

## **An analysis of digital economy related personal expenditure in Thailand**

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### **ABSTRACT**

The objective of this paper is to conduct a survey on personal expenditure that is related to digital economy, to study factors that determine digital economy related personal expenditure, and to analyze the impact of such personal expenditure on an individual's well-being. An online questionnaire is used as the data collection method for 444 samples. The data is analyzed through a descriptive statistics approach to describe the survey results. Seemingly unrelated regression is also used to study the factors affecting personal expenditure related to digital economy, while ordered probit is the analysis method adopted to identify the impact of digital economy related personal expenditure on an individual's well-being.

According to the study results, those having their workplace in Chiang Mai represent the majority of the samples (60.81 percent). Most of them use the Internet at home (more than 75 percent) and more than 80 percent use the Internet during the time period of 18.01–24.00 hours. LINE is the most popular application. More than 89 percent of the samples use the Internet through social media websites. The most common purposes are chatting, making phone calls, and social networking (more than 75 percent). The average spending through online trading is 55,974.75 baht per month. Most of the samples use the Internet for entertainment and have not benefited from the Internet by using it for learning or increasing income. On the impact of digital economy related personal expenditure on individuals' well-being, the study found that Internet users who spend little on advertising media and much on online trading and air ticket purchase are happier in terms of dining. At the same time, those who have small expenditure on online learning and large expenditure on downloads are happier working. Internet users whose large portion of spending is on online air ticket purchase are happier indulging in hobbies, while those who spend little on movies have happier families. On the other hand, Internet users who spend much on applications are happier from generating higher extra incomes.

## 1. Significance of the Problems

Thai people, male and female, have a similar need for Internet connection. Most Thai people use information technology through mobile phones, which makes them incur a high level of expenditure compared to their income, given that most Thais are low-income earners. The most common purpose of using information technology is for entertainment. That said, the technology has not been genuinely adopted for the development of the quality of life.

Realizing the importance of digital economy, the researchers became interested in studying and analyzing personal expenditure that is related to digital economy in Thailand. According to the literature review, previous research centered on the use of information and communication technology that contributes to the country's GDP growth, and thus a better economic growth. However, no study has been carried out to analyze the impact that personal expenditure related to digital economy has on a person's well-being. Therefore, the researchers are interested in this area of the subject and have conducted an analysis on a group of Internet users. This paper, "An Analysis of Digital Economy Related Personal Expenditure in Thailand," aims to explore behaviors of personal spending on items related to digital economy, to study the factors determining digital economy related personal expenditure, and to analyze the impact of such personal expenditure on a person's well-being. The study results will provide a guideline for effective planning for business operation, as well as information for the National Digital and Social Economy Committee to use in planning and determining policies to promote and develop social economy infrastructure in the future.

## 2. Methodology

The following table summarizes methodologies to examine each of the objectives in this study.

Objective	Theoretical Model	Data Analysis Methodologies
1. Examine individuals' spending behaviors in the digital economy.	Random Utility and Consumer Behavior Models	Collect digital economy related personal expenditure data using survey and analyze data using descriptive statistics.
2. Identify factors determining personal expenditure in the digital economy.		Analyze data using Seemingly Unrelated Regression Estimator (SURE). $E_i = \alpha_1 + \sum_{k=1}^N \beta_{k,1} X_k + \sum_{i=0}^N \beta_{m,1} Z_m + \varepsilon_1$ $E_j = \alpha_2 + \sum_{k=1}^N \beta_{k,2} X_k + \sum_{j=0}^N \beta_{m,2} Z_m + \varepsilon_2$
3. Analyze the effect of digital economy related expenditure on individuals' well-being.		Analyze data using Ordered Probit Model. Subjective Well-being = $\alpha + \sum_{k=1}^K \beta_k E_k + \varepsilon$

## 3. Results

This study collected data regarding digital economy related expenditure from 144 individuals to define spending behaviors in the digital economy and to identify factors determining the behaviors. Additionally, this study also examines the effect of personal expenditure in the digital economy on individuals' well-being. The results are as follows.

### 3.1 General information on the survey sample

From the survey, it was obvious that the majority of the sample (60.81 percent) lived in Chiang Mai. The time period during which people used the Internet the most was from 6:01 p.m. to 12:00 a.m. In this time period, 80 percent of the sample used the internet. More than 74 percent of the Internet users used the Internet from home. The most popular application was LINE. A total of 89 percent of the sample reported that they used the LINE application. As far as activities were concerned, more than 75 percent used the Internet for social activities such as voice calls and social networking. In addition to social activities, the study found that individuals also traded stocks online. The average transaction was THB 55,974.75 per month.

