ฟังก์ชันการตัดสินใจเข้าสู่เศรษฐกิจใต้ดินยุคดิจิตอล

THE DECISION-MAKING FUNCTION INTO UNDERGROUND DIGITAL ECONOMY

ธันย์พัทธ์ ใคร้วานิช

คณะเศรษฐศาสตร์ มหาวิทยาลัยรังสิต ประเทศไทย

ฟังก์ชันการตัดสินใจเข้าสู่เศรษฐกิจใต้ดินยุคดิจิตอล

ธันย์พัทธ์ ใคร้วานิช

คณะเศรษฐศาสตร์ มหาวิทยาลัยรังสิต ประเทศไทย

THE DECISION-MAKING FUNCTION INTO UNDERGROUND DIGITAL ECONOMY

TANPAT KRAIWANIT

FACULTY OF ECONOMIC, RANGSIT UNIVERSITY, THAILAND

Decision Function to Underground Digital Economy

Tanpat Kraiwanit,Ph.D.

Faculty of Economics, Rangsit University, Thailand

*Corresponding Author: First Author dr.tanpat@gmail.com

Globalization makes our world become smaller and leads new technology to help comfort men to be developed. The fact that we can now communicate across the world quickly shows that technology is a factor driving the economy. It is not only economic bright side which is developed, but the underground economy has also entered the digital age. The objectives of this study are the teenage 13 up who are curious to try and lack judgment to decide what is right or wrong and the affecting factors participate in underground business via online data collection about 1200 samples in Thailand. It was found that the adolescents with behavioral modification involved in the underground economy in various ways, for instance, communications could now expand broadly, both in Thailand and overseas via the Internet. Moreover, the quantitative survey showed importance of education(X2), income(X3), residence(X4), place(X5), the device used(X6), and patterns of internet use(X7).

Whereas $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

$P = \frac{1}{1+e^{-z}}$ P is probability to involve in underground business

There was a statistically significant relationship between the young Thai and the underground in the digital economy. The government does not allow the youth to enter internet café before 3 pm and after 10 pm on a week day, and educate the public about the role for people along with strictly enforcement. The government should set off time of internet cafe not open 24 hours and strictly bans youngsters to play before 3 pm and after 10 pm on a weekday. As the youth who have no knowledge about computer law and regulations. Thus, the government should educate and organize them to comply with law. The government should establish the cyber police department to control and arrest illegal shops. Create the campaign encourage and focus on the copyright products only.

Keywords Decision Function ,Underground Economy, Digital Economy.

TABLE OF CONTENTS

		Page
ABSTRACT		i
TABLE OF CONTENT		ii
LIST OF TABLES		iv
LIST OF FIGURES		v
CHAPTER 1	INTRODUCTION	1
	Background and importance problem	1
	The purpose of study	2
	Scope and limitations of the research	2
	Conceptual framework	3
	Research Hypothesis	3
	Benefits of research	4
	Definitions	4
CHAPTER 2	LITERATURE REVIEW AND RELATED RESEARCH	5
	Related thories	5
	Related researches	12
CHAPTER 3	RESEARCH METHODOLOGY	45
	Population and sample size	45
	Research instrument	45
	Questionnaire Development	46
	Data collection	46
	Data analysis	47

TABLE OF CONTENTS (Continued)

		Page
CHAPTER 4	THE RESULTS OF THE STUDY	53
	The data were analyzed using descriptive statistics	53
	The factors affecting the decision to participate in the underground digital economy	61
	In-depth Interview	71
CHAPTER 5	CONCLUSIONS AND RECOMMENDATIONS	74
	Conclusions	74
	Discussion	75
	Suggestion	77
BIBLIOGRAPHY		78
APPENDIX		80

LIST OF TABLES

TABLE		Page
2.1	2006 World Cup Gambling Debt	38
2.2	Statistical data of crime in relation to intention on valuables as reported nationwide	42
4.1	The gender of the youth participated in the underground digital economy	54
4.2	The age of the youths participated in the underground digital economy	54
4.3	The level of education of the youth participated in the underground digital economy	55
4.4	Revenue of youth involved in underground digital economy	55
4.5	The living of youth involved in the underground digital economy	56
4.6	The location of the youth to use the Internet who participated in the underground digital economy	57
4.7	The Internet devices of youth participated in the underground digital economy	57
4.8	The purpose of Internet using of youth involved in the underground digital economy	58
4.9	The proportion of the underground digital economy that youth involved	59
4.10	The frequency of Thai youth used service of the underground digital economy	60
4.11	Pearson Chi-Square of each variable	62
4.12	The score according to the significance level of the variables is then averaged weight in total 100 points	62
4.13	The results of the Multivariate Analysis Method = Enter (case 1.1 using all independent variables)	64
4.14	The results of the Multivariate Analysis Method = Forward Stepwise (Wald) (case 1.2 use locals significantly)	66
4.15	The results of the Back Testing of case 1.1	69
4.16	The results Back Testing of cases 1.2	70

LIST OF FIGURES

FIGURE		Page
1.1	The conceptual framework of the study	3
2.1	Relationship between buyers, small dealers, and big hosts	21
2.2	Relationship between buyers, small dealers, and big hosts	24
3.1	The non-linear graph of logistic and ranges from 0 to 1	49
3.2	Logistic graph when $\beta 1 > 0$ and Logistic graph when $\beta_1 < 0$	50
4.1	The curve of the ROC Curve of the case 1.1 when the response variable classified into 2 groups	68
4.2	The curve of the ROC Curve of the case 1.2 when the response variable classified into 2 groups	68

Chapter 1

Introduction

1.1 Background and importance problem.

Digital technology is what helps drive economic growth across all sectors to reach their full potentials with the development of new technology. In addition to convenience for humans, it also helps shrink the world to become smaller. You can communicate quickly across the globe, discover information or make transactions easily such as via e-commerce, e-banking, etc. With this change of globalization, on the bright side, it is not just the economy which is being developed, but also includes the underground economy which has a dark side too, having entered the digital age. In terms of underground economy of Thai youth involvement ,Leksrinak, Ploydanai, and Sukchotiratana (2012) studied gambling behavior of youth for the case study of Bangkok and found that 72% of youth gamble at least 1-3 days per week, 89.8% gamble at a friend's house or resident, each gamble cost 1,000 – 2,000 baht. Kasikorn Thai Research Center Co., Ltd. conducted a survey and found that 21.4% of football audiences which are respondents are the gambler. The amount is varied from only 200 baht to 10,000 baht and estimated the amount of gambling debt to be at least 6,000 million Baht.

Because the site search related to online gambling, it is very simple. The use of digital media in communication knowledge and transaction is used as a channel to enter underground economy, especially Thai youth is curious and will be involved in the underground economy easily.

The results of the digital economic policy will enhance the role of digital technology in full capacity of all sectors. It will develop and improve national living in Thailand for sustainable growth. That is globalization developed new technologies to help comfort the human and change our world becoming smaller. We can communicate across the world quickly; discover information or transactions easily as E-Commerce, E-Banking, etc. These are requiring a digital technology as the component.

But among the midst of globalization, not only bright side is just the economy that has been developed. It also includes the underground economy as the dark side that has entered the digital age as well. The access to the underground economy can do something more convenient causing the underground business development in the digital economy up.

1.2 The purpose of study

In the study of underground digital economy, objectives to study the factors that have made teenager as well as decision to involve in the underground digital economy.

1.3 Scope of the research.

The scope of study is to study the model of the underground digital economy that Thai teenager involved is details contains.

1) The scope of the area is in Thailand involved teenager used computer online at least 1 hour a day

2) The scope of the population and the sample focused on teenager who participated in underground digital economy.

Quantitative survey is the number of sample 1,200 from a group of teenager in Thailand and the ages of 13up and teenager who was involved or was ever

involved with the underground digital economy 20 samples conducted in-depth interviews which do qualitative research.

1.4 Conceptual framework

In this research, Information from related research and education documents will lead to summary document is a conceptual framework to be applied to research

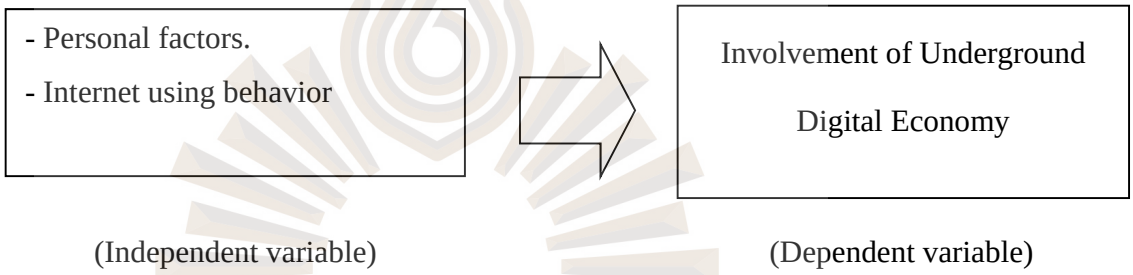


Figure 1.1 The conceptual framework of the study.

The conceptual framework deployed in this study is Thai youth between the ages of 13up. The study of personal factors including sex, age, education, revenue, the internet using behavior as the independent variables, which is also the dependent variable, is the Thai youth who involved in the underground digital economy.

1.5 Research Hypothesis

1) Hypothesis 1 Personal factors affecting participated in the underground digital economy
2) Hypothesis 2 Internet using behavior affecting participated in the underground digital economy

1.6 The benefits expected to be derived from the research

1) The results of the study will be used as a guide to determine policies and measures to solve the problem of the underground digital economy.

2) To be the basis for new research that will explore the story of the underground digital economy.

1.7 Definitions.

Underground Digital Economy

In Thailand, the cause of the underground economy as patronage system and authoritarian social – political, the accumulation of funds at the initial stage, the scourge of drugs, prostitution – hired wife, gambling and illicit trade, including the struggling of the poor to survive on a daily basis Arephapirom, 2003.

Underground Digital Economy in this study classified into 3 groups as follows:

Online gambling is gambling for money or other things with a fortune by predicting or guessing the consequences in the future and these can be done through digital media such as online casino that allows players to gamble on gambling online, that allows players to play even at home betting online gambling by predicting the results of football matches will take place.

Pornography media means goods or media that are related to sexuality, including sex-phone is having sex with each other over the phone. Live Sex is sexual intercourse or shows their orgasm through digital media will be shown for money.

Illegal products is a product that has a law banning imported or exported outside the country strictly, and in some cases, forbid any transmission of prohibited goods into or exported outside the country.

Chapter 2

Literature Review and Related Research

The study was conducted by focusing on related content and papers such as Thailand and international underground business surveys, previous researches on youth's risk factors including related definitions and theories. The related researches are as follow:

2.1 Related Theories

Underground Digital Economy has emerged when the underground economy has entered the digital age.

The questionnaire has defined the underground digital economy in a simple way so that Thai youths can easily understand the term as follows:

Underground digital economy is any action performed on the internet associating with spending or making money, illegally, where police would make an arrest or the wrongdoers do not want their parents to know."

In this paper, it refers to a various underground economy that is appeared in the form of digital media or when the digital media is used to facilitate the access to underground economy, for a marketing campaign, or to escape from the authority.

Affecting Factors

We found that there are 3 factors contributing to the emergence of underground economy as follow:

1) Formal economy or capitalist market economy, despite their ability to dominate the market, they cannot completely replace the traditional exchanges. This is likely the case for countries where capitalism has not been much developed.

2) Formal economy or capitalism usually support groups with large capital and obstruct groups with less capital to enter the market. Therefore, some groups that had lost their competition in the formal market entered the underground economy, instead.

3) Resulted from the flaws of the economy system and politics in the formal market itself, some group of people ranging from small to large companies, government workers, and criminal organizations have taken the opportunity to establish influences to seek for profit by using force to infringe or violate the law causing the emergence of the underground economy.

Various papers have stated that the emergence of the underground economy came from the ineffectiveness of law so people have turned to underground activities. This is because the cost of making things legal is expensive. For wealthy countries, cost of money transfer is quite low comparing to the national income, which is in contrast to developing countries especially Latin American countries. Incorporating with corruption by government personnel and companies, tax and other burden avoidance, and the analysis of primitive capital accumulation, which is the analysis for ex-communist countries such as the then Soviet Union, eastern European countries, and china, all of these have contributed to the emergence of underground economy.

There have been two important concepts on gambling i.e. Conservatism and Positivism. Conservatism focuses on moral resulting in gambling prohibition from the government and society. However, Positivism emphasizes on a unit of analysis study or the study on each individual and disregarding the environment as a factor. It is the study of the gambler himself without consideration that if gambling is either bad or legal.

Newman (Otto Newman, 1972: 11) stated that both Conservatism and Positivism were influenced by Functionalism and Positivism, which were main concepts in sociology at that time and focused on searching for the good order of the society. Study of main behavior study has revealed a perspective that when everyone in the society is the same, impact from gambling behavior on family, community, and society can be seen.

Researches from many psychologists and psychotherapists have revealed that many gamblers cannot control their desire to gamble and have a personality that would deteriorate themselves, their families, and works. When incorporating it with an economic concept with visualization that gambling is an irrational behavior of human that makes the gambler to face a financial problem and eventually leading to the social problem, and a sociology concept which sees that gambling does worsen the gambler and the society. Such augmentation of concepts has influenced the government and society to frame up gambling in order to create a good order for the society. Gambling has been seen as a crooked behavior, that is, gamblers were not emerged from government policy and the law including the view that gambling is a crime. Therefore, the government has been intervening to control gambling of the people.

Veblen (Thosistein Veblen , 1932: 276) stated that in the 19th century, high society had demonstrated wealth and social status by gambling, which was a recreational activity. Similarly, many other economists said that gambling is associated with recreation and is an activity of the working class. This shows the positive side of gambling that it is an entertaining activity and hobby of high income people. It is the other view of gambling in which the gambler must always have the problem by gambling. Gambling was seen as a tool to gain economic benefit and be recreational for gamblers.

