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A study of the actual use of the Thai MOOC open learning service

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Abstract: Access online courses, and they can be studied anywhere, anytime. The Thai government supports the use of Thai MOOC (Massive Open Online Courses) as part of Thailand's 20-year national strategy to build competitiveness, emphasizing new ways of learning by creating the Thai MOOC Open Learning Service. This platform provides useful information to all users for accessing learning in their fields of interest. Thai MOOC offers a safe environment for individuals from diverse backgrounds to acquire valuable knowledge. This model benefits Thai MOOC by providing a system that offers a clearer picture of overall users, including the Thai Cyber University and lectures within the Thai MOOC system. Data collection and analysis employed a mixed-method approach. Qualitative research involved 21 experts in Thai MOOC, with expert consensus achieved through the rough set Delphi approach. Quantitative research gathered data from 800 actual Thai MOOC users. The analysis utilized both descriptive and inferential statistical methods. The results identified seven key factors: 1) Knowledge Sharing, 2) Thai MOOC Features, 3) Motivation and Usage, 4) Perceived Usefulness, 5) Perceived Ease of Use, 6) Attitude Toward Use, and 7) Actual Use. These factors are essential for Thai MOOC developers to understand user attitudes and improve the platform accordingly.

Keywords: *Actual use, Attitude toward use, Knowledge sharing, Motivation, and usage.*

1. Introduction

Presently, Thailand supports the use of the internet as part of the learning process, such as distance learning programs. Distance learning is gaining importance since the post-COVID-19 period [1]. It is a new routine of learning that is globally gaining significance. Changes in work have made educational institutions adjust to online social distancing classes [2, 3].

The online open learning service is supported by the Thai government as part of the 20-year strategy for developing the educational ecosystem to support and open the education system for the concept of "lifelong learning." Professors at educational institutions are creating more specific courses according to learners' interests. These courses are attended by Thai MOOC users from different backgrounds to study within their fields of interest. More Thai MOOC users are interested in following these courses provided by professors and lecturers at Thai MOOC, as they are direct, flexible, and easily accessible, with the ability to gain certificates [4].

Thai MOOC is a new digital platform for online learning systems, such as YouTube and Facebook, which provide learning content and discussion platforms for online learning [5, 6]. Thai MOOC is part of the National 20-year plan of the Thai government to make learning easier and accessible to all users of all ages and backgrounds [7].

Thailand's 20-year plan provided the foundation for the government's national plan toward Thailand's future. Thai MOOC, or www.ThaiMOOC.org, offers online courses under the Thai Cyber University. Thai MOOC is an important part of the nation's future for Thais, under the slogan: Thai future, our future [8, 9].

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As mentioned earlier, Thai MOOC is an important part of opportunity creation as many courses are economical, geological, social, and environmental. Furthermore, Thai MOOC provides an online learning system for users without considering gender, age, race, religion, or other sensitive issues. Thai MOOC, as an education system, emphasizes the part of learning that is perceived as useful, and perceived ease of use is a factor that influences the actual use of the system [10].

The importance of online communication as part of an online learning system, like Thai MOOC, is that users have to accept technology. The change within society impacted Thai MOOC and other online learning systems to be more desirable alternatives to traditional classroom learning, as the flexibility of time and distant access with no personal contact feels safer and more desirable [11].

Reflecting on the evidence since the COVID-19 pandemic, society has shifted to social distance learning and new ways of online social learning. Thai MOOC, as a new method of online learning, is interesting, but who are the actual users? How consistent are the actual users of Thai MOOCs? How might they impact social changes? To what extent do these changes influence the shift away from traditional in-class, face-to-face learning toward more open and affordable Thai MOOC-based online learning? Based on the aforementioned reasons, the researcher focuses this study on highlighting the importance of the topic, identifying key factors, and examining findings related to developing a model that reflects actual users of Thai MOOC for a deeper understanding.

2. Literature Review

Literature review was conducted, and the key variables, the theoretical framework, and the hypothesis are as follows:

2.1. Knowledge Sharing (KSH)

In the digital innovation age, the usage of YouTube, Facebook, and other social media platforms in learning has seen knowledge shared more flexibly, as content creation has become the common norm for sharing knowledge of learners' interests [12]. The Thai MOOC education system encourages knowledge sharing among learners. As an online education system, the use of social media for sharing knowledge, discussion, building on learning, or even chatting and sharing feedback on personal experiences has been widely conducted on social media platforms [13].

2.2. Thai MOOC Feature (TM)

Thai MOOC refers to the Thai Massive Open Online Course learning service, classes, or courses. It is partly an e-learning system, but with additional features reflecting openness and reputation influenced by social factors. As learners intend to use Thai MOOC, open learning services are suggested by attitudes, social influences, and self-efficacy factors that all impact learners' actual use of Thai MOOC [10].

2.3. Motivation and Usage (MAU)

Motivation and usage of the Thai MOOC learning service are driven by the psychological aspect that recognizes the usefulness of the system and the choice to continue using it due to its effectiveness [14]. Positive experiences received by individuals lead to motivation, while easy access supports the desire for actual usage on a frequent basis [15].

2.4. Perceived Usefulness (PUS)

The usefulness of the Thai MOOC service is because the information provided by the system is perceived as useful, creating a positive perception towards system usage [16]. The useful data and relevance of the information and knowledge provided lead actual users to the Thai MOOC learning service [17, 18].

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2.5. Perceive Ease of Use (PEU)

Thai MOOC learning service's ease of use is due to the experiences of actual users that reflect on the education system's easy usage. This positive attitude towards using Thai MOOCs plays a significant role in the actual intention to continue using the Thai MOOC learning service system [19].

2.6. Attitude toward Using (ATT)

The attitude toward using the Thai MOOC open learning service is influenced by users finding the system useful, with accurate and relevant data. Another factor impacting the use of the Thai MOOC learning service is perceived ease of use [20].