### 3.2 Factors determining digital economy related expenditure

This part of the study used the Seemingly Unrelated Regression Estimator (SURE) model to analyze the data. The results are as follows:

- a. Factors determining expenditure on movies: The variables that are negatively related to movie expenditure, at 5% significance level, include female (X1) and age (X2). The variables that are positively related to movie expenditure, at 5% significance level, are fixed home broadband (Z6) and time of the Internet usage (Z8).
- b. Factors determining expenditure on advertisement: The variables that are negatively related to advertisement expenditure, at 5% significance level, include age (X2) and private sector employee (X5). The variable that is positively related to advertisement expenditure, at 5% significance level, is international travel (Z4).
- c. Factors determining expenditure on music: The variable that is negatively related to music expenditure, at 5% significance level, is age (X2).
- d. Factors determining expenditure on online games: The variable that is negatively related to gaming expenditure, at 5% significance level, is age (X2).
- e. Factors determining expenditure on chatting and social networking: The variables that are negatively related to social networking expenditure, at 5% significance level, include age (X2) and marital status (X5).
- f. Factors determining expenditure on online shopping: The variable that is negatively related to online shopping expenditure, at 5% significance level, is mobile broadband (Z5). The variable that is positively related to online shopping expenditure, at 5% significance level, is international travel (Z4).
- g. Factors determining expenditure on E-banking: There is no variable that significantly determines the expenditure on E-banking.
- h. Factors determining expenditure on applications: The variable that is negatively related to the expenditure on applications, at 5% significance level, is age (X2).

- i. Factors determining expenditure on online newspapers, journals, and magazines: The variables that are negatively related to the expenditure on online newspapers, journals, and magazines, at 5% significance level, include private sector employee (X5) and mobile broadband (Z5).
- j. Factors determining expenditure on E-learning: There is no variable that significantly determines the expenditure on E-learning.
- k. Factors determining expenditure on software: The variable that is positively related to software expenditure, at 5% significance level, is age (X2).
- l. Factors determining expenditure on online databases: The variable that is positively related to expenditure on online databases, at 5% significance level, is income (X8).
- m. Factors determining expenditure on online stock trading: The variable that is negatively related to the expenditure on online stock trading, at 5% significance level, is household size (X7).
- n. Factors determining expenditure on online air ticket booking: The variable that is negatively related to expenditure on online air ticket booking, at 5% significance level, is private sector employee (X5).
- o. Factors determining expenditure on online hotel booking: The variable that is negatively related to expenditure on online hotel booking, at 5% significance level, is marital status (X3). The variable that is positively related to expenditure on online hotel booking, at 5% significance level, is household size (X7).

### **3.1 Effects of digital economy related expenditure on individuals' well-being**

This part of the study used the Ordered Probit Model to analyze the data. The results are as follows.

- a. Factors determining the food dimension of an individual's well-being: The type of expenditure that is negatively related to the food dimension of well-being at 5% significance level is advertisement expenditure (E2). The expenditures that are positively related to well-being, at 5% significance level, are online stock trading expenditure (E14) and online air ticket booking expenditure (E15).
- b. Factors determining the transportation dimension of an individual's well-being: None of the expenditures included in this study significantly determine the transportation dimension of well-being.
- c. Factors determining the exercise dimension of an individual's well-being: None of the expenditures included in this study significantly determine the exercise dimension of well-being.
- d. Factors determining the work dimension of an individual's well-being: The type of expenditure that is negatively related to the food dimension of well-being, at 5% significance level, is e-learning expenditure (E11). The expenditure that is positively related to well-being, at 5% significance level, is online database expenditure (E13).

- e. Factors determining the hobby dimension of an individual's well-being: The type of expenditure that is positively related to the hobby dimension of well-being, at 5% significance level, is online air ticket booking expenditure (E2).
- f. Factors determining the family dimension of an individual's well-being: The type of expenditure that is negatively related to the family dimension of well-being, at 5% significance level, is movie expenditure (E1).
- g. Factors determining the social recreation dimension of individual's well-being: None of the expenditures included in this study significantly determine the social recreation dimension of well-being.
- h. Factors determining the knowledge dimension of an individual's well-being: None of the expenditures included in this study significantly determine the knowledge dimension of well-being.
- i. Factors determining the earning dimension of an individual's well-being: The type of expenditure that is positively related to the family dimension of well-being, at 5% significance level, is the expenditure on applications (E9).  
Factors determining the peace dimension of an individual's well-being: None of the expenditures included in this study significantly determine the peace dimension of well-being.

#### **4. Conclusion**

This digital expenditure study has the objectives of describing spending behaviors in the digital economy, identifying factors determining the behaviors, and examining the effect of personal expenditure in the digital economy on individuals' well-being. The data for this study were collected using online surveys. The sample included 444 Internet users. The conclusions of the results for each of the objectives are as follows.

##### **Objective 1: Examine individuals' spending behaviors in the digital economy.**

The results showed that majority of the sample lived in Chiang Mai. The most common time period during which the Internet is used is from 6:01 p.m. to 12:00 a.m., and most of the users used the Internet from home. The most popular social media application was LINE and the most frequent activities online are chatting and other social networking activities. Although the average transaction for online stock trading is THB 55,974.75 per month, majority of the sample still use the Internet mostly for entertainment purposes. There was not much evidence for usage to acquire knowledge or to generate income.