McMillan (Jan McMillan, 1996: 20) sees that gambling behavior is not a crooked behavior but rather a recreational or a stress-relieving activity from work. Moreover, gambling is the creation of social structure balance and is a normal activity that is safe to relieve stress from work. It is also a way to win instability and uncertainty of the working class and it opens up an opportunity for gamblers to use their abilities in this opportunity of theirs. Therefore, gambling is about unleashing each individualism that was lost or could not be demonstrated at work even if the gambler recognizes the potential of losing money and low chance of winning. This is because the gambler wants to be rewarded via interactions with others and to be associated with friends.

From Friedman and Savage's theory on income, a decision to gamble has inverted relationship with income where lower income individual has a tendency to gamble more than the individual with higher income. The lesser the income, the individual would gamble on games with higher risk, that is, to invest less and hope for a much higher return.

Moreover, Markowitz further elaborated Friedman and Savage's theory that most people like to gamble on games with lower risk, which the chance of winning is higher even if the investment is greater. This shows that gambling amount is fluctuates by income.

Social Influencing Factors

Social influence refers to one's behavior than effects and transforms behaviors and attitudes of others to be the same. The transformation has three processes namely, stimulation, reinforcement, and social comparison. Behaviors of people that mutually influence one another in terms of behavior and attitude are called social interaction. For example, a teacher's behavior influences the behavior of the student. If the teacher looks at the student, the student will pay more attention. At the same time, if the student is acting bored and not paying attention to the teacher, the teacher would feel discourage to teach. Social influence can be categorized into two types such as unintentional social influence and intentional social influence as follow:

1) **Unintentional social** influence refers to the social influence of a person that affects the behavior of another person without any intention. Social stimulation refers to the influence of other people or the environment on the behavior of a person in which the people have not done anything. For example, if a person has been jogging for a period of time and feels tired and the speed has reduced, when the person meets another group of joggers, he/she would feel more energized and could run faster. In another case, a person has practiced very well on a speech but might forget some messages when speaking in front of a large crowd. Bruce Bergum and Donald Lehr have found that a person shall act more when others are presented; for example, when we give our very first Buddhist

speech to a crowd of mixed age groups, we would be shaken, bashful, and shiver. Nevertheless, some other psychologists have found that when asking a person to learn a meaningless word, he/she could study well and if he/she is alone or study alone at night, he/she would be more focused and could read for a longer period of time. Robert Zajonc has constructed a theory on stimulation in order to explain the difference of this finding and he found that the presence of others shall stimulate our energy and force. The increased force shall manipulate the already prominent behavior of a person to become more prominent or better and would manipulate the already deficient behavior to become more deficient. If the task is easy or is something that has been studied well, the person would carry out the task quickly and better. If the task is difficult, complex, or unfamiliar, which normally would be easy to make a mistake, with the presence of others, the task shall appear to be difficult with more mistakes. Subsequently, Nicholas Cottrell has elaborated Zajonc's theory by stating that the presence of others not only stimulate the person and enhance the person's prominent behavior, it can evaluate the person's behavior, too. A research by Cotrell et al. has found that when asking participants to recall words with the presence of others who were being blindfolded, the presence of others did not affect behaviors of the participants. The presence of others would have an influence on the participants only when the presence is of people who were able to evaluate. Therefore, stimulation helps to enhance the prominent behavior to become more prominent and worsen the deficient behavior to become more deficient. The presence of observers would increase the already prominent response to become more prominent if the observers are able to evaluate the behavior of the person.

Social reinforcement is another way that a person can influence the behavior of another person. It acts as both the source or reward and punishment where a reward is in terms of money, points, hug, kiss, praise, etc. Meanwhile, the punishment would be threatening, hitting, feeling of regret, separation from the social, etc. Primary reinforcement shall be given such as food, water, shelter, etc. while secondary reinforcement is given in the forms of money, acceptance, love, etc. However money may

not be a direct reward since it cannot make you full or quench your thirst, money can be used to buy food to end hungriness or thirstiness and can make you happy.

Reinforcement by language is the use of language or speech as a reinforcement for a person; for example, parents usually use reinforcement by language in teaching their child such as when the child speaks politely, the parents would laud the child, etc. Researchers also have found that reinforcement by language from a stranger is more influence than from the parents because parents are likely to give too much love to their child resulting in a reduction of reinforcement by language. Chester Insko has studied the influence of reinforcement by language on attitude and believe of a person by interviewing a group of students on television regarding the feeling towards a spring festival, half of the students received positive reinforcement by language every time they spoke to support the festival while half were rewarded when they spoke to oppose the festival. One week later, Insko made a general survey of all the students where there was one question asking about the opinion on the festival, he found that students received reinforcement by the language when opposing to the festival. Hence, reinforcement by language used in telephone interview has an impact on the attitude and opinion of students in the later stage.

2) Intentional social influence refers to the event that a person's influence has an impact on the behavior of another person with the intention to be so. Intentional social influence may be in the forms of obedience to a person with authority, persuasion, conflict, and brainwash. For example, legislation of traffic law for the citizen to comply, advertisement to persuade consumers to consume the advertised product, or persuasion of a politician towards eligible voters, etc.

Obedience to the authority is a prominent form of intentional social influence, which is the behavior of a person with authority that has an impact on people's behaviors. Obedience to the authority may lead to disaster. From a study conducted by Stanley Milgram (1963) where participants were acted as teachers and cliques acted as students.

Teachers would ask questions to be answered by students and if the answer was wrong, the punishment would be an electrical shock of 15 volts up to 450 volts, which is dangerous. It was found that 65% of the participants obeyed the experimenter to punish the students at 450 volts. Moreover, the lesser the distance between the participants and the experimenter, the lower the magnitude of obedience.

Persuasion or the change of attitude by changing the perception is an effort to indirectly change a person's behavior. It is the persuasion that aims to trigger attitude change with a hope that it should subsequently lead to behavior change and it is a change of attitude by changing the perception. Everyone has the attitude towards things because attitude helps to categorize social environment that is hard to perceive to be easier such as categorizing things to be good or bad. Attitude can be formed by various ways such as by social comparison, social information, self-perception process from parents' guidance, classic condition, and familiarity. Change of attitude from persuasion needs a trustful and attractive communicator. A trustful communicator can make the news receiver to be inclined as can be seen from advertisements of many products; for example, a toothpaste advertisement has the actor dress up as a dentist, etc. Attractiveness or satisfactoriness of the communicator is another factor contributing to the change of attitude. For instance, advertisements use handsome men and pretty women as models and they can attract to create the change in attitude because information receivers desire to be like the communicators.

For changing the attitude by changing the behavior, conflict is used to change the attitude of having the person behave in the opposite of his/her attitude. This is from the believe that people prefer their conformation of attitude and behavior and when the behavior and attitude do not conform, conflict arises in which is a stressful event. People would reduce this event by two methods such as to reduce the non-conformation of thought by changing the attitude or by increasing the level of thought conformation and would conclude that they were forced to exhibit the behavior. People would rather choose to change their attitude

Social perception refers to the act of perception of a person and interpretation of other people's behaviors that the person has interaction with. This perception has an impact on the response of the person; for instance, if we perceive that a neighbor is a cheater and liar, the perception would deter us to associate with the neighbor. It is interesting to note that in perceiving others, we would perceive by categorizing people into different categories such as hardworking, honest, kind-hearted, introvert, aggressive, etc. Social perception comprises of two processes namely impression and identification of the cause.

Brainwashing is a high level of social influence and it can be done in many ways such as instigating pain so the subject person feels low or guilt would make brainwashing become easier, control of the environment or information, satisfactory or trustworthiness would make brainwashing easier, and confession. In accordance with the theory of the conflict of thought, a person would change his/her attitude in line with the behavior that has already acted.

2.2 Related Researches

The seven factors causing deviated behavior of a student that the first three factors were factors relating to mass and information, factors related to community, and factors related to the economy (Petchdum and Yamkasikorn) et al. (2011) they found in accordance with the social development of adolescence in this globalization age. Teens will start to give less importance to friends and more to the mass and information since they start to desire freedom, need intimating people, and need understanding. And according with Kongrach (2011) conducted his study on the use of the social network of teenagers in Thailand for the case study of Facebook. He found that most Thai teens have spent quite a lot of time on the social network since it can be used with freedom without any control and no need to care about the length of use. This is because the social network

is a result of communication technology innovation that makes the world become smaller and any news and information can be accessed instantly. Opinions, thoughts, and information can be exchanged to satisfy people's needs. Social media also has high potential in linking the extensive network so users are admiring the social network and feel fun until they are abnormally obsessed. In using a social network, users can express their secrets to discuss problems or show their own identity needs that they do not dare to do in real life and can track news and movements of friends or people that have been long lost in touch. Social influence has a great role in the use of social network. It has a positive relationship with an abnormal obsession of social network use and social network addiction because Thailand has an open society that easily and rapidly accepts changes especially for the adolescence group that use a social network for entertainment and to be fashionable. Arpabhirom (2003) found that there are four significant factors contributing to the occurrence of underground business as follow: (1) history and cultural inheritances. The patronage system and authoritarian system give importance on the supporter or the person with power more than the rules. Therefore, enforcement is slacking or tends to favor people with authority. (2) The rapid expansion of capitalism in the country simultaneously with the cold war and fascism have resulted in primitive capital accumulation that relies on government officials. Therefore, government corruption has disseminated. (3) The development of capitalism system and structure has created monopolization or the benefit is preserved only for a selected minor group incorporating with bribery of authority in other countries, the phenomena of profit speculation, less investment for more profit, and the trend of over consumption, and development of new technology have opened up an opportunity for underground business to expand rapidly resulting in unlawful trading and new type of crime on the internet. And lastly, (4) the strive to survive on the daily basis of low income citizens especially in big cities with rapid expansion rate as a result of the shrinkage of the agricultural sector and bankruptcy of farmers. Moreover Leksrinak,Ploydanai,and Sukchotiratana (2012) studied gambling behavior of youth for the case study of Bangkok and found that 72% of youth gamble at least 1-3 days per week, 89.8% gamble at a friend's house or resident, each gamble cost 1,000 – 2,000 baht. The social factor contributing to gambling that received the highest

weight is when having a friend who gambles, people will gamble, too. The structure factor with high contribution to gambling is the news and information received that related to the place to gamble and method of gambling. The factor of attitude and motivation to gamble that received the highest weigh was the channel of earning of the desire to win back. The result of emotion and physic that received high weight distribution was that the person is addicted to gambling and cannot quit so he/she lost confidence, stress out, and just neglect. The result of family and social interaction that received high weight distribution was such as lying to the family to gamble, fight with family members over gambling, stealing money from family members because of gambling, and borrowing to gamble. The result of aggressive youth behavior and the education of youth were medium such as skipping class to gamble, loss of concentration and sleeping in the class, bad school result when comparing with friends, reprimand by teachers and family or being arrested, and lastly, the lead to risky behavior to smoke, drink, or use drugs.

In the year 2012 Singh, Jain-Chandra, and Mohommad have conducted a study on the inclusive growth, institutions, and the underground economy and found that for developing countries with huge underground economy, production capacity is managed to be passed on only to strong institutions, which is an obstacle to the formal participation and economic growth. This is a major contributor to the occurrence of underground business, especially when associating with the role of institutions and the law. When businesses are facing with enforcement, there will be a motivation to hide their activities in the underground business. This shows that the factor contributing to the emergence of underground business is likely to be the institution itself rather than a tax. According with Drabsch (2003) conducted a study on the economic and social implications of gambling found that gambling industry is a large industry in Australia in which last year, Australian have lost 15 billion dollars in gambling. Gambling in Australia has grown extensively in the past twenty years where casinos and game machines are legal. They have earned a lot of revenue for the government via gambling tax. When surveying for a reason of gambling, it was found that people gamble because of community's attitude and the

phenomena of gambling problem emerged. However, policies were laid out to reduce hazardous of gambling by making the gamblers be responsible. Moreover, community development and funding support of community projects were implemented for communities to receive benefit from the establishment of casino community. In addition, security measures were put in place to reduce conflict and reduce the likeliness to gamble in other forms that may have an impact on crime.

Underground Loterry

In the end, the Government Lottery Office has decided to print out lottery tickets of two and three digits, similar to the underground lottery, to be sold in July, 2003. The reason is to solve the overpriced lottery tickets that have been selling more than the specified price after the government has laid out a policy to seriously suppress the underground lottery business where underground lottery hosts are categorized as 1 of 15 illegal influential groups. Therefore, some underground lottery hosts have temporarily stopped their operations resulting in an increase in the selling price of lottery tickets for the round of 1 June 2003 from 80 baht a pair to 90-100 baht a pair. This has greatly troubled the people who wish to buy government lottery. At the same time, issuance of such lottery could help the government to pull out the enormous pool of money from the underground lottery business to become the government's revenue. It is expected that the government shall earn from the selling of two and three digits lottery tickets the amount of around 75 million baht per round or 1,800 million baht per year after deduction of expenses. Nevertheless, what the government should consider besides the increase in revenue is that the policy may promote the people to be obsessed more with gambling to the extent that the household income might decrease by purchasing government lottery rather than using that money to spend on their daily lives. On the other hand, debt increases by using the money to buy lottery without wining for many consecutive rounds. It is similar to a double-edge sword where the government should be careful of the subsequent social problems. 9th year, issue 1276, 6 June 2003 http://www.tfrc.co.th

Since the government has announced that underground lottery hosts are 1 of 15 illegal influential groups that must be suppressed quickly starting from 21 May 2003, the impact on the underground lottery business is huge. Some underground lottery hosts have changed the betting process such as placing the bet 1-2 days before the lottery draw and only accept the bet by phone. Meanwhile, many hosts have stopped their underground lottery operations because they are afraid that the government may increase the punishment to the point of asset investigation or immediate seizure of asset if they were arrested similarly to what the government has done continuously done to drug hosts. This is very much different from the original punishment that only comprises of imprisonment and fine where underground lottery hosts are not afraid of since income or revenue from this business is quite high so the hosts are not afraid. However, seizure of asset is a severe punishment and the hosts could go broke. Moreover, some people who buy underground lottery believe that their assets would be seized too if they were arrested and with such believe, underground lottery hosts have stopped their operation while some people also stop buying underground lottery or turn to other games such as the government lottery. As a result of the higher demand, government lottery tickets have become shorted and a price has increased from 80 baht per pair to 90-100 baht per pair. Therefore in order to solve the overpriced lottery ticket, the shortage of lottery tickets, and to pull out money from the underground business into the controllable system, the government via the government lottery office has an idea of printing out lottery tickets of 2 and 3 digits as similar to the underground lottery to be sold in July 2003 for the amount of 5 million tickets with the face ticket value of 50 baht. Each ticket has the same reward as the underground lottery. For example, if the buyer wins 2 digits for below and top numbers, 1 baht of purchase would yield the maximum reward of 70 baht. 3 digits for top numbers would yield the maximum 500 baht prize for the bet of 1 baht. 3 digits for top numbers but the digits are switching places (Tote), 1 baht of purchase would yield the maximum reward of 100 baht. 3 digits for below number, 1 baht of purchase would yield the maximum reward of 125 baht. After all, the issuance of such 2 and 3 digits lottery is a temporary measure before the implementation of automatic lottery machine, as known as the online lottery, in early 2004.

