

Usage motivation of a new health application in the elderly and the general public through family institution and social media channels

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Abstract. The purpose of this study was to explore usage motivation and satisfaction of a new health application among the elderly in the Bangkok Metropolitan Region. The sampled population included elderly individuals living in the region, and the data were collected using a questionnaire. The resulting data were then analyzed statistically using frequency, percentage, mean, standard deviation, and multiple regression analysis. The results of the study revealed that the motivation for using the new health application was overall at a very good level. When considered in different aspects, motivation for application usage and self-care were found at a very good level, while the motivation from the application's benefits and in recommendation or referral were found at a good level. As for usage behavior, users of the new health application were found to use it approximately 4 times per day. The outcomes of the hypothesis tests also revealed that the motivation from the application's benefits and application usage were found to positively affect the usage satisfaction in terms of the decision to use with statistical significance level of .01. Motivation from the application's benefits and self-care were also found to positively affect usage satisfaction in terms of usage frequency (times/day) with statistical significance level of .01.

1 Introduction

A mobile application is a type of software that runs on mobile phones and tablets. It can be designed as a program, game, command, or to provide other types of assistance on a smartphone. Therefore, there are several types of applications designed to meet the various demands of users. Nowadays, there is a large variety of applications for users to choose from, which they can download and install on their device. Once an application is installed, some of them can be used offline without access to the internet.

Such appropriate adoption of technology can extend the scope of learning, enabling faster learning and allowing easy access to knowledge and its application for real-life benefit. Therefore, it has interested the researcher of this study to develop a health application for the elderly that gathers useful information about common health conditions in the elderly - such as diabetes, hypertension, cancer, kidney disease, etc. - and provides users with useful and complete information which can be easily, conveniently, and quickly

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accessed. The information included in this application consists of the nature of the diseases, causes, risks, prevention, and treatment, as well as recommendation on diet and exercise for each condition. This was the start of a project to develop a new health application and to promote it through various social media platforms. The primary focus of this application is disease prevention and health promotion among the elderly in the Bangkok Metropolitan Region, as well as provision of educational benefits to the elderly and the general public. Understanding its importance, the researcher was interested in developing and studying this new health application and online promotion platforms/promoting on online platforms [1].

The government has issued a strategic plan to improve the quality of life of the elderly by promoting their ability to learn for life, for the elderly to have knowledge, direction, readiness of the body and mind, and intelligence to be self-reliant. There are development of learning and public communication systems with a primary focus on improving the elderly's ability to appropriately manage knowledge, information, communication, and information technology in the modern communication context, which often engages the internet as a channel for communication.

As the internet is considered a useful technology and a convenient and effective channel of media, there are the elderly people who accept it and are more inclined to use this technology. A previous study on internet usage behavior found that the elderly nowadays have both ability and experience in internet usage. The reasons for use included – convenience, time saving, uncomplicated use, ability to use anywhere and anytime, and usefulness in searching for all types of news information.

Such awareness of the benefits of the internet also included that it can provide updates on events or situations and that it can be used as a channel for communication. Nonetheless, the top motives for the elderly to use the internet were reducing communication cost and interacting with other people freely without restrictions of time and place, such as the use of social networks, etc. For this reason, the researcher was interested in studying and creating usage motivation for the new health application among the elderly and the general public through the family institution and social media channels.

2 Methodology

2.1 Research scope

The variables in this study consist of:

1. Personal data: gender, age, marital status, highest education, and Monthly income;
2. Usage motivation of the new health application in the aspects of the application's benefits, application usage, self-care, and recommendation or referral;
3. Satisfaction in the use by the elderly in the Bangkok Metropolitan Region, including decision to use and usage frequency (times/day).

2.2 Determination of population and sample groups

The population in this research study were elderly individuals in the Bangkok Metropolitan Region who were selected using sampling methods as follows:

Step 1 - Simple Random Sampling: Simple random sampling was done in 10 sites with close proximity to Suan Sunandha Rajabhat University, the researcher's university, to be used as a pilot population and a guideline for further sampling in the study. The sampled population in this step was from the Foundation of Thai Gerontology Research and Development Institute, Suan Sunandha Rajabhat University Alumni Association, Dusit

District, Phra Nakhon District, Khlong San District, Bang Rak District, Phaya Thai District, Huai Kwang District, Salaya District, and Bang Phli District.