2.7. Actual Use (ACU)

The actual usage of the Thai MOOC open learning service is impacted by the knowledge shared, the Thai MOOC features, and the motivation to use it within the education system to be perceived as useful and easily accessible. If yes, the positive attitude towards the usage of the education system could lead to actual usage of the system [21].

3. Conceptual Framework

Developing a new model for the actual use of the Thai MOOC open learning service will contribute to a deeper understanding of the Thai MOOC education system. Figure 1 features theories of knowledge sharing (KSH) [22, 23], Thai MOOC Feature (TM) [4, 10], Motivation and Uses (MAU) T [24], Technology Acceptance Model (TAM) [6, 25], Information Success (IS) [11], and Acceptance and Use of Technology [11] used as the conceptual framework.

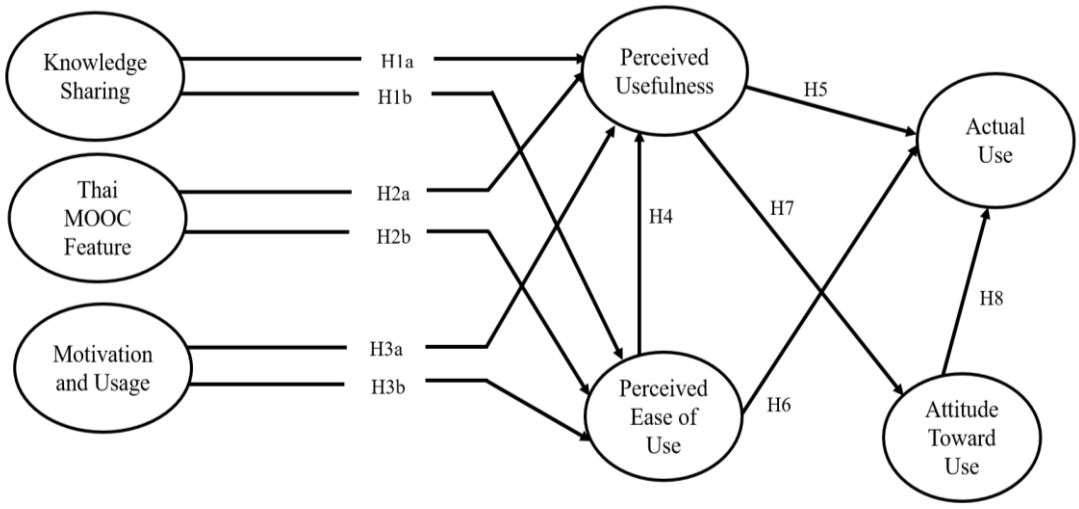

Figure 1.
Conceptual framework.

Narrative review found the following hypothesis:

H_{1a}: Knowledge sharing (KSH) directly influences perceived usefulness (PUS)
H_{1b}: Knowledge sharing (KSH) directly influences perceived ease of use (PEU)
H_{2a}: Thai MOOC feature (TM) directly influences perceived usefulness (PUS)
H_{2b}: Thai MOOC feature (TM) directly influences perceived ease of use (PEU)
H_{3a}: Motivation and usage (MAU) directly influence perceived usefulness (PUS)
H_{3b}: Motivation and usage (MAU) directly influence perceived ease of use (PEU)
H_{4}: Perceived ease of use (PEU) directly influences perceived usefulness (PUS)

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H_5 Perceived usefulness (PUS) directly influences attitude toward use (ATT)
H_6 Perceive ease of use (PEU) directly influences actual use (ACU)
H_7 Perceived usefulness (PUS) directly influences actual use (ACU)
H_8 Attitude toward use (ATT) directly influences actual use (ACU)

4. Research Methodology

The research methodology utilized a mixed-method approach, which includes qualitative and quantitative research methods [26] used to develop the structural equation model of the actual use of the open learning service Thai MOOC. The research process used in this methodology for this section is displayed in Figure 2.

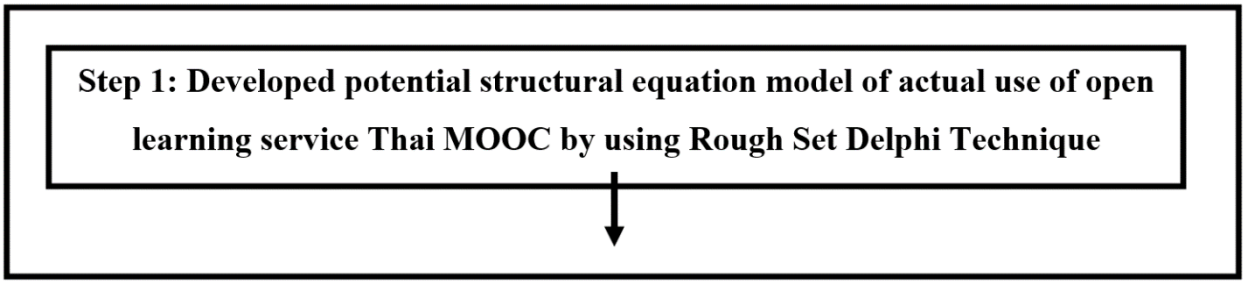

Figure 2.
Research Process.