When the government has a serious policy to suppress underground lottery while having the idea of conducting this type of business instead of the original hosts, there is both positive and negative impact on the overview of the economy and society as follow:

Positive impact

The government would have more money to improve the country. Originally, most of the money circling inside the underground lottery was just the transfer of funding from the citizens to both large and small underground lottery hosts, which the number of people was many folds lesser than lottery buyers. Therefore, the money was not used to invest and create real output. Hence if Thai government can turn this money into government revenue via the issuance of 2 and 3 digits lottery, there would be a benefit in term of investment in the real sector and would also enhance investment and employment that would also develop the country's GDP. It should be noted that 5 million issues of 2 and 3 digit lottery could yield the maximum sale amount of 250 million baht per round and with revenue after the deduction of expense at around 30% or 75 million baht per round or 1,800 million baht per year. Such revenue could increase instantly if the lottery is popular among buyers and when the government issue more lottery.

People have more choices

In the past, hosts would take advantages of underground lottery buyers by not accepting or reduce prizes for the popular lottery numbers especially if the numbers were featured on newspaper. Such action not only reduced the risk, it encouraged hosts to take advantages on the buyers. Since the government had a policy to issue 2 and 3 digits lottery which resembling the same style as the underground lottery, the current hosts would less likely to take advantages of the buyers in terms of prize money and the betting number.

Negative impact

It is promoting the people to infatuate with gambling. It is a double edged sword for the government to issue the 2 and 3 digits lottery to replace the underground lottery and to solve the overpriced government lottery because instead of taking an advantage while the underground lottery business is still shaking from the decisive suppression policy of the government that resulted in many underground lottery operators going out of businesses to constantly promote the citizens to quit buying the illegal underground lottery to improve their economic statuses, where the betting money could have turned into other expenses for the family and most of the time the betting money would have gone wasted, the government issued a similar type of underground lottery to be sold side by side with the ordinary government lottery so the people are still associating themselves with gambling.

The mission of solving overpriced government lottery has failed. Although underground lottery business was prosperous in the past, the price of the government lottery has been overpriced. The reason was that the undersupplied of the lottery while the number of lottery sellers has increased. The increased sellers did not receive direct quota from the government so they had to buy from the authorized hosts and they had to sell the lottery at a higher price than the government stipulated price. Moreover, government personnel have not taken it seriously to capture and suppress anyone who sold overpriced lottery. Therefore despite the policy of the government to issue 2 and 3 digits lottery to support the demand while the government is trying to suppress the underground lottery, it would only somehow alleviate the overpriced lottery but probably could not decisively solve the problem since the government has not solved the problem from its root.

Underground lottery business has become more complex resulting in a more difficult suppression

Since the government has a more decisive policy to suppress underground lottery together with the issuance of a new type of lottery that is similar to the underground lottery that expects to suppress easy operation of the underground lottery hosts, however, it cannot completely eradicate these underground hosts. This is because underground hosts can persuade customers by giving them a discount of around 10-25% of the betting money and the customer can bet in credit. Therefore since trillions of baht is circulating annually in the underground lottery business, underground lottery hosts would develop the betting system to be difficult to catch by using technology and modern communication devices such as telephone and facsimile instead of messenger to convey lottery betting bill (record of lottery betting) from one place to another. Moreover, some hosts have installed a closed-circuit camera to monitor any intrusion of a police force. Such method would make underground lottery suppression more difficult.

In conclusion, underground lottery business has increasing its value in harmony with the increasing number of citizens and income. This is because Thai people prefer lottery and underground lottery comparing to other types of gambling since they are the easiest form of gambling. Therefore, the government is hoping to turn the immense amount of money circulating in the underground lottery business to be government's revenue. However what the government should place as the major concern, ahead of the increase in revenue, is the negative impact resulting from providing more legal gambling channel by the government because there is more negativity than positivity for the people and, most of the time, gamblers would loss more than win. Additionally, gambling could create more quarrel and debt within a family.

Underground Lottery

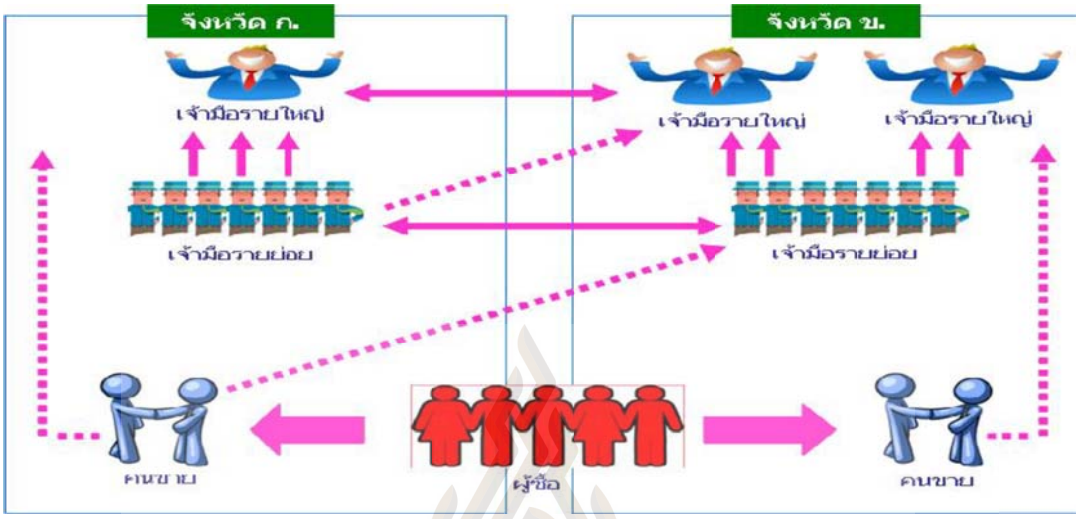
Section: Politics, Social, Culture/Social

Important Issue

The underground lottery is an illegal gambling practice but it is very popular among Thais of all genders and age groups, from merchants to pupils/students, company workers, government personnel, and business owners. This is because the underground lottery is easy to bet and the amount of bet can be as low as 5 baht, 10 baht, or 20 baht. At the same time, betting centers are dispersed around in villages, workplaces, markets, and communities so that hosts or agents can reach gamblers easier.

The underground lottery is played by referring to the result of the government lottery. However afterward the demand has increased, underground lottery then expanded its result reference to Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery that their drawing dates were different from government lottery's drawing date. Nevertheless when the government changed the drawing date of both Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery to be the same as the government lotter's date, which is on the 16th of each month in order to reduce the frequency of underground lottery betting, both underground lottery types then became less popular.

The value of underground lottery has increased constantly from around 320,000 million baht annually from 1993 to 1995 to around 542,000 million baht in 2003. Thirty percent of the betting money or 162,000 million baht per year is income of the hosts, sub-agents, and distributors (data from Piriyarangsan et.al, "Setthakij Karn Panun" book : Choices of Policy in 2003). However since the government has changed the drawing date of the government lottery to be the same date as of the Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery, it is expected that the value of underground lottery betting would also change.



Source : Research by Sungsit Piriyarangsan et.al. ("Setthakij Karn Panun" book : Choices of Policy in 2003)

Figure 2.1 Relationship between buyers, small hosts, and big hosts

Overview

Value of underground lottery is quite large when comparing to the money people spend on the government lottery, which is legal. Market value of government lottery is around 55,000 million baht (calculated by the issued lottery of 23 pairs, 46 million copies with 2 rounds of issuance in each month. It is equal to 552 million copies per year and the current selling price is at 100 baht per pair). It is evident that value of the underground lottery is around 5-6 times larger than of the government lottery.

In 2004, the Government Lottery Office issued 2 and 3 digits lottery as similar to the underground lottery in order to solve the overpriced government lottery and to draw the immense amount of money circulating in underground lottery business to become government's revenue. However now, the issuance of 2 and 3 digits lottery has stopped by government policy to be replaced by online lottery or the sale of lottery via automatic machines.

In the past, police has been interested in continuously suppressing underground lottery. However, the process of underground lottery business is complex with various layer of hosts ranging from small agents in communities to many higher level of hosts before reaching the major host. Moreover, telephone, facsimile, and email are used so it is very hard to suppress. Recently, underground lottery has now become popular again after the 2 and 3 digits lottery was terminated in late 2006. Where recently, Piriyarangsan has appraised that the value of underground lottery in 2009 would be at around 300,000 million baht.

Currently, there are many forms of media such as newspaper and the internet that provide data and detail of prized numbers in each lottery round and such data came from many sources such as shaman houses, monks, weird particles, etc. At the same time, lottery guide is sold in book shops and lottery shops which mean underground lottery gamblers have an easy resource of numbers to gamble. It is expected that the value of underground lottery would increase in harmony with the increased number of citizen with continuous new gamblers entering the field while current gamblers will still keep on gambling. Moreover, the increased income of the people is also another factor stimulating the betting of the underground lottery, the increase of betting amount in each round, or even during economic hardship, people still gamble in the underground lottery because it is the channel and hope of people to receive big money for less investment.

If the government can sell the 2 and 3 digits lottery via automatic machines, there will be quite an impact on the underground lottery business because with the automatic machine, people can freely choose to bet in any numbers unlike the underground lottery where sometimes some numbers are prohibited to gamble or the prize money is discounted for certain numbers. Sometimes when there are many prize winners, there will be a problem of paying out prize money.

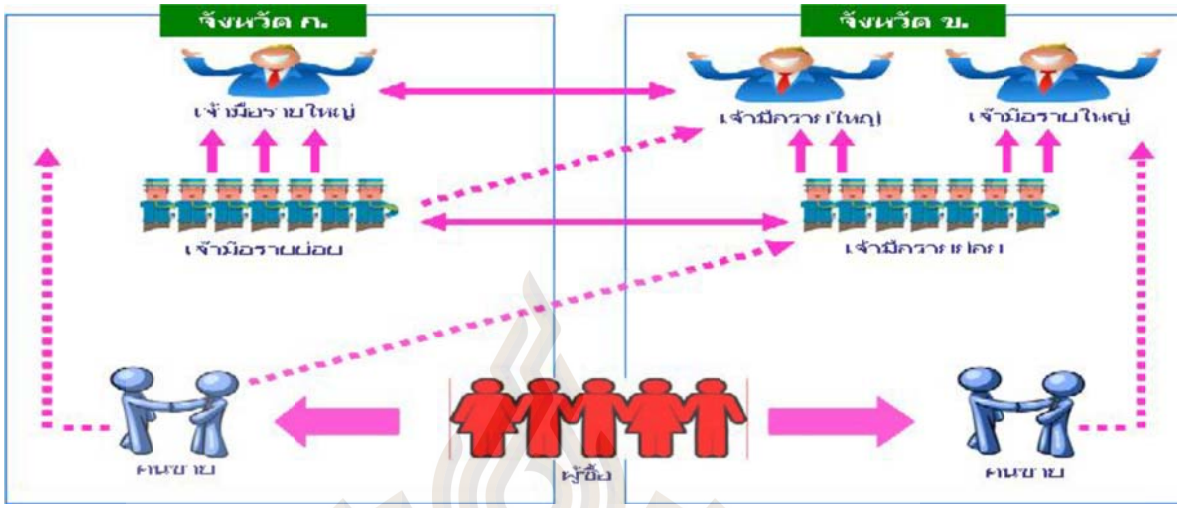
Most recently in May 2009, the Ministry of Finance has given an authority to the Government Lottery Office to issue 2 and 3 digits lottery via automatic machines (online lottery) where it is expected to take around 45 days or around August to be able to operate.

Important Issue

The government has the policy to terminate the project of issuing special 2 and 3 digits lottery via automatic machines or the online lottery early in 2010 because the government does not want the people to gamble more especially children and youths that may gamble more in the above ground lottery because it is easy to buy. With such factor, it is feared that people will turn to the underground lottery because there is no alternative.

The underground lottery is played by referring to the result of the government lottery. However afterward the demand has increased, underground lottery then expanded its result reference to Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery that their drawing dates were different from government lottery's drawing date. Nevertheless when the government changed the drawing date of both Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery to be the same as the government lotter's date, which is on the 16th of each month in order to reduce the frequency of underground lottery betting, both underground lottery types then became less popular.

The value of underground lottery has increased constantly from around 320,000 million baht annually from 1993 to 1995 to around 542,000 million baht in 2003. Thirty percent of the betting money or 162,000 million baht per year is income of the hosts, sub-agents, and distributors However since the government has changed the drawing date of the government lottery to be the same date as of the Government Savings Bank's lottery and Bank for Agriculture and Agricultural Cooperatives' lottery in 2007, it is expected that the value of underground lottery betting would also change.



Source : ("Setthakij Karn Panun" book : Choices of Policy in 2003)

Figure 2.2 Relationship between buyers, small hosts, and big hosts

Overview

The underground lottery is an illegal gambling practice but it is very popular among Thais of all genders and age groups, from merchants to pupils/students, company workers, government personnel, and business owners. This is because the underground lottery is easy to bet and the amount of bet can be as low as 5 baht, 10 baht, or 20 baht. At the same time, betting centers are dispersed around in villages, workplaces, markets, and communities so that hosts or agents can reach gamblers easier.