Step 2 - Quota Sampling: Collection of data by distributed by giving questionnaires to the elderly who lived in different areas as mentioned to step 1, with determined quota of 40 people per area.

Step 3 - Systematic Random Sampling: Sampling of population was done in the sub-units with similar demographic characteristics. Random samplings were done in intervals during the period of 09:00-18:00 on Monday to Sunday for a total of 10 days. This step resulted in reaching the required total of 400 samples from the Bangkok Metropolitan Region.

2.3 Questionnaire Quality Assessment

In this research, a questionnaire was used for data collection. The questionnaire was created based on literature reviews and various research studies and it was verified by 3 experts to validate the accuracy of content and language used. 40 sets of the questionnaire were then tried out in a non-sample group with similar demographic to the sample population. The result from the try-out was used to calculate Cronbach's Alpha Coefficient to determine the questionnaire's reliability.

The calculated coefficient alphas were - .7112 for items on the application's benefits, .7835 for the items on the application usage, .7575 for the items on self-care, and .9312 for the items on recommendation or referral – which are acceptable levels for actual data collection [2,3].

2.4 Data analysis

1. Descriptive Statistics were used to describe the demographic characteristics of the sample population, usage motivation for the new health application, and usage satisfaction. The statistics used include Frequency, Percentage, Mean, and Standard Deviation. As for the part of the questionnaire involving business innovation, for which the 5-level Likert Scale was included in the questions, the criteria for each grading level are determined as follows [2].

Average score	Motivation Rating
4.21 – 5.00	= A very good level of motivation
3.41 – 4.20	= A good level of motivation
2.61 – 3.40	= A moderate level of motivation
1.81 – 2.60	= A poor level of motivation
1.00 – 1.80	= A very poor level of motivation

2. Inferential Statistics: Multiple Regression Analysis was used to test the hypothesis “the motivation for use of the new health application in the aspects of the application's benefits, application usage, self-care, and recommendation or referral have effects on the usage satisfaction of the elderly in the Bangkok Metropolitan Region.” [5]

3 Result

Results of demographic characteristics and motivation in the use of a new health application and usage satisfaction of the elderly in the Bangkok Metropolitan Region.

1. Demographic characteristics of the sample population: From Table 1, it was found that the majority of the sample population were female, aged 60-65 years, followed by 66-

70, and 71-75 years old respectively [6]. Most of them were single, followed by those who were married/living together, and those who were divorced/widowed/separated respectively. The majority of them had lower than undergraduate education, followed by those with undergraduate or equivalent education, and those with postgraduate or higher education. Most of the population had a monthly income of 10,001-15,000 Baht, followed by those who earned 15,001-20,000 Baht, those who earned lower than or equal to 10,000 Baht, and those who earned 20,001-25,000 Baht respectively [7].

Table 1. Frequency and percentage of the demographic characteristics of the respondents.

Demographic characteristics		Number (people)	Percentage
1. Gender	Male	158	39.5
	Female	242	60.5
	Total	400	100.0
2. Age	60–65 years	157	39.3
	66--70 years	109	27.2
	71-75 years	70	17.5
	75 years and older	64	16.0
	Total	400	100.0
3. Status	Single	236	59.0
	Married / Living together	149	37.3
	Divorced / Widowed / Separated	15	3.7
	Total	400	100.0
4. Education	Lower than undergraduate	226	56.5
	Undergraduate or equivalent	136	34.0
	Postgraduate or higher	38	9.5
	Total	400	100.0
5. Monthly income	Less than or equal to 10,000 Baht	60	15.0
	10,001 - 15,000 Baht	149	37.3
	15,001 - 20,000 Baht	112	28.0
	20,001 - 25,000 Baht	53	13.2
	25,000 Baht or more	26	6.5
	Total	400	100.0

2. Usage motivation for the new health application includes the application's benefits, application usage, self-care, and recommendation or referral: According to Table 2, motivation for using the new health application was overall at a very good level, and when considered by aspect, it was found that:

Application's benefits [8] - The sample population was found having usage motivation from the application's benefits at a good level. The users could use it to search for information for disease prevention and health care and to learn information about common health conditions in the elderly. It was also found to raise disease prevention and health awareness and help prevent and mitigate the risks of diseases.