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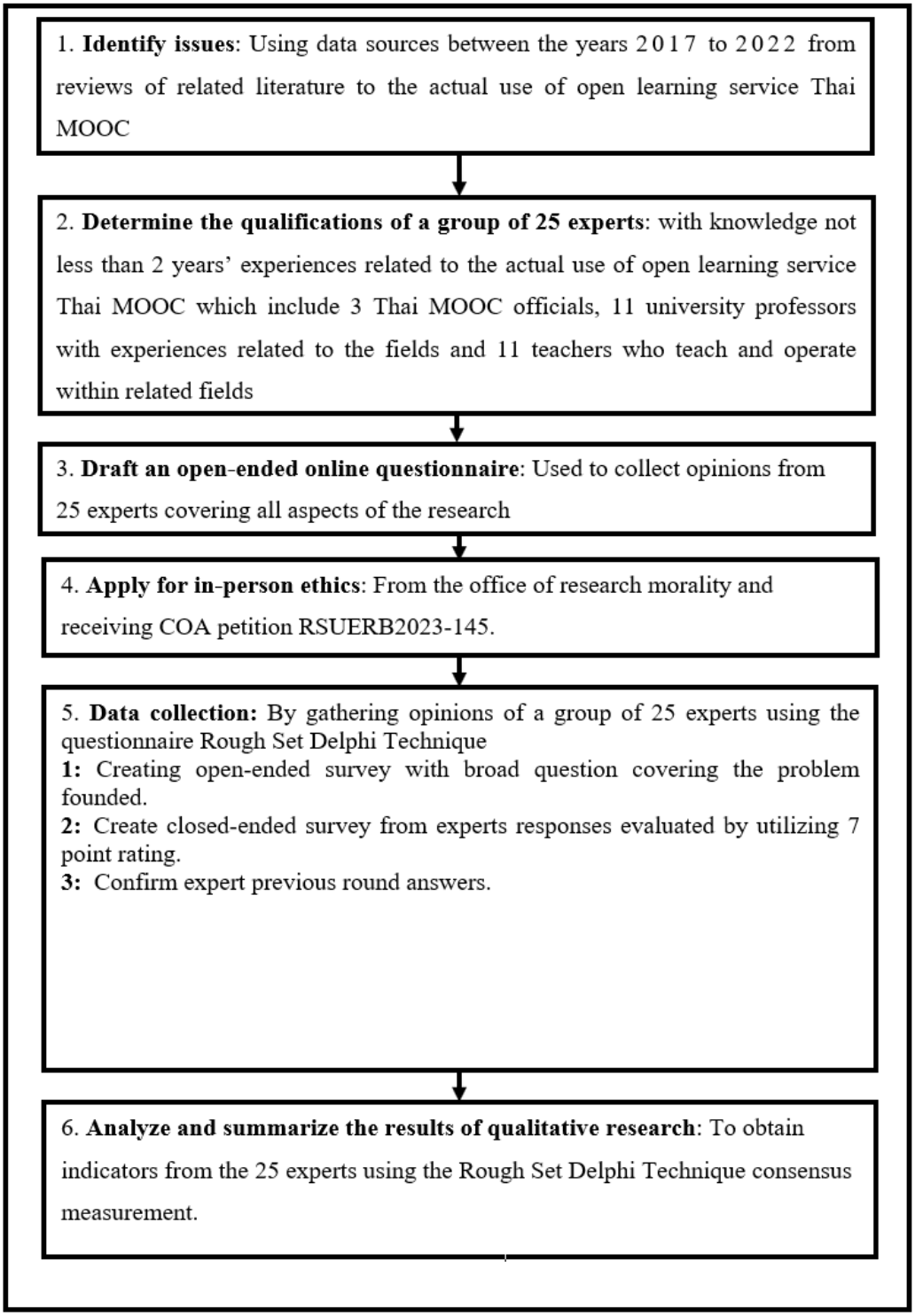

Figure 2.
Research Process (continue).