The value of underground lottery is quite large when comparing to the money people spend on the government lottery, which is legal. Market value of government lottery is around 70,000 million baht (calculated by the issued lottery of 29 pairs per round, 58 million copies with 2 rounds of issuance in each month. It is equal to 696 million copies per year and the current selling price is at 100 baht per pair). It is evident that value of the underground lottery is around 4-5 times larger than of the government lottery.

In 2004, the Government Lottery Office issued 2 and 3 digits lottery as similar to the underground lottery in order to solve the overpriced government lottery and to draw the immense amount of money circulating in underground lottery business to become government's revenue. However now, the issuance of 2 and 3 digits lottery has stopped by government policy.

In the past, police have been interested in a continuously suppressing underground lottery. However, the process of underground lottery business is complex with various layer of hosts ranging from small agents in communities to many higher level of hosts before reaching the major host. Moreover, telephone, facsimile, and email are used so it is very hard to suppress.

The government has the policy to terminate the project of issuing special 2 and 3 digits lottery via automatic machines or the online lottery early in 2010. With such factor, it is feared that people will turn to the underground lottery because there is no alternative.

Recently, the underground lottery has now become popular again after the 2 and 3 digits lottery was terminated in late 2006. Where recently, Sungsit Piriyarangsan has appraised that the value of underground lottery in 2009 would be at around 300,000 million baht.

Currently, there are many forms of media such as newspaper and the internet that provide data and detail of prized numbers in each lottery round and such data came from many sources such as shaman houses, monks, weird particles, etc. At the same time, lottery guide is sold in book shops and lottery shops which means underground lottery gamblers have an easy resource of numbers to gamble. It is expected that the value of underground lottery would increase in harmony with the increased number of citizen with continuous new gamblers entering the field while current gamblers will still keep on gambling. Moreover, the increased income of the people is also another factor stimulating the betting of the underground lottery, the increase of betting amount in each round, or

even during economic hardship, people still gamble in the underground lottery because it is the channel and hope of people to receive big money for less investment.

Most recently, the government has the policy to terminate the issuance of 2 and 3 digits lottery via automatic machines in which the underground lottery business will no longer have a competitor. This is because the above ground lottery has many advantages such as people can freely choose to bet in any numbers, unlike the underground lottery where sometimes some numbers are prohibited from gambling or the prize money is discounted for certain numbers. Sometimes when there are many prize winners, there will be a problem of paying out prize money.

The World Cup has officially started on 31 May 2002 until the final match on 30 June 2002 in which football fans around the world and in Thailand have given a lot of attention. During this special period, the need for news and information regarding the World Cup has also elevated as can be seen by the news reported on television channels, newspapers, magazines, radio stations, hosting of special programs reporting before each match. While these media formats are still widely popular, the most modern form of media that has no limit or a new form of media that is equally popular is being the internet that could respond to somewhat 640 million users around the world. Besides providing information and knowledge, the internet can offer services relating to buying and selling of the World Cup's products such as tickets, souvenirs, etc., and for the first time in any international competitions, the internet provides match highlights online. Moreover, the internet is a new channel for gambling that worth keeping attention since it provides easy and speedy communication and very hard to check for illegal activities (Year 8, issue 1071, 10 June 2002 http://www.tfrc.co.th

.

The Fédération Internationale de Football Association or FIFA, the organizer of the World Cup, granted authorization to yahoo.com to provide a unique service of broadcasting highlights of each goal of all the 64 matches via the internet. Internet users that wish to view can register and pay a service fee of 19.95 dollars or around 890 baht. Moreover, there are other services to be provided such as a 24-hour news update, introduction of all the 32 teams, competition schedule of all the 64 matches including critics, introduction to 20 arenas in South Korea and Japan that are co-hosts, history of the World Cup, goals in the past, information of each referee, points table, cities hosting the competition, merchandising of souvenirs, match tickets, screen savers and wallpaper download, etc. Yahoo was selected to be the official website of this competition because it is popular and received worldwide recognition with diversified services in many languages. Furthermore, there are official websites of the World Cup of the co-hosts, South Korea and Japan, (www.worldcupkorea.org and www.jawoc.or.jp) that also provide similar services as Yahoo's in which both websites provide additional services in terms of country's information and tourism information. Besides the official websites, there are many other websites that provide similar services especially news, quiz games, best player voting, best goal voting, and web boards. It can be clearly seen from websites of various news agencies, both domestically and abroad, that emphasize on the World Cup to create liveliness during this time.

Nevertheless during the live broadcasts of matches by television channels and radio stations, internet usage has decreased by 45-50% since people would focus on the live matches. Live broadcast via the internet has not received much popularity because of the streaming quality and stoppage of the live image. In order to watch live online without any interruption, the computer must be upgraded for more speed that would bear a most cost. Anyhow in the near future, the internet will be a new mean of broadcasting that will receive more popularity.

Besides providing useful or informative services for users, the internet is also a new way to gamble. From a behavioral survey of people in Bangkok regarding World Cup 2002 for the total of 1,619 samples by Kasikorn Research Center, interesting issues were found as follow:

A number of World Cup gamblers increased. Kasikorn Research Center estimated that around 500,000 people in Bangkok, or 9% of the total number of people in Bangkok, are interested in gambling in this World Cup. Most of the samples aged between 15-35 years old. 15.4% of the sample group gambles via the internet. The research has found that the internet has today become a new channel for gamblers since the internet is an effective communication tool in terms of speed and cost as evident in the number of gambling websites, mostly from other countries. Internet has become a medium for Thai gamblers to bet without limitation of distance and as Thai people are obsessed with gambling, gambling websites have created a page in Thai to exclusively facilitate Thai gamblers. There are two forms of gambling via the internet 1) bet via official gambling websites and 2) usage of email as a communication tool instead of a telephone. 900 million baht flourished via the internet. The research on football betting via the internet of people in Bangkok revealed that the average money spent is around 12,000 baht per person. The Kasikorn Research Center has estimated that around 900 million baht will be fueled by the internet for this World Cup.

However amidst the hype of World Cup betting that is spreading widely while the competition is getting more intensive, the Royal Thai Police is asking for collaboration from internet service providers or ISP to block gambling websites from outside the country and to monitor internet cafes that are suspicion of being gambling houses in various areas especially in front of many academic institutions.

It should be noted that more usage of internet as a channel of gambling is because it is practically difficult to track for illegal activities in terms of investigation techniques to search for wrongdoers, the lack of manpower, high cost, and it is the mutual

consent between gamblers and the gambling websites. Even if it is caught, penalty and punishment are still not severe enough. For the effort of blocking gambling websites from other countries, there is no definite law for it and could initially only ask for collaboration of ISPs.

It can be seen that internet service is a good form of service to search for knowledge, communication channel, information dissemination, and channel to reach the target group where presently user expansion rate is rapid. On the other hand, the internet is mean to gain wealth or to conduct a crime of criminals and it will become a way to create heavy damage, too. Therefore, rules and regulations to control and punishment are necessary and crucial to preventing any unexpected problems that may arise.

The latest World Cup competition has helped motivated Thai people to play more sports and enhanced the dream of having a chance to see the Thai national team participate in the 2006 World Cup Finals in Germany in the next 4 years. It also helped circulate money in many businesses that received virtue of this World Cup competition. On the other hand, when the World Cup will close its curtain on 30 June 2002, what will follow is the festival of gambling debt chasing since, during this World Cup competition, football gambling has been widely popular. The level of gambling has indeed increased from the normal period. It is expected that this debt chasing will create a lot of problems such as fights within families, robbery or thievery, drug trading, or prostitution to pay back the gambling debt or even suicide to run away from debt as occasionally reported on the news. Therefore, football gamblers must acknowledge that football gambling is a form of vices that can create troubles for oneself in terms of money, study, or work and may also ruin the future. Moreover, if a debt is accumulated, problems will also affect family members and significant others. Therefore football enthusiasts should only watch for entertainment with family members or friends instead of aiming for gambling. This is because most gamblers would lose money or acquire more debt until some people had to commit suicide or to trade amphetamine as evident on the news.

Kasikorn Research Center has conducted a research on “World Cup 2002 gambling and people in Bangkok” by an in-depth study focusing only on football gamblers. The total sample size was 1,186 people and the study was conducted between 28 June and 3 July 2002 by dispersing the occupations and age groups in order to study the difference in football gambling behaviors during this World Cup competition. The research has revealed that from the total number of football gamblers in Bangkok that had responded to the questionnaire, 58.3% lose money in this World Cup and round 17.5% of people in Bangkok that has a thought of skipping gambling debt. When calculating the number of football gamblers in Bangkok incorporating with football gambling behavior of people in Bangkok, skipping of football gambling debt may atop 1,100 million baht (debt skipping means not having enough to pay off the football gambling debt so creditors have to start to chase debts. However, it is expected that the creditors can only retrieve back only partially). Therefore, it is to be concerned that debt chasing for this World Cup would be more aggressive comparing to the other previous World Cup competitions and this would cause the crime rate to skyrocket. Moreover, when incorporating research data on the behavior of Thai football gamblers to the calculation, football gambling debt skipping for this World Cup is forecasted to be almost 5,000 million baht since football gambling for this competition is vastly played comparing to the previous World Cup competitions.

In addition, the research has found that 55.3% of football gamblers would choose to skip debt owe to friends first then follow by acquaintances, and gambling brokers, respectively. The reason of daring to skip debt owe to friends fist is because they think that eventually, they can agree without causing any serious event when comparing with thinking of skipping debt owe to gambling brokers that are known to have aggressive methods of getting money back. However when considering base on the different age group and occupation group of people who are likely to skip debt payment, the most likely is the group of 25 years or younger or students/university students. Most of the people in this group are new gamblers where this is the first World Cup gambling for them.

Football gambling behavior of people in Bangkok…Convenient and on credit

During the past 1 month of the World Cup, gambling amount has reached the figure of ten billions of baht but when comparing to the previous World Cup competitions, there are clear differences in term of football gambling as follow:

1) More betting money did not go through gambling brokers. The research has found that betting amount of football gamblers in Bangkok that responded to the questionnaire are very much different from hundreds to hundred thousand. However, the number of people who betted through gambling brokers were similar to those who betted somewhere else. During this World Cup, 52.2% of football gamblers in Bangkok that responded to the questionnaire betted through gambling brokers while it was 70% for the previous World Cup. This is partial because the police have enforced strict measures to suppress gambling so some people in Bangkok would bet among friends. Moreover, the research revealed that some gamblers were new gamblers that had just started to gamble in this World Cup so it is not surprised that they would start to gamble among friends first. Additionally, the other factor contributing to more gambling among friends is that the live broadcast was during the day time so there was more chance for friends to gather around and watch and gamble at the same time.

Even the portion of gamblers betted via gambling brokers has dropped for this World Cup, the gambling amount has increased. Professional gamblers that bet through football gambling brokers had increased their gambling amount to around 65,000 baht throughout the tournament while the amount was 46,000 baht for the previous World Cup or increased by 41.3%. Nevertheless for gamblers that prefer to bet between friends and relatives, not via gambling brokers, they would only reserve a betting fund that only increased by 15.4% from the previous World Cup from 13,000 baht to 15,000 baht.

2) New gamblers and new football gambling brokers. The research has revealed that 24.7% of gamblers were first timers that had just entered into football gambling and comprised of main people of 25 years or younger. It can be said that this group is people who are still students. Most of the new football gamblers started to gamble when they see

friends bet. They would bet in a small amount at first because they do not know about football gambling especially technical terms and handicap rules that would take time and interest to understand. However once they start to lose money, they would bet higher on subsequent matches to recover. The emergence of new football gambling brokers, which mostly were minor brokers, resulted from the fact that profit gained from football gambling broker operation was enormous where each broker had millions of baht in profit because there was no limit of a bet. Large broker with networks in Bangkok and other countries had certainly earned more; therefore, it was not a surprise to see the emergence of new and smaller brokers and most of them acted as a middleman between the gamblers and large brokers.

Football gamblers in Bangkok… Skipped 1,100 million baht of gambling debt

Kasikorn Research Center Co., Ltd. conducted a survey and found that 17.5% of football gamblers in Bangkok that responded to the questionnaire would skip gambling debt. The expected amount of debt to be skipped is very much varied from only 200 baht to ten thousands of baht and when calculating from the number of football gamblers in Bangkok, the amount of gambling debt to be skipped shall be as high as 1,100 million baht or 17.0% of the total football gambling amount in Bangkok. Moreover, when incorporating the calculation with data on football gambling behaviors of Thai people, the amount of gambling debt to be skipped the entire country would be almost 5,000 million baht or 16.7% of the country's total amount of football gambling. This was because football gambling for this World Cup was very popular compared to the previous ones.

The research has found the reasons why gamblers in Bangkok reported that they acquired more football gambling debt than expected during this World Cup competition as follow:

1) An unexpected result of many matches. During this World Cup competition, there were many matches that the results were not as expected especially for highly favorite teams and strong teams that were defeated by much weaker teams that ashamed many football pundits. For example, Italy vs the Republic of South Korea or Spain and

the Republic of South Korea, etc. That resulted in a gain for brokers and lose for many gamblers. Hence when the semi-final matches, third-place match, and final match arrived, those who lose money from the earlier rounds would bet more to recover the loss. Yet, some gamblers lose more money. Gamblers can be categorized into the following groups:

Losing group. The research found that 58.3% were in this group. The proportion of losing money to brokers or friends was quite close. The amount of money loss of gamblers in Bangkok that responded to the questionnaire was quite different ranging from hundreds to hundred thousand but in average, the amount was around 7,000 baht per person. Additionally, it is to be noted that most of the new gamblers, especially those below 25 years old, that betted for the first time during this World Cup competition were in this group. This is because they had not had enough football gambling experience.

Winning group. The research found that only 31.7% of the sample population were winning. Most of the gamblers in this group have betted in football for quite a long time and they had quite an experience to gamble and knew how to control themselves not to over bet like new gamblers. The interesting issue is that for money won from football gambling, 40.4% reported that they would use this fund to continue betting, 28.1% reported that they would use to pay off some debt, 26.8% reported that they would reserve it to bet in other forms of gambling, and the rest 4.6% would spend the money and to buy a mobile phone.