##### **Objective 2: Identify factors determining personal expenditure in the digital economy.**

From the results, the following can be concluded:

- a. As for the factors determining expenditure on movies, young female users who use the Internet at home for a longer time period are more likely to spend more on online movies.
- b. As for the factors determining expenditure on advertisement, young users who are not private sector employees and who frequently travel internationally are more likely to spend more on online advertisements.

- c. As for the factors determining expenditure on music, young users are more likely to spend more on online music.
- d. As for the factors determining expenditure on online games, young users are more likely to spend more on online gaming.
- e. As for the factors determining expenditure on chat and social network, single female users are more likely to spend more on social networking activities.
- f. As for the factors determining expenditure on online shopping, users who frequently travel abroad and do not use mobile broadband are more likely to spend more on online shopping. This may be because users do not trust the security system for online transactions through mobile broadband or the interfaces are not yet convenient enough for users on mobile devices.
- g. As for the factors determining expenditure on E-banking, there is no variable that significantly determines the expenditure on E-banking. This may be because majority of the users do not use E-banking and this is potentially due to the lack of trust of the security system.
- h. As for the factors determining expenditure on applications, younger users are more likely to spend more on applications.
- i. As for the factors determining expenditure on online newspapers, journals, and magazines, users who are employees in the private sector and who use mobile devices are likely to spend less on online newspapers, journals, or magazines.
- j. As for the factors determining expenditure on E-learning, there is no variable that significantly determines the expenditure on E-learning. It is evidenced that most Internet users use the Internet for entertainment purposes, not for information-acquiring purposes.
- k. As for the factors determining expenditure on software, older users are likely to spend more on software download.
- l. As for the factors determining expenditure on online databases, users with high income are likely to spend more on online databases.
- m. As for the factors determining expenditure on online stock trading, users with fewer family members are likely to spend more on online stock trading.
- n. As for the factors determining expenditure on online air ticket booking, users who are employees in the private sector are likely to spend less on online air ticket booking.
- o. As for the factors determining expenditure on online hotel booking, single users with more family members are likely to spend more on online hotel booking.

**Objective 3: Analyze the effect of digital economy related expenditure on individuals' well-being.**

From the results, the following can be concluded:

- a. As for the factors determining the food dimension of an individual's well-being, Internet users who spend less on online advertisement and more on online stock trading and air ticket are more likely to have better well-being in the food dimension.
- b. As for the factors determining the transportation dimension of an individual's well-being, none of the expenditures included in this study significantly determine the transportation dimension of well-being. This may be because the Internet cannot improve the conditions for actual transportation.
- c. As for the factors determining the exercise dimension of an individual's well-being, none of the expenditures included in this study significantly determine the exercise dimension of well-being. This may be because satisfaction from exercising depends on other factors that are not relevant to Internet usage.
- d. As for the factors determining the work dimension of an individual's well-being, Internet users who spend less on E-learning and more on online databases are more likely to have better well-being in the work dimension.
- e. As for the factors determining the hobby dimension of an individual's well-being, Internet users who spend more on air tickets are more likely to have better well-being in the hobby dimension.
- f. As for the factors determining the family dimension of an individual's well-being, Internet users who spend less on online movies are more likely to have better well-being in the family dimension.
- g. As for the factors determining the social recreation dimension of an individual's well-being, none of the expenditures included in this study significantly determine the social recreation dimension of well-being. This may be because Internet usage has multidimensional effects on satisfaction as far as an individual's offline social life is concerned. Although social network users may gain more satisfaction from offline social activities, too much Internet usage may have adverse effects as well. Therefore, it can be safely concluded that there is no factor with statistically significant conclusive effect.
- h. As for the factors determining the knowledge dimension of an individual's well-being, none of the expenditures included in this study significantly determine the knowledge dimension of well-being. This may be because E-learning is not yet widespread. Any available sources of knowledge require users to be self-motivated to learn.
- i. As for the factors determining the earning dimension of an individual's well-being, Internet users who spend more on applications are more likely to have better well-being in the earning dimension.

As for the factors determining the peace dimension of an individual's well-being, none of the expenditures included in this study significantly determine the peace dimension of well-being. This may be because factors determining peacefulness for each individual are out of the scope of this study. Online activities have no effect on the peace dimension of an individual's well-being.

## **5. Policy recommendation**

The government should support all constructive online activities, namely economic, social, educational, and medical, by improving the Internet security to gain trust from the users.

## **6. Potential research extensions**

- a. In addition to the expenditure on each of the online activities, the questionnaire can also ask the amount of time that each individual spends on each of the activities. The study on both the expenditure share and the time share of each of the activities can be useful.
- b. The survey method can be more diversified. The online survey allows us to study general behaviors as regards Internet usage and its effects. Studies on the more detailed behaviors can be performed by observing individuals' actual usage of the Internet in Internet cafés or by organizing group interviews.