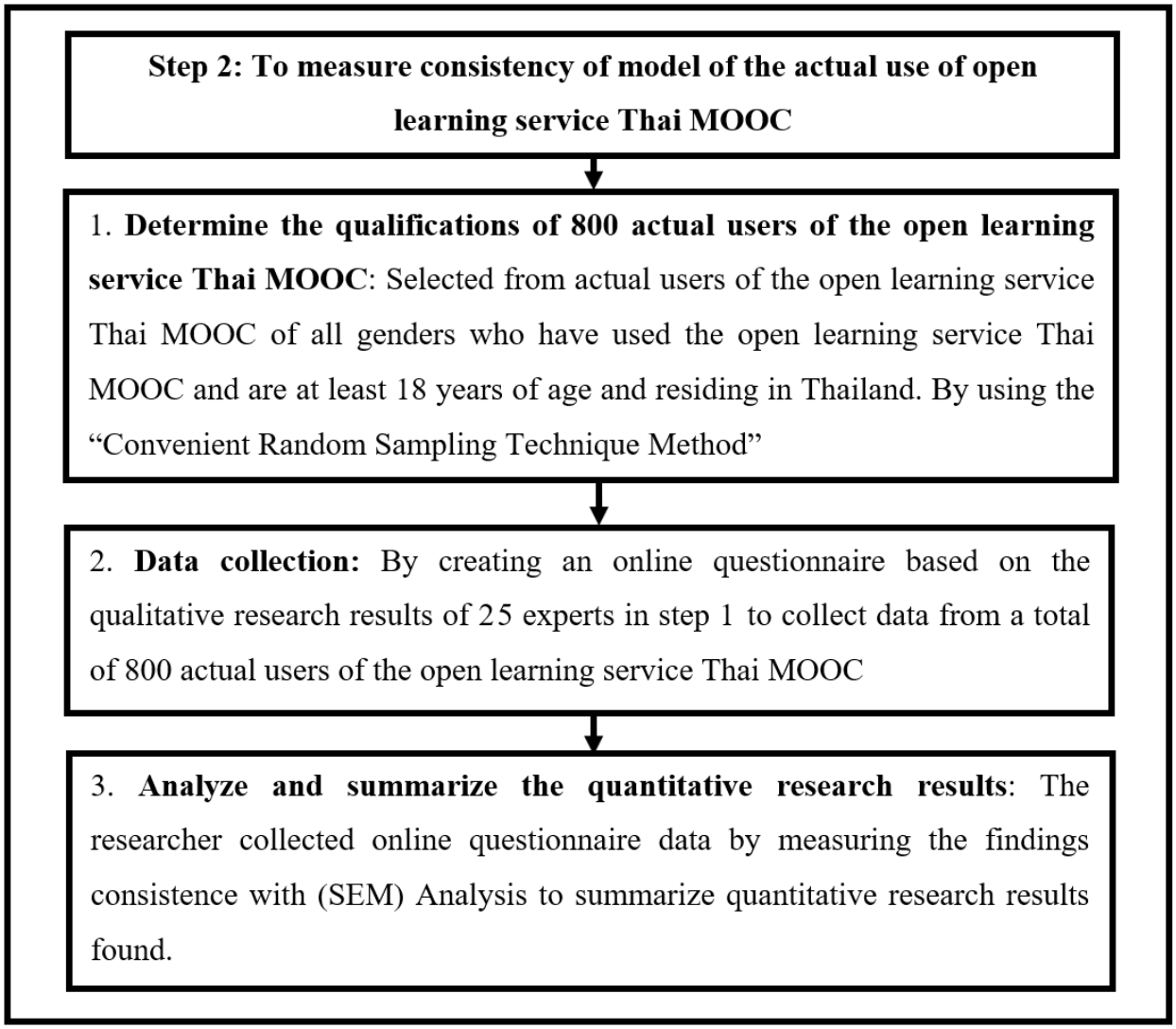

Figure 2.
Research Process (continue).

4.1. The Structural Education Model of the Actual Users of the Open Learning Service Thai MOOC Using Rough Set Delphi Technique

4.1.1. Population and Sample

Population and sample include Thai MOOC representatives (3 people), university professors with relevant experience (11 people), and teachers operating within related fields (11 people). There are three groups, totaling 25 individuals.

4.1.2. Research Instruments

The research instrument collected data using an online questionnaire sent via email concerning the potential structural model of the actual use of open learning services in Thai MOOC. It was developed by reviewing related survey research from 2017 to 2022. The instrument was then distributed to 25 experts for evaluation.

4.1.3. Documentation Gathering

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A collection of documentation was conducted after receiving approval from the ethics department of Rangsit University, petition number RSUERB2023-145. The data collection process began by sending the open-ended questionnaire in rounds 1 to 3, with confirmation of the round 2 closed-ended questionnaire from November 2023 to April 2024. The three rounds of data collection took six months to complete.

4.1.4. Data Analysis

Data analysis utilized the Rough Set Delphi Technique to examine the data. The steps of the Rough Set Delphi Technique were used to analyze responses from 25 experts, as shown in Figure 3.

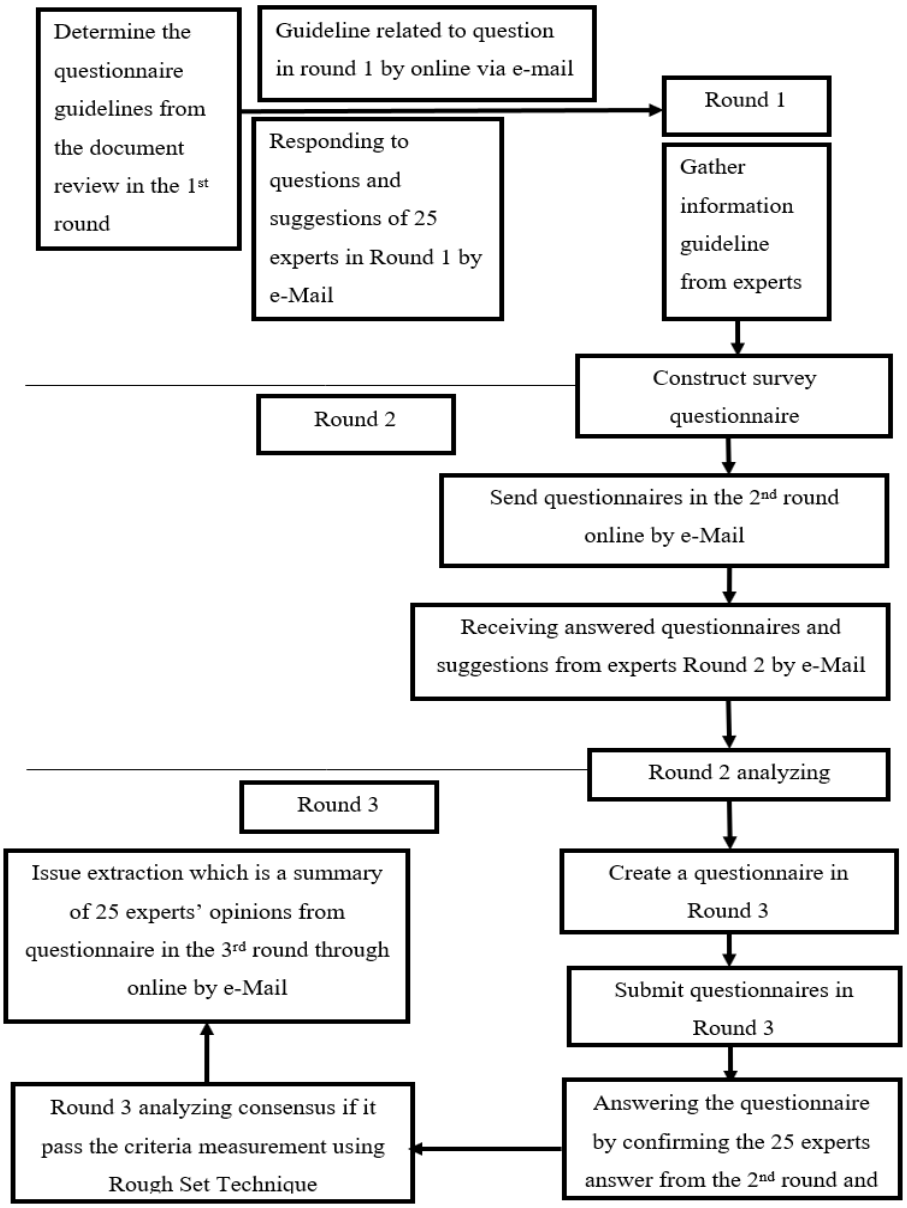

Figure 3.
Steps of Rough Set Delphi Technique.