The break-even group. The research found that only 10.0% were in this group. Most of the gamblers in this group were recreational gamblers and those who gambled among friends and they saw profit as to have a chance to bet and did not care much about the amount of money to gain or lose.

2) Betting on credit. From the research during 1998 to 1999 or during the previous World Cup, there were around 200 football gambling brokers in Bangkok and around 2 to 3 brokers in large provinces. However in this World Cup, there were many

more brokers especially Bangkok resulting in more convenience for gamblers to bet. However betting during this World Cup has become different from the previous World Cup. Since police have seriously trying to suppress football gambling, many brokers had avoided accepting bet in unmasking fashion and turned to use the telephone, instead. By using this method, the amount of credited bet increased where in the past each bet would be only by cash except for regular gamblers that were trusted by the brokers. Moreover, payment was done by offsetting the win and lose bets then specified the payment date. Therefore, gamblers would very much dedicate on betting almost on every match in a hope that when after offsetting, they would still have some profit. Nevertheless for some, that made them acquire more gambling debt and the aftermath is expected to be more debt chasing activity especially when the World Cup is over. For good credit customers with quite a high amount owed, the broker would negotiate to pay in installment or to reschedule the payment date. For student customers that had no credit with brokers, the brokers would investigate to identify the gambler and the bet would only be placed by cash. However for smaller brokers, cash was still more popular.

While football gambling business is still booming, the business has created an interesting occupation which is the chit conveyor. Chit conveyor received a percentage cut from brokers when they could get customers and also received percentage cut when making prize payment to the winning gamblers. The percentage cut is as stipulated but in average is around 10% of the amount. However, chit conveyor has another duty of chasing debt from gamblers in the case of credit bet. However, most chit conveyors would only accept cash bet and, hence, debt chasing activity of football gambling brokers was conducted via chit conveyor, telephone, and professional debt chasers that would even follow the gamblers to their workplaces. For those likely to skip debt, football gambling brokers would solve this problem by blacklisting this customer and send his name to other brokers. The chit conveyor would also be penalized by the pay cut.

The research also found that 55.3% of football gamblers would choose to skip debt owe to friends first then follow by acquaintances, and gambling brokers, respectively. The reason of daring to skip debt owe to friends fist is because they think that eventually, they can agree without causing any serious event when comparing with thinking of skipping debt owe to gambling brokers that are known to have aggressive methods of getting money back. However when considering base on the different age group and occupation group of people who are likely to skip debt payment, the most likely is the group of 25 years or younger or students/university students. Most of the people in this group are new gamblers where this is the first football gambling experience for them.

Football gambling debt skipping… Cause of the increased crime

Since the expected football gambling debt skipping in Bangkok may atop 1,100 million baht and may reach 5,000 million baht nationwide, crime rate after the end of the World Cup might arise. This is because during any big football competitions especially the World Cup and the European Championship, the crime rate in the forms of thievery, snatching, looting, and robbery would increase from the normal period. From an observation of crime rate in relation to thievery, snatching, looting, and robbery during the previous World Cup (1998) there were 63,820 cases nationwide, which increased by 23.6% compared to the figure in 1997. Moreover in 1999 that did not have a world class football competition, the number dropped to 55,947 cases or decreased by 12.3%. For the year 2000 that had the European Championship, it went up to 63,236 cases, an increase of 13.0%, while for 2001 that did not have a major football competition, it went down to 60,794 cases or decreased by 3.9%.

During this World Cup, the Royal Thai Police has issued strict preventive and suppressive measures on football gambling by means of assigning police forces to monitor venues that showed live broadcast with many audiences such as at department stores and entertainment venues, etc. Moreover, measures were also implemented to suppress football gambling brokers and to punish business owners who hosted a live

broadcast of football matches and allowed gambling to take place. Additionally, the police asked for collaboration from financial institutes to monitor and check account movement of suspects or abnormal transactions.

On July 2nd 2002, the Royal Thai Police ordered all investigative departments of every police station around the country to closely monitor the behavior of people who were likely or expected to be debt chasers or to those that would threaten, harm, or commit a crime. After the World Cup, it is expected that people would acquire a lot of debt so police officers of every police stations were ordered to strictly oversee the situation since football gamblers that lose money might commit a crime to find money to pay back the debt. Football gambling debt chasing is a duty of police officers to take care of. Anyone who was threatened by debt chase can report to the police to take action and they should not deal with it by themselves. Although gambling is a personal problem, threatening is illegal. For those committed a crime to pay back their gambling debt, it is illegal, too. It is an expensive lesson to have football gambling debt and it is a waste of money.

Despite the efforts put by all parties to prevent and suppress football gambling but since the number of gamblers has risen and football gambling brokers had dispersed to many places incorporating with an important fact that gamblers could use a mobile phone to place a bet, it was very difficult to suppress. Therefore, football gambling is still popular in Thai society and the problem is getting bigger especially during this World Cup that violence from debt chasing could pressure losing gamblers to commit more crime.

Kasikorn Research Center Co., Ltd. has found that the problem of football gambling debt is a cause of many types of crime. The three most frequent crimes that are expected to follow after the ending of the World Cup are thievery, assault, and extortion. Besides serious action by the police in order to assure the safety of lives and properties of the people, a specific statistic on crimes from gambling should be collected to clearly

compare the damages from football gambling since, in the past, the police only collect the number of arrests made for football gambling.

This 2006 World Cup is playing a part to inspire Thai people to play more sports and it is helping to inject a tremendous fund of money into various businesses. On the other hand once, the World Cup will be over on 9 July 2006, what will follow is the festival of debt chasing resulted from football gambling. This is because, during this World cup, football was widely gambled during this time much more than the normal period. It is expected that debt chasing would cause a lot of problems such as fights in families, robbery or thievery, drug trading, or prostitution in order to make money to pay off the gambling debt or even to commit suicide to run away from the debt as are evident in news reporting. Therefore, football gamblers must acknowledge that football gambling is a form of vices that can create troubles for oneself in terms of money, study, or work and may also ruin the future. Moreover, if a debt is accumulated, problems will also affect family members and significant others. Therefore football enthusiasts should only watch for entertainment with family members or friends instead of aiming for gambling. This is because most gamblers would lose money or acquire more debt until some people had to commit suicide or to trade amphetamine as evident on the news.

Kasikorn Research Center Co., Ltd Year 12, issue 1833, 6 July 2006 has conducted a research on "World Cup 2006 and behavior of Thai people" between 1-15 May and 1-16 June 2006 for the total sample size of 3,793 sets separated by gender, age, and occupation of people in various regions nationwide. Afterward on 30 June to 3 July, an inquiry was made specifically for 500 football enthusiasts that followed the competition until the last stage. The inquiry was focusing on gambling lose and the chances of skipping the football gambling debt since there was a shock result in the semi-final matches where favorite teams such as England, Brazil, and Argentina were defeated. The research has revealed that from the total number of football gamblers that had responded to the questionnaire, 60.3% lose money in this World Cup and round 21.4% of gamblers had a thought of skipping gambling debt. (debt skipping means not having

enough to pay off the football gambling debt so creditors have to start to chase debts. However, it is expected that the creditors can only retrieve back only partially).

Therefore, it is to be concerned that debt chasing for this World Cup would be more aggressive comparing to the other previous World Cup competitions and may be a cause of higher crime rate especially for thievery, assault, and homicide.

Table 2.1 shows 2006 World Cup Gambling Debt

2006 World Cup Gambling Debt

Region	Proportion of losing gamblers without an ability to pay	Proportion of losing gamblers with a chance of skipping debt
Bangkok and the Greater Bangkok Area	36.5%	24.1%
Central	16.6%	14.8%
Northern	15.4%	15.6%
Northeastern	16.3%	21.5%
Southern	15.2%	24.0%
Overall	**19.0%**	**21.4%**

Source: Kasikorn Research Center Poll

In addition, the research has found that 51.1% of football gamblers would choose to skip debt owe to friends first then follow by acquaintances, and gambling brokers, respectively. The reason of daring to skip debt owe to friends fist is because they think that eventually, they can agree without causing any serious event when comparing with thinking of skipping debt owe to gambling brokers that are known to have aggressive methods of getting money back. However when considering base on the different age group and occupation group of people who are likely to skip debt payment, the most

likely is the group of 25 years or younger or students/university students. A portion of people in this group is new gamblers where this is the first World Cup gambling for them.

Kasikorn Research Center Co., Ltd. conducted a survey and found that 21.4% of football enthusiasts that responded to the questionnaire would skip gambling debt. The expected amount of debt to be skipped is very much varied from only 200 baht to ten thousands of baht and when calculating from the number of all football gamblers, the amount of gambling debt to be skipped shall be as high as 6,000 million baht or 16.2% of the total football gambling amount.

The research has found the reasons why gamblers in Bangkok reported that they acquired more football gambling debt than expected during this World Cup competition as follow:

1) An unexpected result of many matches. During this World Cup competition, there were many matches that the results were not as expected especially for highly favorite teams and strong teams that were defeated by much weaker teams that ashamed many football pundits. Especially, England vs Portugal and Brazil vs France that resulted in a gain for brokers and big lose for many gamblers. Hence when the semi-final matches, third-place match, and final match arrived, those who lose money from the earlier rounds would bet more to recover the loss. Yet, some gamblers lose more money since there was another shocked result in a semi-final match between Germany and Italy where Germany was a clear favorite because of a better handicap and advantage as the host. Gamblers during this World Cup can be categorized into the following groups:

Losing group. The research found that 60.3% were in this group. The proportion of losing money to brokers or friends was quite close. The amount of money loss of football enthusiasts that responded to the questionnaire was quite different ranging from hundreds to hundred thousand but in average, the amount was around 5,000 baht per person. Additionally, it is to be noted that most of the new gamblers, especially those below 25 years old, that betted for the first time during this World Cup competition were in this group. This is because they had not had enough football gambling experience.

Winning group. The research found that only 29.7% of the sample populations were winning. Most of the gamblers in this group have betted in football for quite a long time and they had quite an experience to gamble and knew how to control themselves not to over bet like new gamblers. The interesting issue is that for money won from football gambling, 40.4% reported that they would use this fund to continue betting, 28.1% reported that they would use to pay off some debt, 26.8% reported that they would reserve it to bet in other forms of gambling, and the rest 4.6% would spend the money and to buy a mobile phone.

The break-even group. The research found that only 10.0% were in this group. Most of gamblers in this group were recreational the gamblers and those who gambled among friends and they saw profit as to have a chance to bet and did not care much about the amount of money to gain or lose.

2) Betting on credit**.** From the research during 1998 to 1999 or during the previous World Cup, there were around 200 football gambling brokers in Bangkok and around 2 to 3 brokers in large provinces. However in this World Cup, there were many more brokers especially Bangkok resulting in more convenience for gamblers to bet. However betting during this World Cup has become different from the previous World Cup. Since police have seriously trying to suppress football gambling, many brokers had avoided accepting bet in unmasking fashion and turned to use telephone or the internet, instead. By using these methods, gambling on credit occurred where in the past each bet would be only by cash except for regular gamblers that were trusted by the brokers. Moreover, payment was done by offsetting the win and loses bets then specified the payment date. Therefore, gamblers would very much dedicate on betting almost on every match in a hope that when after offsetting, they would still have some profit. Nevertheless for some, that made them acquire more gambling debt and the aftermath is expected to be more debt chasing activity especially when the World Cup is over. For good credit customers with quite a high amount owed, the broker would negotiate to pay in installment or to reschedule the payment date. For student customers that had no credit

with brokers, the brokers would investigate to identify the gambler and the bet would only be placed by cash. However for smaller brokers, cash was still more popular.

Kasikorn Research Center Co., Ltd. has found that the sample group that acquired football gambling debt faced different methods of debt chase by football gambling brokers. 80.6% faced the method of conversation and negotiation, 11.9% faced extortion, and 7.5% faced various methods such as confiscation of valuables ranging from jewelry, mobile phone, or car. Nevertheless, some of the sample group reported that football gambling brokers had a procedure to chase debt in which they would start a conversation and negotiation. If the debt is still not paid, they will start to extort until confiscation of valuables. For some gamblers that were juvenile, the debt amount may be reported to the parents and hope for a repayment by them.

Once football gambling debt was acquired, the sample group had to find a way to solve the problem. A survey on the approach to solving football gambling debt problem of the sample group was conducted and the 3 most preferred solutions were to delay the payment/pay in installments, borrow money from friends, and visit a pawnshop. People in the sample group that had negotiated to delay the payment were mostly those that could not find a source to make repayment and would likely to skip football gambling debt.

Since the expected 2006 World Cup gambling debt skipping in Bangkok may atop 6,000 million baht nationwide, crime rate related to intention on valuables (such as thievery, snatching, looting, and robbery) shall increase. This is because during any big football competitions especially the World Cup and the European Championship, the crime rate related to intention on valuables would increase from the normal period. From an observation of crime rate in relation to intention on valuables during the previous World Cup (1998) there were 68,569 cases nationwide, which increased by 23.2% compared to the figure in 1997. Moreover in 1999 that did not have a world class football competition, the number dropped to 65,529 cases or decreased by 4.4%. For the year 2000 that had the European Championship, it went up to 68,334 cases, an increase of 4.3%, and

while for the previous World Cup in 2002, it went up to 68,906 cases or increased by 4.7%. What should be taken into a consideration is that the increased numbers of cases were the cases that were reported in which the actual cases could be higher. However, all the cases were not caused by football gambling but losing money on football gambling and not having enough to pay the debt was expected to be the supplement cause of crime related to intention on valuables. Moreover, when considering the statistic in relation to intention on valuables in 2006 that is expected to increase, it is 3 consecutive years increase in crime in relation to intention on valuables.