Application usage - The sample population was found having usage motivation from the application usage at a very good level. When considered item by item, the users found that fonts used in the application are large in size and easy to read. The application also allowed them easy-to-understand and convenient access to a variety of their interested topics. The application was easy to download through the App Store or Play Store and it included necessary and complete information.

Table 2. Mean and standard deviation of usage motivation for the new health application.

Usage motivation	Level		
	\bar{x}	SD	Inter
Application's benefits			
1. Users are provided with information about common health conditions in the elderly.	4.15	.463	Good
2. Users can search for information necessary for disease prevention and health care.	4.24	.635	Very good
3. It helps prevent and mitigate the risks of diseases.	4.11	.629	Good
4. It raises awareness of disease prevention and health care.	4.14	.462	Good
Overall motivation from the application's benefits	4.16	.547	Good
Application usage			
5. The application is easy to download through the App Store or Play Store.	4.26	.669	Very good
6. It contains complete and necessary information that users require.	4.15	.754	Good
7. It allows users easy-to-understand and convenient access to a variety of their interested topics.	4.33	.695	Very good
8. The fonts used are large in size and easy to read.	4.55	.470	Very good
Overall motivation from application usage	4.32	.647	Very good
Self-care			
9. Users want to reduce the risks of diseases.	4.33	.825	Very good
10. Users want to eat a healthy diet and do appropriate exercise	4.25	.606	Very good
11. Users want to avoid behaviors that cause negative health effects.	4.12	.645	Good
12. Users want to promote a positive attitude in health care.	4.22	.644	Very good
Overall motivation from self-care	4.23	.680	Very good
Recommendation or referral			
13. Users can use the information they have obtained to recommend or provide advice to others.	4.14	.782	Good
14. Users perceive and understand the information from the trial usage of the application.	4.25	.525	Very good
15. Users can recommend downloading or accessing the application to others.	4.06	.606	Good
16. Users can advise others on the basic usage of the application.	4.13	.645	Good
Overall motivation from recommendation or referral	4.14	.639	Good
Overall usage motivation for the new health application	4.21	.628	Very good

Self-care - The sample population was found having usage motivation from their own self-care at a very good level. When considered item by item, it was found that they wanted to reduce the risks of health issues, eat a healthy diet, do exercise as appropriate, promote a positive attitude in health care, and avoid harmful health behavior.

Recommendation or referral - The sample population was found having usage motivation from recommendation or referral at a good level. When considered item by item, it was found that users could perceive and understand the information from their trial usage of the application, and they could use the information they obtained to recommend or provide advice to others [9]. They could advise others on the basic usage of the application and could advise others about downloading or accessing the application.

3. Usage satisfaction for the new health application: According to Table 3 and 4, the overall decision to use was at a very good level. When considered by each aspect, users' decision to use was due to; the application was free with no additional cost, it helped them exercise and develop brain function to prevent amnesia, it was a way to spend free time usefully, and it helped users get more practice with technology to facilitate their daily life. The sample population was found with usage frequency up to 32 times per day at the

maximum and 1 time per day at the minimum. The mean usage frequency was 4 times per day.

Table 3. Mean and standard deviation of usage satisfaction for the new health application in decision to use factors.

Factors for decision to use	Level		
	\bar{x}	SD	Interpretation
1. It is a free application with no additional cost.	4.56	.316	Very good
2. It helps exercise and develop brain function to prevent amnesia.	4.33	.365	Very good
3. It helps practice the use of technology to facilitate their daily life.	4.21	.679	Very good
4. It is a useful use of free time.	4.27	.522	Very good
Overall decision to use	4.34	.470	Very good

Table 4. Minimum, maximum, mean, and standard deviation of usage satisfaction for the new health application in the aspect of usage frequency(times/day).

Aspect of usage satisfaction	Min	Max	\bar{x}	SD
1. Frequency (times/day)	1	32	8.27	4.12

Additionally, from Table 5, it was found that most of the sample population had access to social media platforms via mobile phones, tablets, laptop computers, and others. The people who had influence on their social media access were family or relatives, friends, and various types of advertisement.

4. Future use and recommendation to others: The results of the research revealed that the sample population was most likely to continue to use this new health application and they would also definitely recommend this application to the people they know, as shown in Table 6.

Table 5. Frequency and percentage of applications' usage behavior in daily life and influence on applications' usage.