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Data analysis utilized the Rough Set Delphi Technique measure experts' opinions. See Figure 4.

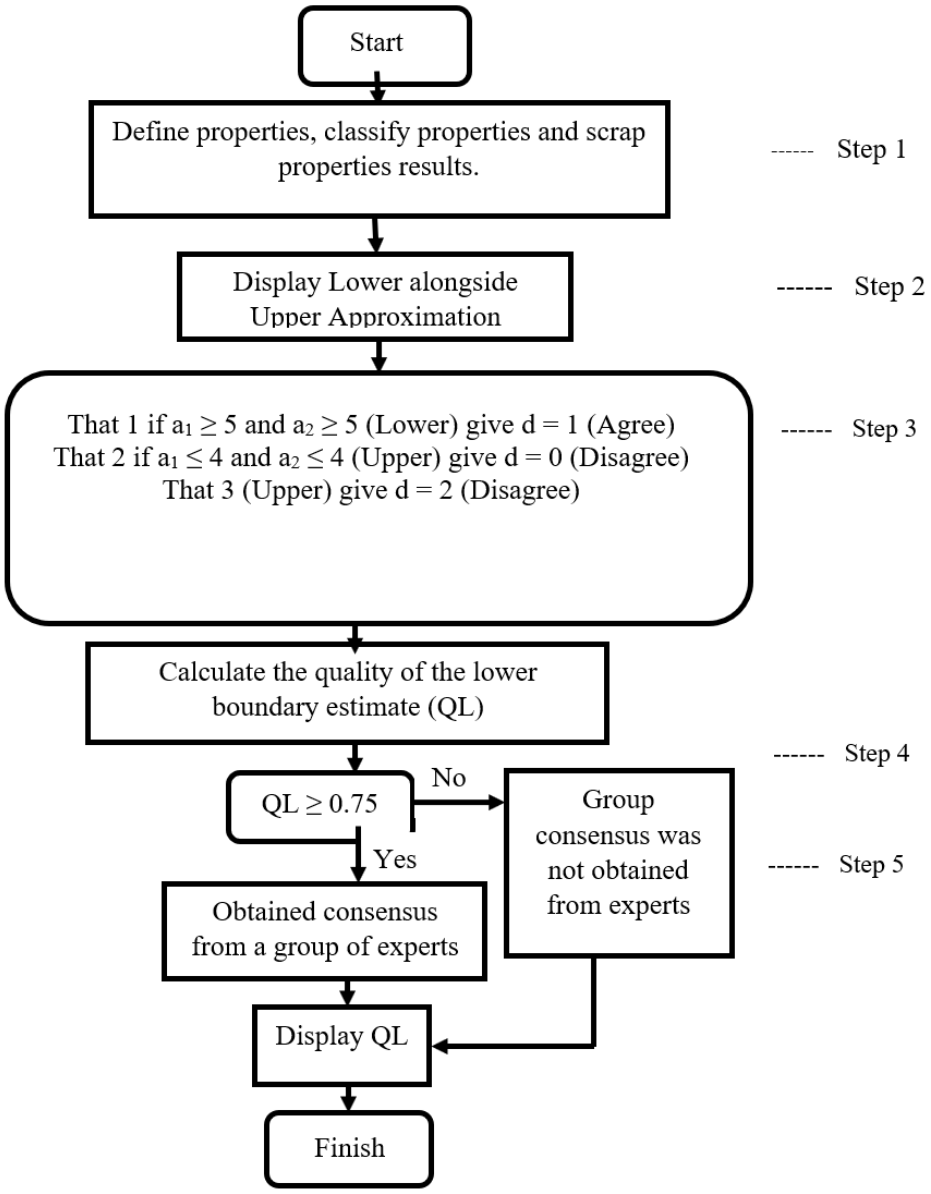

Figure 4.
Expert Group Consensus Measurement Schematic utilizing the Rough Set Delphi Technique.

Data analysis utilized the criteria to measure consensus among the 25 specialists. See Table 1.

Table 1.
Rough Set Delphi Technique consensus criteria.

Consensus	Criterion
QL	QL < 0.75 No specialist consensus.
	QL 0.75 Concordance turned out to be secure upon assembly in regard to the specialists.

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4.2. Measure Model Consistency of the Actual Use of the Open Learning Service Thai MOOC

4.2.1. Population

As of 2022, this study population consisted of 614,992 Thai MOOC education system users [27].

4.2.2. Sample

The sample group is made up of 800 Thai MOOC education system users, where 600 examined questionnaire results were utilized according to Holster's qualifications [28].

4.2.3. Research Instruments

An online survey of the actual use of open learning Thai MOOC was utilized as the research instrument.

4.2.4. Data Collection

Data collection was conducted by the researcher using online questionnaires distributed to users of the Thai MOOC education system. The survey included one screening question: 'Are you a Thai MOOC education system user?' Respondents who answered 'Yes' proceeded with the survey, while those who answered 'No' were screened out. Data collection took place from April to June 2024, during which 800 responses were gathered. Of these, 600 were used for data analysis.

4.2.5. Information Interpretation

Descriptive statistics were used to analyze the data, measuring frequency, percentage, and other relevant indicators. Inferential statistics were employed to assess the structural equation model (SEM) to determine the consistency of actual use of the Thai MOOC open learning service. Statistical values were applied to evaluate the model's variable consistency, as shown in Table 2.

Table 2.
Structural model of the actual use of the open learning service, Thai MOOC test criteria.