Table 2.2 Statistical data of crime in relation to intention on valuables as reported nationwide

Statistical data of crime in relation to intention on valuables as reported nationwide

Year	Reported cases	Change from last year
1997	55,652	+5.2
1998 (World Cup)	68,569	+23.5
1999	65,529	-4.4
2000 (Euro Championship)	68,334	+4.3
2001	65,813	-3.7
2002 (World Cup)	68,906	+4.7
2003	67,134	-2.6
2004 (Euro Championship)	68,665	+2.3
2005	76,178	+10.9

Source: The Royal Thai Police

During any important football competition, the Royal Thai Police has issued strict preventive and suppressive measures on football gambling by means of assigning police forces to monitor venues that showed live broadcast with many audiences such as at department stores and entertainment venues, etc., to prevent football gambling. Moreover, measures were also implemented to suppress football gambling brokers and to punish business owners who hosted a live broadcast of football matches and allowed gambling to take place. Additionally, the police asked for collaboration from financial institutes to monitor and check account movement of suspects or abnormal transactions.

The Royal Thai Police has ordered all investigative departments of every police station around the country to closely monitor the behavior of people who were likely or expected to be debt chasers or to those that would threaten, harm, or commit a crime. After the World Cup, it is expected that people would acquire a lot of debt so police officers of every police stations were ordered to strictly oversee the situation since football gamblers that lose money might commit a crime to find money to pay back the debt. Football gambling debt chasing is a duty of police officers to take care of. Anyone who was threatened by debt chase can report to the police to take action and they should not deal with it by themselves. Although gambling is a personal problem, threatening is illegal. For those committed a crime to pay back their gambling debt, it is illegal, too. It is an expensive lesson to have football gambling debt and it is a waste of money.

Despite the efforts put by all parties to prevent and suppress football gambling but since the number of gamblers has risen and football gambling brokers had dispersed to many places incorporating with an important fact that gamblers could use a mobile phone to place a bet, it was very difficult to suppress. Therefore, football gambling is still popular in Thai society and the problem is getting bigger especially during this World Cup that violence from debt chasing could pressure losing gamblers to commit more crime.

Kasikorn Research Center Co., Ltd. has found that the problem of football gambling debt is a cause of many types of crime. The three most frequent crimes that are expected to follow after the ending of the World Cup are thievery, assault, and extortion. Besides serious action by the police in order to assure the safety of lives and properties of the people, a specific statistic on crimes from gambling should be collected to clearly compare the damages from football gambling since, in the past, the police only collect the number of arrests made for football gambling. During the last corner of the 2006 World Cup, besides observing to see which nation will come out on top of this World Cup competition once it is over, the crime in relation to the intention of valuables should increase since it is always the case for the year with a major football competition. For this year, it is expected to be more severe because football gambling is still very popular.

Chapter 3
Research methodology

This research is the study of documents and research to study the behavior of Thai youth who involved in Thailand's underground digital economy. The researcher identifies analysis approach and conducting research as follows:

3.1 Population and sample size.

3.1.1 Population

The target population for the collection of primary data used in this study is that Thai youth aged 13 years old up and have been using the Internet regularly.

On the part of participating in the underground digital economy of Thai youth, can be filtered by selecting topic "The frequency of the service" If Thai youth select an option since "since 1 times a week" or above will be evaluated to participate in a underground digital economy based on questionnaire attached in Appendix B, the samples falling within the definition of 1,200 cases.

3.2 Research Instrument

In the research on the underground digital economy, there are tools that are used in the research are the two-part question that was used in the in-depth interviews to qualitative research and questionnaires for quantitative research.

1) In-depth interviews used to collect data and qualitative research by a group of key informants as purposive sampling interviewed Thai youth who has been involved in the underground digital economy and the people who are involved with the underground digital economy totaled 20 samples and because in this research the problem there is no right answer.

2) Questionnaire to collect quantitative data is a tool used to collect data was open-ended questionnaires and closed-ended questionnaires which are available from the education purpose, conceptual framework, and related research documents. Taken as creating practices questionnaire, which consists of 3 parts, as follows:

Part 1 : General information of the respondents

Part 2 : General behavior in the use of the Internet.

Part 3 : Questions about involvement in underground digital economy.

3.3 Questionnaire Development

1) Draft of questionnaire based on information from documents and interviews. To determine the factors that affect the Thai youth participated in the underground digital economy to analyze, synthesize and categorize the query for review and improve.

2) Testing the quality of the questionnaire by determining the validity with the questionnaire proposed advisors to determine the content validity and appropriate correct language when there is a suggestion then is revised questionnaire to content validity and completeness purposes. The questionnaire was to trial, with a population of 30 sets to calculate the reliability of the questionnaire with the analytical method of alpha coefficient was equal to 0.727 which was higher than the criterion is 0.6 indicates that the questionnaire can be trusted.

3) Making the full questionnaire used to collect data and used the program Google Form to collect questionnaires.

3.4 Data collection.

As the primary data from interviews with the Thai youth that was participated in the underground digital economy and responses from the questionnaire to keep away from the Thai youth between the ages of 13-21 years throughout the country, and Internet use focusing on specific by the board or the fan page of various educational institutions, including

Primary data is data collected from online questionnaire

Secondary data is the information gathered from the study of books, journal, research documents, website, and information from other relevant sources.

This research has gathered the following information:

1) Interviews conducted interviews and collect data manually with a contact in advance before the interview. Explain the interviewee aware of the purpose and request permission from the interviewee. As well as to clarify the interviewee know that data from the interviews will be kept a secret. The interviewee will not be affected in any way. While the interview would be taking notes and recorded both said the review emphasized the important information to verify that the information provided is identical to the understanding of the interview.

2) The questionnaire, collected data manually by using the questionnaire through online media conducted by sampling when the sample size already. There is a large population in sampling based on research using convenience sampling method by all the samples were collected throughout the country. Distributed to the high school, vocational college, and technical college, and sending a questionnaire link according to the web boards, Fan pages of a junior high school and high school throughout the country along with random prizes for those who do a questionnaire as motivation in the information of the respondents.

3.5 Data analysis.

Analysis and synthesis of data from documents, questionnaires, and interviews to get answers in the research and know the factors which make the Thai youth participated in the underground digital economy for incomplete questionnaire will eliminate.

1) General data analysis of respondents

Analyze data by using a computer program and processing statistical data, both in terms of general behavior in the use of the Internet, the respondent and the type of the

behavior of the respondents participated in the underground digital economy, which is a checklist, and then analyze the data by using the descriptive statistics to describe the information contains.

2) Analysis of factors that affect the decision to participated in the underground digital economy of Thai youth using general information of Thai youth as the Independent Variable. The analysis of general information and Internet using behavior of respondents in order to analyze the factors that may affect the Thai youth decided to participate in the underground digital economy and because data has the characteristic of independent variables is qualitative data is required to interpret the information to be quantitative by using The Pearson Chi-Square of each independent variable and dependent variable. The value of the analysis of the set points for each variable compared with the proportion of the Thai youth that participated in the underground digital economy. When getting the value of each variable, then put the numbers would be used to create a decision function into the underground digital economy.

In this research, the dependent variable is the decision to participated in the underground digital economy of Thai youth divided into participate and not participate, so it analyzes the factors that influence the decision to participated in the underground digital economy of Thai youth by using Logistic Regression analysis of Binary Logistic is used when the dependent variable Y is Dichotomous variable are variables that have only two value gives an estimate of the Y as a chance event that takes place, which is worth between 0 to 1. If using the linear regression equation is $\hat{Y} = a + bX$. The value of $\hat{Y}$ may not be in the range of 0 to 1 or 0, or that may be less than the one shown by the line in Figure 3.1.

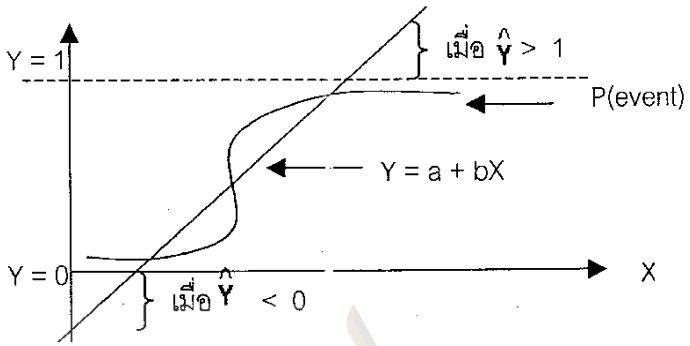


Figure 3.1 The non-linear graph of logistic and ranges from 0 to 1.

Simple linear regression equation or the equation shows the relationship between the Y with X will be in the form of linear as follows.

$$Y = \beta_0 + \beta_1 X + e$$

Or $$E(Y) = \beta_0 + \beta_1 X \qquad \text{By } -\infty < E(Y) < \infty$$

In logistic regression analysis when Y has only two values relationship to the X and Y is not in a linear, but the format will be in the form.

$$E(Y) = \frac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$$

So P (event) = P (event occurring) $= \dfrac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$

The equation is that the Logistic Regression Function $0 \leq E(Y) \leq 1$ หรือ $E(Y) = P(\text{event}) = P$ (event occurring) and P (no event) = P (events do not occurring) as

P (event) = P (Thai Youth participated in the underground digital economy, or Y = 1)

P (no event) = P (Thai youth do not participated in the underground digital economy, or Y = 0)

so P (event.) = P (event occurring). $= \dfrac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$

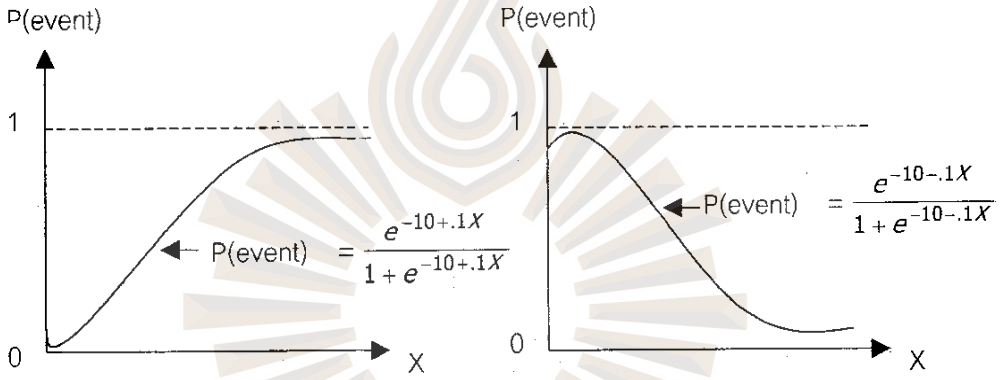


Figure 3.2 Logistic graph when $\beta 1 > 0$ and Logistic graph when $\beta_1 < 0$

When independent variable more than 1 or independent variable is p ($p \geq 2$) Logistic Response Function is changing

$$\text{P (event)} = \frac{e\beta_0 + \beta_1 x_1 + \ldots + \beta_p x_p}{1 + e\beta_0 + \beta_1 x_1 + \ldots + \beta_p x_p}$$

P (no event)= 1 – P (event)

Finding the relationship between dependent variables and independent variables are not in the form of linear. It is to adjust the relationship in the form of linear by.

$$\text{Odds} = \frac{\text{P (event)}}{\text{P (no event)}}$$

$$\text{Log (Odds)} = \left(\text{Log} \frac{\text{P (event)}}{\text{P (no event)}} \right)$$

$$\text{Or Log (Odds)} = \beta_0 + \beta_1 X_1 + \ldots\ldots + \beta_p x_p$$

This equation is linear and known as Logistic Response Function. from the formula of the Odds will be found if the Odds are more than 1 indicates that the event has occurred, rather than chance will not

The estimate of Y is the estimated P (event) for estimation of coefficient $\beta_0, \beta_1, \ldots, \beta_P$ using Maximum Likelihood method. In the general regression equation used Least Square method is used to estimate $\beta_0, \beta_1, \ldots, \beta_P$ from equation $Y = Y = \beta_0 + \beta_1 X_1 + \ldots + \beta_p x_p + e$

In general regression analysis provided that the errors have a normal distribution, but the Y has only 2 values 0 and 1 will make the error of e are the only 2 values, which is impossible that e have a normal distribution so it cannot be used normal regression analysis.

The terms of the regression analysis are the variance of the error or V (e) have a constant value of X, but in Logistic when Y has only 2 value and Y are the Bernoulli distribution. This makes the variance and the average has a relation. As a result, the condition that V (e) constant value would not be true. It is not possible to use normal regression analysis.

1) Wald Statistic is a test statistic value with the purpose to test the significance of the coefficient estimates of each β_i which is a model that has an impact on the risks that happen in the dependent variable.

$$Wald\_Statistic = \left(\frac{\beta_i}{S\tan dard\_Error\_of\_Estimate} \right)^2$$

2) Likelihood-Ratio Test is the ratio of the maximum value of the Likelihood function that belongs to the Full Model (L_1) with a Simpler Model of (L_0) used to determine the model and the value of this ratio by converting the log will be Likelihood-Ratio Test Statistic as follows.

$$-2\log\left(\frac{L_0}{L_1}\right) = -2[\log(L_0) - \log(L_1)] = -2LL$$

This value is -2 Log Likelihood or - This test statistic has n Chi-Square distribution.

3) Hosmer-Lemeshow Goodness of Fit Test is a statistics test using the Chi-Square distribution to test hypotheses that result from an analysis by the LRA (Logistic regression analysis), there are no different from the observed data.

Chapter 4
The results of the study

The study analyzed data collected from surveys and from the various documents reports To study the types and styles of the underground digital economy, Thailand youth involved, including the method of access and study the factors that contribute to Thai youth participated in the underground digital economy. The results were as follows:

4.1 The data were analyzed using descriptive statistics (Descriptive Statistics)

A survey using a questionnaire has a specific screening of Thai youth between the ages of 13-21 years old and known to the underground digital economy all 1200 examples. The results are as follows:

4.1.1 General data and Internet usage behavior.

General data analysis of respondents both personal information and information about the use of digital media from the questionnaire. Respondents were screened for specific Thai youth between the ages of 13-21 as follows:

Table 4.1 shows the gender of the youth participated in the underground digital economy.

