, May). Users' motivation to participate in online crowdsourcing platforms. In *2012 International Conference on Innovation Management and Technology Research* (pp. 310-315). IEEE.
- [9] Sharma, A. (2010). Crowdsourcing critical success factor model: Strategies to harness the collective intelligence of the crowd. *London School of Economics (LSE), London*.
- [10] Sukthong, P. (2012). *Crowdsourcing for organization problem-solving*. (Master's thesis, Thammasat University). (In Thai)
- [11] Nedpogaeo, A. (2018). *Mediumology: Principles, concepts, and innovation*. Nakorn. (In Thai)
- [12] Bentler, P. M., & Chou, C. P. (1987). Practical issues in structural modeling. *Sociological Methods & Research*, 16(1), 78-117.
- [13] Ding, L., Velicer, W. F., & Harlow, L. L. (1995). Effects of estimation methods, number of indicators per factor, and improper solutions on structural equation modeling fit indices. *Structural Equation Modeling: A Multidisciplinary Journal*, 2(2), 119-143.
- [14] Schumacker, R. E., & Lomax, R. G. (2010). *A beginner's guide to structural equation modeling*. (3rd Ed). Psychology Press.

- [15] Makphanthong, C. (2016). *Communication research*. Chulalongkorn University Press. (In Thai)
- [16] Stapitanonda, P. (2014). *Communication research methodology*. (7th Ed.) Chulalongkorn University Press. (In Thai)
- [17] Kaiwan, Y. (2013). *The analysis of structural equation modeling by AMOS*. Chulalongkorn University Press. (In Thai)
- [18] Tabachnick, B.G. & Fidell, L.S. (2007). *Using Multivariate statistics*. New York: Allyn and Bacon.
- [19] Hair Jr., J. F. et al. (2019). *Multivariate data analysis with readings*. Pearson College.
- [20] Alam, S. L., & Campbell, J. (2012). *Crowdsourcing motivations in a not-for-profit GLAM context: The digitisation of the Australian newspaper program*. Paper presented at the Australasian Conference on Information Systems, Geelong.
- [21] Bhatti, S. S., Gao, X., & Chen, G. (2020). General framework, opportunities and challenges for crowdsourcing techniques: A comprehensive survey. *Journal of Systems and Software*, 167, 1-27.
- [22] Nontapan, P. (2014). *Applying a crowdsourcing approach for the development of monitoring and mitigation network map in Songkhla province*. (Master's thesis, Prince of Songkhla University). (In Thai)
- [23] Kiatpanont, R. (2015). *An innovative process for managing crowdsourced information during disaster response*. (Doctoral dissertation, Chulalongkorn University). (In Thai)
- [24] Mankijjakan, B. (2017). *Structural equation model of factors influencing acceptance of government electronic payment system among Elderly in Bangkok*. (Master's thesis, National Institute of Development Administration). (In Thai)
- [25] Burarak, P., & Nilaphatama, S. (2019). Citizen material management in the news of mass media. *Academic Journal of Humanities and Social Sciences Burapha University*, 27(53). 109-131. (In Thai)
- [26] Karlsson, M., & Martinsson, Å. (2014). How can the relationship be a motivator?: A Qualitative study of motivation towards crowd-sourcing. (Bachelor's thesis, Linnaeus University).
- [27] Tangkittipaporn, J. (2013). *General psychology*. Chulalongkorn University Press. (In Thai)
- [28] Zheng, H., Li, D., & Hou, W. (2011). Task design, motivation, and participation in crowdsourcing contests. *International Journal of Electronic Commerce*, 15(4), 57-88.
- [29] Ramasoota, P. (2013). *Internet content monitoring*. Chulalongkorn University Press. (In Thai)
- [30] Diaz, P., Aedo, I., Arias, R., & Díez, D. (2012, May). Towards emergency 2.0: Social media and civic engagement in emergency management. In *Proceedings of the Workshop on Large Scale Ideation and Deliberation Systems* (p.4), Marseille, France, 29 May 2012.

- [31] Techaprasertsakul, N. (2013). *New media and the building of citizen engagement during the 2011 flood crisis*. (Master's thesis, Chulalongkorn University). (In Thai)
- [32] Asawin Nedpogaeo (2021). *Communication, innovation, and locality*. Nakorn. (In Thai)
- [33] Chai-arla, S. P. (2013). Participatory communication: Mechanism in mobilizing concepts to practice under the alternative development paradigm. *Journal of Humanities and Social Science, Khon Kaen University*, 30(2), 23-42. (In Thai)
- [34] Aitamurto, T. (2013). Balancing between open and closed: Co-creation in magazine journalism. *Digital Journalism*, 1(2), 229-251.
- [35] Chewananth, P., & Sawang, S. (2021). The structural equation modeling of factors affecting financial contribution intention and behavior via investment crowdfunding in social enterprise in Thailand. *Kasetsart Applied Business Journal*, 15(23). 79-98. (In Thai)
- [36] Rawinit, W. (2013). *A model for an emotional component in crisis communication*. (Doctoral dissertation, Chulalongkorn University). (In Thai)
- [37] Waranusantikul, S. (2003). *Theories and applications*. Se-Education Public Company. (In Thai)
- [38] Kruthen, W. (2020, December 22). *COVID-19: A novel Coronavirus and threat to the world population in 2020*. <https://www.bbc.com/thai/international-55217851> (In Thai)
- [39] Walaisathian, P., Op-oon, P, Wises, S, Benjasub, C., & Hasonnaree, C. (1999). *The process and techniques for developers*. The Thailand Research Fund. (In Thai)
- [40] Pattanapongsa, N. (1994). *Participation: Basic principles, techniques, and case studies*. (2nd Ed.). Siriluck Printing. (In Thai)