Number	Statistics	Criteria	Author
1	CMIN/df	≤ 3.00	Marsh and Hocevar [29]
2	GFI	≤0.90	Hu and Bentler [30]
3	AGFI	≤0.90	Mia et al. [31]
4	CFI	≤0.90	Lee et al. [32]
5	IFI	≤0.90	Mia et al. [31]
6	TLI	≤0.90	Lee et al. [32]
7	RMSEA	≤ 0.08	Lee et al. [32]
8	SRMR	≤ 0.08	MacCallum et al. [33]
9	Hoelter's Critical N (CN)	> 200	Hoelter [28]

5. Structural Model Outcomes

The structural model applied the statistical values from Table 2 to measure the SEM's consent results for this study. By examining the consideration criteria, it is shown that the revised model remains constant and steady for the structural model of actual open learning service use in Thai MOOC. See Table 3.

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Table 3.
The Structural Model Approval Results.

Index	Results	Approval
CMIN	1011.627	Yes
df	635	Yes
CMIN/df	1.593	Yes
GFI	0.922	Yes
AGFI	0.900	Yes
CFI	0.986	Yes
RMSEA	0.031	Yes
SRMR	0.027	Yes
Hoelter's Critical N (CN)	427	Yes

Table 4 provides an overview of the validity (SEM) model of the actual use of the open learning service, Thai MOOC.

Table 4.
Overview of the Structural Model: Validity of the Actual Use of the Open Learning Service Thai MOOC.

Variable	Feature	CFA	SEM	Mean	SD	α	CR	AVE	KMO
Lowest Value		> 0.5	> 0.5			> 0.7	> 0.7	> 0.5	> 0.5
KSH	KSH1	0.81	0.81	5.97	1.16	0.929	0.93	0.69	0.929
	KSH2	0.84	0.84						
	KSH3	0.79	0.79						
	KSH4	0.83	0.83						
	KSH5	0.86	0.86						
	KSH6	0.84	0.84						
TM	TM1	0.8	0.8	6.08	1.14	0.929	0.929	0.687	0.93
	TM2	0.84	0.84						
	TM3	0.85	0.85						
	TM4	0.79	0.79						
	TM5	0.82	0.82						
	TM6	0.86	0.86						
MAU	MAU1	0.85	0.85	6.07	1.21	0.941	0.941	0.726	0.934
	MAU2	0.85	0.86						

Table 4.
Overview of the Structural Model Validity of the Actual Use of Open Learning Service Thai MOOC (continue).

	MAU3	0.85	0.85						
	MAU4	0.85	0.85						
	MAU5	0.88	0.88						
	MAU6	0.82	0.82						
PUS	PUS1	0.8	0.79	6.17	1.11	0.926	0.926	0.676	0.915
	PUS2	0.87	0.86						
	PUS3	0.85	0.84						
	PUS4	0.8	0.78						
	PUS5	0.78	0.76						
	PUS6	0.79	0.78						
PEU	PEU1	0.85	0.85	6.13	1.16	0.921	0.922	0.703	0.899
	PEU2	0.86	0.86						
	PEU3	0.86	0.86						
	PEU4	0.85	0.85						
	PEU5	0.78	0.76						
ATT	ATT1	0.86	0.85	6.12	1.2	0.936	0.936	0.747	0.9
	ATT2	0.89	0.89						

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	ATT3	0.87	0.86						
	ATT4	0.84	0.83						
	ATT5	0.86	0.86						
ACU	ACU1	0.88	0.88	6.06	1.31	0.955	0.956	0.783	0.937
	ACU2	0.89	0.89						
	ACU3	0.91	0.91						
	ACU4	0.89	0.89						
	ACU5	0.88	0.88						
	ACU6	0.87	0.87						
Total						0.934			0.921

The structural model for the actual use of the open learning service, Thai MOOC findings, are demonstrated in Figure 5.

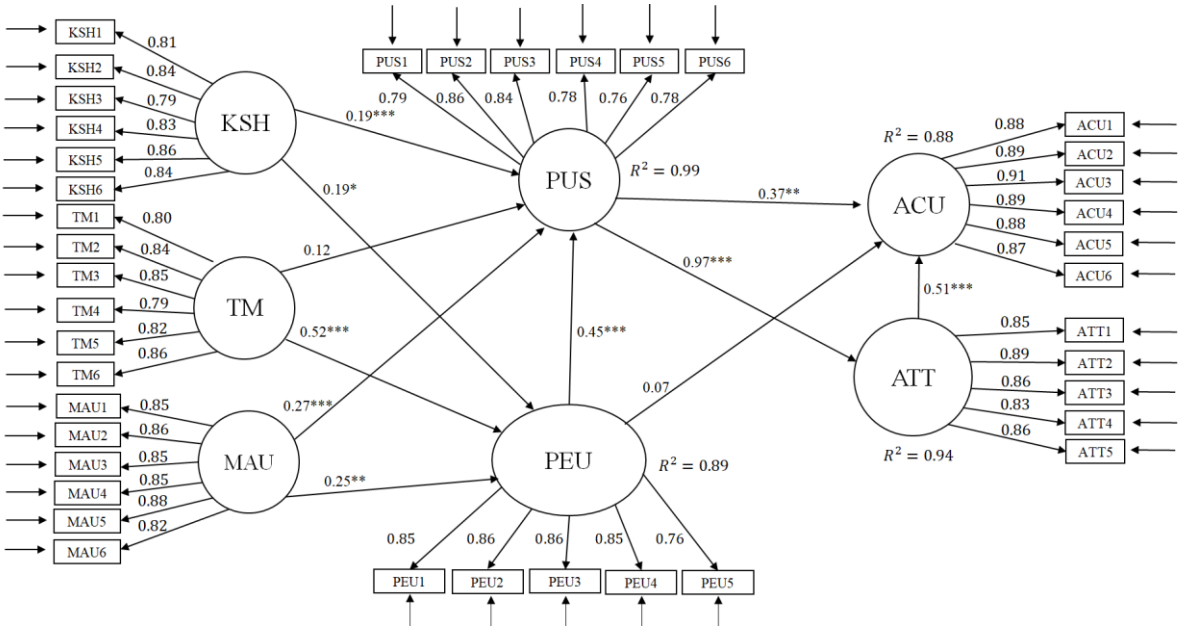

Figure 5.
The Causal Relationship Statistical Value of the Structural Model that Affects the Actual Use of the Open Learning Service, Thai MOOC.