Gender	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Male	235	46.4%	272	53.6%	508
Female	348	50.2%	345	49.8%	692
Number of Respondents	583		617		1200

Table 4.1 the most of the respondents were female, number 692 people. The number of female respondents who participated was 345 people, represented 49.8% and those who did not participate were 348 people, represented 50.2%. The respondents were male 508 people, and they were participated 272 people, represented 53.6% and those who did not participate, 348 people, represented 46.4%.

Table 4.2 shows the age of the youths participated in the underground digital economy.

Age	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
13 - 15 years	272	63.9%	154	36.1%	426
16 - 18 years	203	56.6%	155	43.4%	358
19 - 21 years	108	26.0%	308	74.0%	416
Number of Respondents	583		617		1200

Table 4.2 the most of the respondents, ages 13-15 years, the number 426 people who participated the 154 people represented 36.1% and did not participate, 272 people, represented 63.9%. The second, the respondents ages 19 -21 years, 416 people who participated the 308 people represented 74.0% and did not participate, 108 people, represented 26.0%. And the respondents ages 16 -18 years, 358 people who participated the 155 people represented 43.4% and did not participate, 203 people, represented 56.6%

Table 4.3 shows the level of education of the youth participated in the underground digital economy.

Education Level	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Junior high school	265	63.3%	154	36.7%	419
High school	207	60.1%	138	39.9%	345
Vocational	13	29.0%	33	71.0%	46
Bachelor	98	25.0%	293	75.0%	391
Number of Respondents	583		617		1200

Table 4.3 The majority of respondents had a level of education in junior high school 419 people who participated the 154 people represented 36.7% and non-participants, 265 people represented 63.3%. Next, the respondents had a level of education in Bachelor's degree was a 391 people who participated the 293 people represented 75.0% and did not participate 98 people represented 25.0%. Finally, the vocational was 46 people who participated the 33 people represented 71.0% and non-participants, 13 people represented 98%.

Table 4.4 show Revenue of youth involved in underground digital economy.

Revenue	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
less than 2,000 baht/month	135	63.2%	78	36.8%	213
2,001 – 4,000 baht/month	223	53.4%	195	46.6%	419
4,001 – 6,000 baht/month	93	47.0%	105	53.0%	198
6,001 – 8,000 baht/month	41	37.8%	68	62.2%	109
more than 8,000 baht/month	90	34.7%	170	65.3%	260
Number of Respondents	583		617		1200

Table 4.4 most respondents had revenues 2,001 – 4,000 baht per month, 419 people who participated the 195 people, represented 46.6% and non-participants, 223 people represented 53.4%, followed by the revenues more than 8,000 baht per month, 260 people who participated the 170 people, represented 65.3% and did not participate the 90 people, represented 34.7% and finally, revenues 6,001 – 8,000 baht per month, 109 people who participated the 68 people, represented 62.2% and non-participants, 41 people represented 37.8%.

Table 4.5 shows the living of youth involved in the underground digital economy.

Living	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Lives with his father and / or mother.	428	53.7%	368	46.3%	796
Living with guardian	62	58.3%	44	41.7%	107
Live with friends on dormitory or rental	40	26.2%	112	73.8%	152
Living alone on dormitory or rental	41	34.6%	78	65.4%	120
Other	12	47.1%	13	52.9%	25
Number of Respondents	583		617		1200

Table 4.5 most respondents lived with his father and/or mother, 796 people who participated the 368, represented 46.3% and non-participants, 428 people represented 53.7%, followed by respondents lived with friends on dormitory or rental 152 people who participated the 112, represented 73.8% and non-participants, 40 people represented 26.2%, and finally, lived other, 25 people who participated the 13 people, represented 52.9% and non-participants, 12 people represented 47.1%.

Table 4.6 shows the location of the youth to use the Internet who participated in the underground digital economy.

Location to use Internet	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Residential accommodation	524	47.8%	573	52.2%	1096
Internet cafe	104	40.5%	152	59.5%	256
School	243	46.6%	278	53.4%	521
Number of Respondents	583		617		1200

Note can select more than 1 choice.

Table 4.6 the most of the respondents used the Internet in a residential area, 1096 people who participated the 573, represented 52.2% and non-participants, 524 people represented 47.8%, followed by the use of the Internet at school 521 people who participated the 278, represented 53.4% and non-participants, 243 people represented 46.6%, and finally, by the use of the Internet at internet cafe, 256 people who participated the 152 people, represented 59.5% and non-participants, 104 people represented 40.5%.

Table 4.7 shows the Internet devices of youth participated in the underground digital economy.

Internet devices	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Desktop computer	284	53.9%	243	46.1%	527
Laptop	291	45.2%	354	54.8%	645
Smartphone	487	45.9%	574	54.1%	1061
Number of Respondents	583		617		1200

Note can select more than 1 choice.

Table 4.7 the most of the respondents used the Smartphone to access the internet, 1061 people who participated the 574, represented 54.1% and non-participants, 487 people represented 45.9%, followed by the use of laptop to access the internet, 654 people who participated the 354, represented 54.8% and non-participants, 291 people represented 45.2%, and finally, the use of desktop computer to access the internet, 527 people who participated the 243 people, represented 46.1% and non-participants, 284 people represented 53.9%.

Table 4.8 show the purpose of Internet using of youth involved in the underground digital economy.

The purpose of the internet using	Do not participate		Participate		Total
	Number	Percentage	Number	Percentage	
Facebook	510	47.2%	571	52.8%	1082
Watch a movie	479	46.8%	545	53.2%	1024
Play a game	318	44.8%	392	55.2%	710
For knowledge	472	47.9%	513	52.1%	985
Number of Respondents	583		617		1200

Note can select more than 1 choice.

Table 4.8 the majority of respondents used the Internet to play Face book, 1082 people who participated the 571, represented 52.8% and non-participants, 510 people represented 47.2%, followed by the watch a movie, 1024 people who participated the 545, represented 53.2% and non-participants, 479 people represented 46.8%, and finally, the use of knowledge, 985 people who participated the 513 people, represented 52.1% and non-participants, 472 people represented 47.9%.

4.1.2 The information about the underground digital economy.

Analysis of data about the underground digital economy that Thai youth involved by the screening only Thai youths aged between 13-21 years and participating in the underground digital economy.

Table 4.9 shows the proportion of the underground digital economy that youth involved.

Type of the underground business in the digital economy	Number	Percentage
The gambling.		
Online casino	355	29.6
Online baccarat	124	10.4
Online football pool	499	41.6
Online lottery	410	34.2
The Illegal		
Drug dealing	281	23.4
Arms trade	194	16.2
Infringement of copyright	459	38.2
Other illegal goods	262	21.8
Pornography		
Pornographic film	530	44.1
Online sex service	278	23.2
Sex pills	297	24.8
Sex Toy	246	20.5

Table 4.9 in gambling group, respondents used the online casino 355 people, representing 29.6 %, online baccarat 124 people, representing 10.4 %. online football pool 449 people, representing 41.6% and online lottery 410 people, representing 34.2 %.

In the Illegal group, respondents involved in drug dealing 281 people, representing 23.4 %, arms trade 194 people, representing 16.2 %, infringement of copyright pool 459 people, representing 38.2% and other illegal goods 262 people, representing 21.8 %.

In the Pornography group, respondents involved in pornographic film 530 people, representing 44.1 %, online prostitution 278 people, representing 23.2 %, sex pills 297 people, representing 24.8% and sex toy 246 people, representing 20.5 %.

Table 4.10 shows the frequency of Thai youth used service of the underground digital economy.

Frequency of participation in the business underground	Number	Percentage
Never	432	36.0
Less than 1 times per week.	151	12.6
About 1 times per week.	252	21.0
About 2-4 times per week.	232	19.4
About 5 times a week or more.	133	11.1
total	1200	100.0

Table 4.10 the most of the respondents never to participate in underground business 432 people, represented 36.0, followed by the respondents to participated the underground business of about 1 time per week, 252 people, represented 21.0% and finally, to participation more than 5 times per week, 133 people, represented 11.1% .

4.2 The factors affecting i in the underground digital economy.

The analysis of factors affecting Thai youth to participate the underground digital economy by assigning Thai youth participated the underground digital economy at least once per week. It is considered as participation in the underground digital economy, instead, the value is 1, and if Thai youth participating in the underground digital economy less than 1 time per week or not participate at all, instead the value is 0.

The determination of score

The analysis of factors that influence the decision to participated in the underground digital economy of Thai youth by using a general information both personal data and information of the using behavior as an independent variable and a dependent variable as a youth who participated the underground business in the digital economy, which is an analysis of the general factors and the patterns of internet using to analysis data by using a computer program to the data interpretation information to be quantitative, starting from the determination of Pearson Chi-Square of each of the variables to set the weight. Results for Pearson Chi-Square value of each variable. As shown in Table 4.14.

Table 4.11 shows Pearson Chi-Square of each variable.

ID.	Variable	Pearson Chi-Square	Asymp. Sig. (2sided)
1	Gender	1.179	.277
2	Age	90.732	.000
3	Education level	100.237	.000
4	Revenue	32.101	.000
5	Living	35.436	.000
6	Location to use Internet	21.1	.004
7	Internet devices	33.581	.000
8	Internet usage patterns	29.374	.014

From the table 4.11 can bring the Pearson Chi-Square determining score according to the importance of the variable on average weight based on the Pearson Chi-Square of each variable. The consideration only the significant variables such as age, education level, revenue, living, location to use internet, internet device and internet usage patterns, as shown in table 4.15 by gender has been cut off because of no significance.

Table 4.12 shows the score according to the significance level of the variables is then averaged weight in total 100 points.

ID	Variable	Pearson Chi-Square	Score
1	Age	90.732	26.49
2	Education level	100.237	29.26
3	Revenue	32.101	9.37
4	Living	35.436	10.34
5	Location to use Internet	21.100	6.16
6	Internet devices	33.581	9.80
7	Internet usage patterns	29.374	8.57
	Total	342.561	100.00

Take all variables considered are then assigned scores in each variable by presenting a ratio of youth participating in the underground digital economy, to multiply the maximum points given each variable. Results in Table 4.12

Scores of weight that had to replace the existing database and processed using a technique of Multivariate Analysis by using statistics Logistic Regression Analysis type Binary Logit Model can be divided analysis methods into two cases is

Case 1, the factors that affect the decision to participate in the underground digital economy of Thai youth with the general information of Thai youth is independent variable.

Case 2, the factors that influence the decision to in the underground digital economy of Thai youth with the leisure activities of Thai youth is an independent variable.

Case 1 Analysis the factors that affect the decision to participate in the underground digital economy of Thai youth with the general information of Thai youth is an independent variable can subdivide into 2 cases.

Case 1.1 use all independent variables.

The variable analysis, starting from the case 1.1 is used all variables as age, education level, revenue, living, location to use the internet, internet devices and internet usage pattern. Results in Table 4.13 as follows.

Table 4.13 The table shows the results of Multivariate Analysis Method = Enter (cases 1.1 using all independent variables).

Variable	Symbol	coefficient	Sig.
Constant	-	-7.274	.000
Age	X_1	.000	.998
Education level	X_2	.123	.002
Revenue	X_3	.059	.544
Living	X_4	.068	.442
Location to use Internet	X_5	.359	.010
Internet devices	X_6	.294	.000
Internet usage patterns	X_7	.506	.000

The model will be as follows $P = \frac{1}{1+e^{-z}}$ when P is the probability that Thailand youth is participating in the underground digital economy.

By $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

The model has a value -2 Log likelihood is equal to 968.562, a value Cox & Snell R^2 equals 0.174 and a Nagelkerke R^2 values are equal 0.232 means that this model can be used to describe data at 23.2%.

The Test Hosmer and Lemeshow find the model fit.

H_0 : fit

H_1 : not fit

From the Chi-square test was equal to 11.927 and the Significance of 0.154, more than 0.05 suggests that the model is fit.

Testing Omnibus. -Tests of Model Coefficients to test the hypothesis.

H_0 : The opportunity to participate in the underground business of Thai youth do not depend on the 7 independent variable.

H_1 : The opportunity to participate in the business of underground youth with at least 1 independent variables.

From the values of the Chi-square test equal to 155.070 and the value of Significance is equal to 0.000 that mean H_0 is rejected shows that the opportunity to participate in the underground digital economy of Thai youth depends on independent variables at least 1.

The model found that the variable of, the internet usage pattern is the most valuable because it is the highest coefficient is 0.506, followed by the location to use the internet, the variable coefficient 0.359, with variable age, revenue and living are significant than 0.05 means the variables age, income and living was not statistically significant, which may be caused by Multicollinearity problem, therefore, analyses the data again.

Case 1.2 use Locals significantly

To analyze the variables again by using technique Forward Stepwise statistics Wald statistic, which is technique analyzing selected Locals significantly to be imported into the model. The variables that are not significant are cut off as the table 4.14

Table 4.14 shows the results of the Multivariate Analysis Method = Forward Stepwise (Wald) (case 1.2 use locals significantly).

Variable	Symbol	coefficient	Sig.
Constant	-	-6.834	.000
Education level	X_2	.135	.000
Location to use Internet	X_5	.365	.009
Internet devices	X_6	.296	.000
Internet usage Patterns	X_7	.505	.000

Model is as follows: $P = \frac{1}{1+e^{-Z}}$ where P is the probability that Thailand youth is participated in the underground digital economy.

By $Z = -6.834 + 0.135(X_2) + 0.365(X_5) + 0.296(X_6) + 0.505(X_7)$

The model has a value -2 Log likelihood equal to 969.738, the value of Cox & Snell R^2 equal to 0.173 and the value of Nagelkerke R^2 equal to 0.231 means that this model can be used to describe data at 23.1%.

The Test Hosmer and Lemeshow find the model fit.

H_0 : fit

H_1 : not fit

From the Chi-square test the value was 7.995 and the Significance was 0.434 which more than 0.05 shows that the model is fit.

The test Omnibus. Tests of Model Coefficients in order to test the hypothesis.

H_0 : The opportunity to participate in the underground business of Thai youth do not depend on the 4 independent variables.

H_1 : The opportunity to participate in the underground business of Thai youth with at least 1 independent variables.

From the Chi-square test was the equivalent of 153.895 and the Significance of 0.000 that H_0 is rejected show that the opportunity to participate in the underground digital economy of Thai youth depends on the independent variables at least one.