Applications' usage behavior in daily life	Number of people	Percentage
1. Social media platforms were most accessed via:		
Mobile phone	276	69.0
Tablet	78	19.5
Laptop computer	40	10.0
Others	6	1.5
Total	400	100
2. Access to social media platform was influenced by:		
Family / Relatives	206	51.5
Friends	104	26.0
Various types of advertisement	90	22.5
Total	400	100

Table 6. Mean and standard deviation of future use and recommendation of the new health application.

Future use and recommendation	Level		
	\bar{x}	SD	Interpreted results
1. In the future, will you continue to use this new health application for prevention and health promotion?	4.41	.497	Definitely use
2. Would you recommend or tell people you know to use this application?	4.35	.580	Definitely recommend

Table 7. Stepwise Multiple Regression Analysis of the effects of usage motivation on the usage satisfaction of the new health application.

Variable	B	SE	t	Sig.	Tolerance	VIF
Usage satisfaction: Decision to use						
Constant	306.36	58.15	5.63	.000		
Application's benefits (X ₁)	73.52	14.96	4.77	.000	.789	1.57
Application usage (X ₂)	38.46	11.91	2.98	.003	.789	1.57
R² = .055	Adjusted R² = .051		SE	= 3.09		
Usage satisfaction: Usage frequency (times/day)						
Constant	372.43	58.15	5.63	.000		
Application benefits (X ₁)	79.17	14.96	4.77	.000	.789	1.57
Self-care (X ₃)	39.47	11.91	2.98	.003	.789	1.57
R² = .127	Adjusted R² = .122		SE	= 2.99		

** Statistically significant at the .01 level.

Analysis results on the effects of motivating factors in users' decision to use the new health application showed that motivation from the application's benefits and application usage were determining factors of usage satisfaction at a statistically significant level of .01. On the contrary, motivation from application usage, self-care, and recommendation or referral was not determining factors on the decision to use with a statistical significance at .01 as shown in Table 7.

Analysis results on the effects of motivating factors on usage frequency of the new health application showed that motivation from the application's benefits and self-care were determining factors of usage satisfaction at a statistically significant level of .01. In contrast, motivation from application usage and recommendation or referral were not determining factors on usage frequency with a statistical significance at .01.

4 Discussion

A comparative analysis of usage satisfaction of the new health application in regard to demographic characteristics revealed that the sample population with different levels in education and monthly income was found with different levels of satisfaction in terms of decision to use and usage frequency. This is consistent with a study of Suwich Tirakoat and [4] "Internet usage behaviors, literacy, and attitude towards utilization of wellness content on the internet among Thai elderly".

The study found that most of the elderly surveyed were aged 50-55 years old, living outside a municipality, having secondary education and a bachelor's degree, working in government agencies, and having 1-5 years of experience in using the internet. Their main purpose of internet usage was to communicate with friends and knowledgeable people, as well as to search for health knowledge using Facebook application. Their internet literacy skills were mainly at access and analysis levels. Additionally, the elderly with different education levels, occupations, internet usage experience, and usage purposes were also found with significantly different levels of internet literacy ($p < .05$).

The analysis results revealed that motivation from the application's benefits and application usage had effects on the usage satisfaction of the decision to use the new health application. This might be due to the elderly's needs of useful knowledge that can be easily accessed. This is in line with a study of [1] "Social Network Usage Behavior and Bangkok Older Person's Satisfaction" which found that the elderly who used different social media

platforms - Facebook, Twitter and Line applications - had different satisfaction levels of online social networks usage.

Nonetheless, the analysis revealed that usage motivation from the application's benefits and self-care had effects on the usage satisfaction of the new health application in the form of usage frequency. This might be due to human nature that people often care for their own health and well-being. This corresponds to a study of [6] "Lifestyles and Behaviors in Using Social Network by Office Workers in Bangkok", which found that a majority of the sample population were Facebook users.

They were found using social media platforms during 18:01-22:00 for 7 days per week. They would spend an average of 90 minutes during each use and most of them accessed online social media platforms using a computer at home or in a dormitory.

The activities which these office workers did regularly on these social media platforms were chatting with friends, updating their personal status, information, or photos, and searching or exchanging information. Most of the Bangkok office workers who used social networking services had a family-oriented lifestyle, with 20 families who would express their activities, interests, and opinions about relationships. In addition, the office workers with different occupations and income were also found using social media platforms at different periods of time.

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