Figure 5 displays the relationship affecting the actual use of the open learning service, Thai MOOC. It was found that (ACU) impacted (PUS) at 0.37 (0.005), (PEU) at 0.07, and (ATT) at 0.51 (0.001); (PUS) affected (KSH) at 0.19 (0.001), (TM) at 0.12, and (MAU) at 0.27 (0.001); (PEU) influenced (KSH) at 0.19 (0.05), (TM) at 0.52 (0.001), and (MAU) at 0.25 (0.01); (PUS) determined (PEU) at 0.45 (0.001); and (ATT) is directly influenced by (PUS) when the influence size was 0.97 with a statistical significance of 0.001, respectively.

To evaluate the variables of the actual use of the Thai MOOC open learning service, the confirmatory factorial analysis (CFA test) was performed, as seen in Table 5.

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Table 5.
Confirmatory Factorial Analysis Utilized to Measure the CFA.

			Estimate	S.E.	C.R.	P
PEU	<---	KSH	0.156	0.072	2.168	0.030
PEU	<---	TM	0.421	0.072	5.869	***
PEU	<---	MAU	0.221	0.074	2.986	0.003
PUS	<---	KSH	0.168	0.049	3.409	***
PUS	<---	TM	0.103	0.056	1.847	0.065
PUS	<---	MAU	0.264	0.051	5.176	***
PUS	<---	PEU	0.488	0.059	8.233	***
ATT	<---	PUS	1.088	0.043	25.546	***
ACU	<---	ATT	0.613	0.138	4.442	***
ACU	<---	PEU	0.100			
AVU	<---	PUS	0.495	0.152	3.256	0.001
KSH6	<---	KSH	1.000			
KSH5	<---	KSH	0.989	0.037	27.016	***
KSH4	<---	KSH	0.903	0.035	25.487	***
KSH3	<---	KSH	0.993	0.042	23.855	***
KSH2	<---	KSH	0.960	0.037	26.043	***
KSH1	<---	KSH	0.891	0.037	24.377	***
TM6	<---	TM	1.000			
TM5	<---	TM	0.914	0.035	26.074	***
TM4	<---	TM	0.881	0.036	24.606	***
TM3	<---	TM	0.966	0.035	27.967	***
TM2	<---	TM	0.937	0.034	27.433	***
TM1	<---	TM	0.906	0.036	25.180	***
MAU6	<---	MAU	1.000			
MAU5	<---	MAU	1.129	0.042	26.856	***
MAU4	<---	MAU	1.132	0.042	26.950	***
MAU3	<---	MAU	1.117	0.044	25.517	***
MAU2	<---	MAU	1.103	0.043	25.680	***
MAU1	<---	MAU	1.176	0.046	25.559	***

Table 5.
Confirmatory Factorial Analysis Utilized to Measure the CFA (continue).

PUS1	<---	PUS	1.000			
PUS2	<---	PUS	1.134	0.045	24.971	***
PUS3	<---	PUS	1.031	0.043	24.004	***
PUS4	<---	PUS	0.919	0.042	21.854	***
PUS5	<---	PUS	0.912	0.043	21.188	***
PUS6	<---	PUS	0.970	0.045	21.661	***
PEU5	<---	PEOU	1.000			
PEU4	<---	PEU	1.257	0.056	22.637	***
PEU3	<---	PEU	1.265	0.055	22.952	***
PEU2	<---	PEU	1.168	0.054	21.568	***
PEU1	<---	PEU	1.218	0.053	22.807	***
ATT1	<---	ATT	1.000			
ATT2	<---	ATT	1.058	0.035	30.004	***
ATT3	<---	ATT	1.056	0.037	28.184	***
ATT4	<---	ATT	1.002	0.035	28.743	***
ATT5	<---	ATT	1.054	0.037	28.141	***

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ACU1	<---	ACU	1.000			
ACU2	<---	ACU	0.922	0.029	32.206	***
ACU3	<---	ACU	0.998	0.030	33.398	***
ACU4	<---	ACU	1.037	0.032	32.419	***
ACU5	<---	ACU	0.918	0.031	29.425	***
ACU6	<---	ACU	0.907	0.030	30.587	***
CMIN = 1011.627, df = 635, CMIN/df = 1.1.593, GFI = 0.922, AGFI = 0.900, CFI = 0.986, RMSEA = 0.031, SRMR = 0.027						

The actual use of the open learning service Thai MOOC path model analysis of (SEM) measures appropriateness of hypothesis testing, found that the coefficient of the test results of the p value are under 0.05 or not for the hypothesis displayed in Table 6.

Table 6.
Hypotheses Testing Results: Actual Use of Open Learning Service, Thai MOO.

		β	p	Decision
H1a	PUS <--- KSH	0.168	0.000	Yes
H1b	PEU <--- KSH	0.156	0.030	Yes
H2a	PUS <--- TM	0.103	0.065	No
H2b	PEU <--- TM	0.421	0.000	Yes
H3a	PUS <--- MAU	0.103	0.000	Yes
H3b	PEU <--- MAU	0.221	0.003	Yes
H4	PUS <--- PEU	0.448	0.000	Yes
H5	ATT <--- PUS	10.088	0.000	Yes
H6	ACU <--- PEU	0.613	0.000	Yes
H7	ACU <--- PUS	0.329		No
H8	ACU <--- ATT	0.364	0.001	Yes

Table 6 shows the hypotheses testing results of the actual use of Open learning service Thai MOOC it was found out that from checking the hypothesis testing results that the relationships between (KSH) and (PUS), (KSH) and (PEU), (TM) and (PEU), (MAU) and (PUS), (MAU) and (PEU), (PEU) (PUS), (ATT) and (PUS), (PEU) and (ACU), and (ATT) and (ACU) all hypotheses are significant as all hypotheses are under the p-value of 0.05.

But, (TM) and (PUS), (PUS) and (ACU), as they are not under the p-value of 0.05, are not accepted.

6. Discussion

Considering the different results and findings within, it is found that (KSH) impacted (PUS) as well as (PEU) towards actual Thai MOOC usage. When the knowledge is shared by the Thai MOOC learning service through the usage of social media platforms, the usefulness is consider high by educational users as the information is highly relevant to the users interest, and by using social media as tools for sharing knowledge such YouTube, Facebook and other social media platforms, the easy access of information quality created a positive feeling towards Thai MOOC services. This is consistent with the findings of Ansari and Khan [22] and Eid and Al-Jabri [23] as knowledge sharing theory suggests that information provided must be shared through different channels and relevant to the interest of the actual user to be useful. The information and knowledge sharing must be easily accessible, anywhere. That is why (KSH) directly influenced both (PUS) and (PEU), while indirectly influencing the actual use of the Thai MOOC learning service.

The features of the Thai MOOC (TM) affected how easy people thought it was to utilize the learning service (PEU), which in turn affected how many people actually used the education system. The Thai MOOC platform is easy to grasp since it clearly lists the services it offers. This lets students pick courses that interest them and plan when they want to participate. The platform is straightforward for people to get to and use because the classes are held online. Kurniawan et al. [4] and Theerasopee

and Ottamakorn [10] support the findings. Their research on Thai MOOC features (TM) shows that the system is easy to use and lets students learn whenever and wherever they choose.

(MAU) had a direct effect on both (PUS) and (PEU) when it came to using Thai MOOCs. Online courses can be a new and exciting experience for many, as the traditional classroom does not always meet learners' wide range of knowledge requirements. By using online channels or websites that reflect learners' interests, the Thai MOOC learning service can catch the users' attention and lead to the actual usage of the education system because the knowledge provided is quality information that is relevant to the learners' personal interest and as an online course, it is easily accessible at any convenient time. Zachos et al. [24] stated motivation and uses (MAU) theory pointed out that any learning service system needs to motivate learners to use the system by perceiving it as being useful and easily accessible. The Thai MOOC learning service system is supported by the (MAU) theory to understand the importance of users' motivation, desire, and preferences as key factors towards their actual willingness to use the system.

Perceived ease of use (PEU) directly influenced perceived usefulness (PUS) in relation to actual Thai MOOC usage. The success of information technology in modern society reflects the perception that a system is useful when it is easy to use and provides data aligned with users' interests. Information is delivered quickly and conveniently through technology devices such as smartphones. This is further substantiated by the swift expansion of platforms such as YouTube, blogs, and various informational websites. The Thai MOOC provides rapid, current information across several disciplines, aligning with learners' interests, hence enhancing the platform's perceived utility. Fan et al. [11] assert that the Information Success (IS) theory posits that information is deemed successful when it is timely, pertinent, and aligned with user requirements. The Thai MOOC conforms to the Information Systems theory by effectively providing rapid, pertinent information and attaining substantial user involvement.

7. Conclusion

In conclusion, different important factors have both direct and indirect effects on how people use the Thai MOOC open learning service. These include spreading knowledge, platform features, user incentives, perceived usefulness, ease of use, and willingness to use.

The attitude toward usage is the most important factor influencing how people actually use the Thai MOOC open learning service. Users' attitudes, whether positive or negative, directly impact their decision to engage with the system. A positive attitude toward using Thai MOOC is strongly associated with actual use, making it the most significant direct factor affecting the adoption of the open learning program.

The perceived usefulness of the Thai MOOC open learning program has a significant effect on how many people actually use it. Users are more likely to want to use the system when they believe it will help them. People often feel this way because of the quality of the information shared and the practical features of the Thai MOOC platform. When these factors come together to demonstrate how useful the system is, people are more likely to accept and continue using the service. Therefore, perceived usefulness is a very important factor influencing actual usage of the Thai MOOC open learning program. The perceived ease of use also significantly influences the actual adoption of Thai MOOCs. When people find the education system easy to use, along with useful information sharing and efficient platform features, they are more likely to use the service. The Thai MOOC platform needs to be easy to use to encourage people to adopt and continue using it. Ultimately, demonstrating how useful the Thai MOOC open learning service is highlights its importance for all schools.

8. Suggestions

This research employed a mixed-methods framework, collecting perspectives from 25 specialists across three categories to assess the actual application of the open learning service during the preliminary qualitative phase. Future studies ought to include a larger cohort of specialists from diverse

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backgrounds to obtain more comprehensive opinions and significant data, hence enhancing the advancement of research instruments.

The results from Phase 1 of the qualitative research using the Rough Set Delphi Technique showed that 25 experts had different and important points of view that helped with Phase 2, which was the collection of quantitative data. This phase involved distributing surveys through several Thai MOOC platforms, conducting online assessments, and collecting data in person. Even though we wanted 800 Thai MOOC users to respond, only 600 of them were valid. This shows that even if there is support for this kind of research, many people don't have the time to fully participate. Future research may benefit from utilizing fewer variables and more focused queries, enabling data collection from a larger sample size to produce more accurate and comprehensive results.

Further examination of the Thai MOOC open learning service is essential, as this study indicates that not all variables exert a significant impact, implying that different factors play distinct roles in influencing usage. The Thai MOOC open learning service is a key part of the Thai government's 20-Year National Strategy and is part of many other national programs. As a result, the results of this study are important for the Thai government, Thai MOOC administrators, teachers who work with open learning platforms, and students. These findings improve understanding of the factors influencing the use of Thai MOOCs and other open learning resources.

Transparency:

The authors confirm that the manuscript is an honest, accurate, and transparent account of the study; that no vital features of the study have been omitted; and that any discrepancies from the study as planned have been explained. This study followed all ethical practices during writing.

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