From the model, found that the variable of internet usage pattern was the most valuable because it was the highest coefficient at 0.505. Follow by, the variable of location to use the internet is coefficient at 0.365 coefficient and the using internet devices at 0.296.

The Comparison to find the fit case.

The comparison of the models in 2 cases to find the best fit. By comparison, the -2 Log likelihood, found that the model in the case of 1.1 equals to 968.562 which less than the case 1.2 which the value is 969.738 shows that the model in case 1.1 available. The model in the case of 1.1 also value the Cox & Snell R^2 was 0.174 and the Nagelkerke R^2 was 0.232 while model in case 1.2 value the Cox & Snell R^2 was 0.173 and the Nagelkerke R^2 was 0.231 that means a model in the case of 1.1 can be used to describe the data than the model in the case of 1.2.

ROC curve analysis

ROC curve analysis to find the model that is most appropriate. The ROC curve is a plot the values of False positive rate (1-specificity) in the X axis and the True positive rate (Sensitivity) in the axis Y when the cost of a False positive and False negative has a value equally to set positivity criterion near the upper left corner most. So the graph of the

test approaches to the upper left corner most or the area under the graph most is better. To plot ROC curve of case 1.1 and case 1.2 as follows.

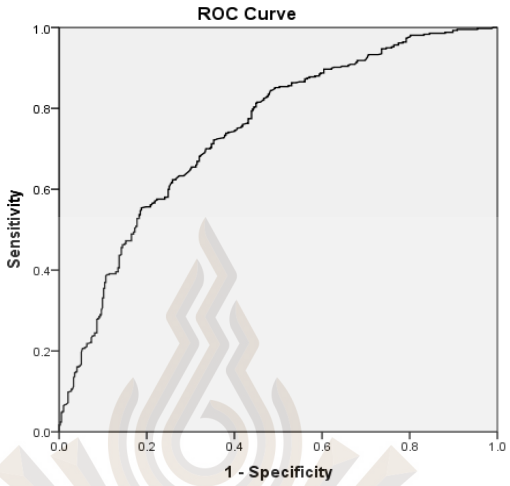


Figure 4.1 shows the curve of the ROC Curve of the case 1.1 when the response variable classified into 2 groups.

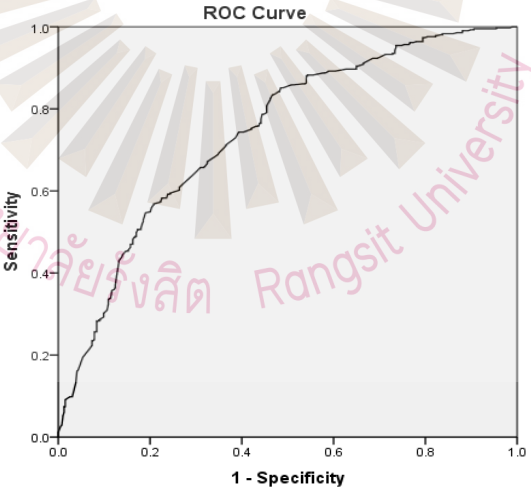


Figure 4.2 shows the curve of the ROC Curve of the case 1.2 when the response variable classified into 2 groups.

From Figure 4.1 and figure 4.2 show the curves of the ROC Curve of the case 1.1 and case 1.2, respectively. The ROC Curve of the case 1.1 had an area under the graph at

0.743. The ROC Curve in case 1.2 had an area under the graph at 0.741. It means model in case 1.1 could be used better than the model in the case of 1.2.

Back-Testing

Testing the actual values that occur with the values of forecast Model in all cases. To test Back Testing at Cut values at various levels (between 0 – 1), which the v Cut Value was the value of decided to participate the underground business. If the forecast value less than the Cut Value would determine Thai youth not to participated in the underground business. And if the forecast value was higher than or equal to the Cut Value would determine Thai youth to participate in the underground business. The Back Testing to select the most suitable form of case 1 as follows.

Table 4.15 shows the results of the Back Testing of case 1.1 .

Cut Value	Forecasting / True value	Not participate	Participate	% Correct	Total
0.50	Not participate	289	105	73.4%	811
	Participate	157	260	62.4%	67.7%
0.55	Not participate	309	85	78.4	811
	Participate	181	236	56.6	67.2
0.60	Not participate	326	68	82.7	811
	Participate	208	209	50.1	66.0

The results of Back Testing in the case of 1.1 found that the analysis of factors that affect the decision to participate in the underground digital economy is the best available the Cut Value at 0.50. From the table it can be seen that this model can calculate the probability that make Thai youth participate in the underground digital economy was total 67.7%, when considering only accuracy in the participation found that the high

accuracy of 62.4% that is if the variables in the case 1.1 of Thai youth to calculated according to the equation, it was found that the score was more than 0.5 means a chance 62.4% that Thai youth will participate in the underground digital economy.

Table 4.16 shows results Back Testing of cases 1.2.

Cut Value	Forecasting / True Value	Not participate	Participate	% Correct	Total
0.50	Not participate	290	104	73.6	811
	Participate	163	254	60.9	67.1
0.55	Not participate	312	82	79.2	811
	Participate	181	236	56.6	67.6
0.60	Not participate	323	71	82.0	811
	Participate	205	212	50.8	66.0

The test results of Back Testing in the case 1.2 showed that the analysis of the factors influencing the decision to participate in the underground digital economy that is the best available Cut Value at 0.50. From the table, it can be seen that this model can calculate the probability that makes Thai youth into the underground digital economy was 67.1% overall. When considering only accuracy in participation only, it was found that the high accuracy of 60.9% that means if the variable in the case 1.2 of Thai youth to calculated according to the equation, it was found that the score was more than 0.5 that means a chance 60.9% that Thai youth will participate in the underground digital economy.

The results of Back Testing of cases 1 can conclude that the model in the case of 1.1 the Cut Value is 0.50. This case can calculate the probability that Thai youth participate in the underground digital economy by considering only the participation, the most accurate of 62.4%. It is able to evaluate the opportunity for Thai youth to participate

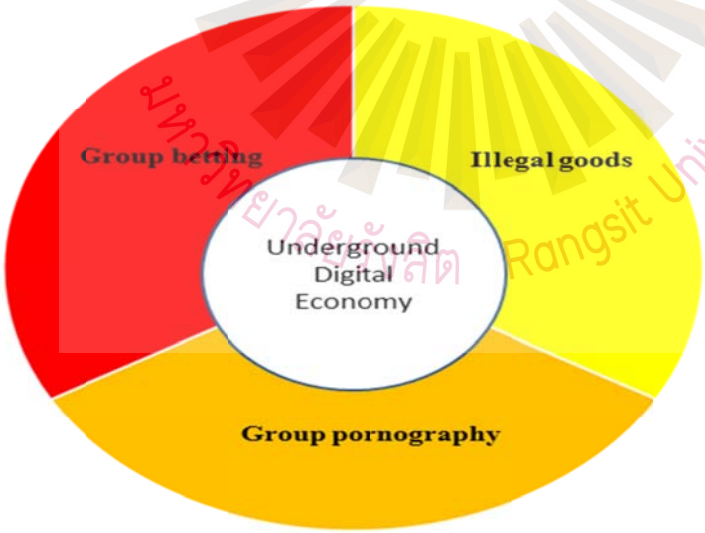
in the underground digital economy from general information and internet usage behavior of Thai youth.

Therefore, it can be concluded that the model in Equation 1.1 can be used to describe the data better than the model in Equation 1.2 by both the test-2 Log-likelihood and Cox & Snell R2 Testing. Nagelkerke R2 testing, the analysis of ROC curve and Back Testing were in effect in the same way.

4.3 In-depth Interview

Research Result by In-depth Interview

The information of the youth who were involved in the underground digital economy of 20 samples by online chatting. The researcher has compiled and analyzed content are as follow:



1 The gambling

The youth who involved in the underground economy mentioned to the casino. The betting is also various depended on how to play the game. The interviewees told that reason to play betting from their friend. First, they start by betting they are among the group of friends and step up to the underground casino. In some case, the players do not have to travel to bet on, but they can play on Line or text, and then transfer money to the table to get betting. When the young people involve into gambling, they are in a risky environment at all times to be a gambler in the future.

For online gambling, the interviewees told that the website was introduced how to play in very simple. First, the players get the identification document (ID) to log in, then he transfers money to the private gambling account of website provider. The minimum amount of 500-1,000 baht depended on owner policy, is not too much for them. Gambles are available to play such as baccarat, roulette, slot machine, playing the card, and etc. The gambling uses the video in real time or lives on which is opened on every day. When they played online gambling like they play games online, feel like nothing wrong. This online gambling also makes them feel safer to play because no one knows who they are. The key factors which make these young people involved in the online gambling they can earn money easily for themselves. Moreover, the transaction of funds transferred and received so simple.

2. The illegal

In terms of what is legal goods, which are copyrights violations of movies, music, games, applications and goods. Usually, the condition that each user download and upload files seem like exchange their files among their members. They just registered as a VIP member and can download unlimited number of files, the subscription is not only long time, but also daily. Retail price range is 50 baht per day up to 1000 baht per year depend on the promotion of the service provider. The respondents also said that they have

been cheated by online vendors to buy brand-named shoes because the price was cheaper than post on the forums to accuse and warn other customers. The illegal products not only previous mentioned but also guns and drugs, if you are the third party could not buy easily, to log in the private Line Group or Facebook Group ,sometime still ordered by phone. For illegal guns, it so easily by using the keyword “sale of illegal guns” on the website of the search engine ,only a thousand Baht.

3. The pornography.

For the online pornography, that can be found everywhere. However, some websites are usually cheating by transfer money, but did not get anything. If they want to avoid that problem, they have to use the specific website. The live show there are variety but most popular shows are at night with DJ to encourage the audience to pay more money to see more show.

The live show was only 18 years old, they are high school, and vocational level. The interviewee said that one of the DJs, who entertained the audience, is his friend, he is 17 years old.

Chapter 5

Conclusions and Recommendations

This research study of Thai youth participated in underground digital economy. The objective of the research was to study the model of access method and the factors that affect Thai youth participated in the underground digital economy. This research using the data collected from questionnaires, the 1200 samples are analyzed by Logistic Regression Analysis Statistics type Binary Logit. The model can be summarized, discuss the results and suggestions, as follows.

5.1 Conclusions

The purpose of this research is to study the business models of the underground digital economy, the access method and the factors affecting Thai youth participated in the underground digital economy, including the value of the underground digital economy can be summarized in these study objectives as follows:

Finding the factors that affect the decision to participated in the underground digital economy of Thai youth with the general information is independent variable found that the models in the case of 1.1 are most appropriate which use 7 variables are statistically significant include: age, education level, revenue, living, location to use internet, internet devices and internet usage patterns.

From the above data can be created as a function of the decision to participate in the underground digital economy by using general information of Thai youth is variable to

Model as follows: $P = \frac{1}{1+e^{-Z}}$ where P is the probability that Thai youth to be participated in the underground digital economy

and $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

By	X_1	is	Age
	X_2	is	Education level
	X_3	is	Revenue
	X_4	is	Living
	X_5	is	Location to use the internet
	X_6	is	Internet devices
	X_7	is	Internet usage patterns

The function of the decision above, this is a model that can calculate the factors affect Thai youths to participate in the underground digital economy.

5.2 Discussion

The results of the research with theoretical concepts and research-related could be conclude that Thai youth who live at dormitory or the residential will have the opportunity to participate in the underground digital economy rather than the youth who live with their parents, which similar to Leksrinag, Ploydanai and Sukshotirat (2012) that to study the gambling behavior of youth in the case study of Bangkok. It found that the majority of youth gambling at friend house or a friend's shelter, and conformity with Seritanon (2011) to study the effect of media exposure, the obscene sexual behavior of university students: application of randomized response technique and the solutions to prevent exposure to pornography. It found that the most of the students exposed to pornography via the Internet system in social media through Smartphone and Facebook, focusing on to look at the friends ‘house and dormitory.

In gambling, it was found that Thai youth started gambling through acquaintances to persuade and known web gambling online through a banner ad. The method opening an account to play online gambling can be done easily via digital media and play it to earn money easily correspond to Leksrinag, Ploydanai and Sukshotirat (2012) that found that social factors that affect gambling on most levels are to have a friend play a gamble and structural factors that make the gambling is in high sequence is to get the news media with content about the gambling, the playing gamble with technology and modern payment system can be accessed easily and the factors of attitude and motivation in gambling is a channel to earn money and want to return the money lost.

The infringement of copyright goods found that Thai youth buy pirated goods because It is cheaper and product copyright too expensive to be purchased in accordance with Lekprayoon (2010), who has studied the subject goods infringing intellectual property rights and the value of the brand can be found that the pirate goods can be seen selling in general, which is caused by the current popularity from consumers but are not willing to pay the high price and counterfeit goods cost less than it is worth more.

Thai youth has seen the advertisements of the underground digital economy often then feel that these have become a commonplace of society when they happen a little attention will make these youth click to see the content because the advertising media influence of emotions, attitudes, values and behaviors of consumers greatly. Especially with teenagers, which is the age with the ability to learn, understand the deeper events, have the ability to think, analyze and synthesize but the lack of hesitation or consider it carefully and also risk-averse behavior and likes to search for new things. The revenue side is found that the more young people are earning more, they are more likely to know the underground digital economy which is consistent with the theory of the Income Demand is when there are changes in income will make the purchase quantity of goods and services changed too.

5.3 Suggestion

For Policy Maker

The government should set off time of internet cafe not open 24 hours and strictly bans youngsters to play before 3 pm and after 10 pm on a weekday. As the youth who have no knowledge about computer law and regulations. Thus, the government should educate and organize them to comply with law. The government should establish the cyber police department to control and arrest illegal shops. Create the campaign encourage and focus on the copyright products only.

For parents

They should provide computers in common room or area at home that is easily visible and observe their behavior in internet using. Moreover, if it is necessary not to let children go out of the private dorm or living rent home alone, they should find an opportunity to visit the children regularly, or call frequently. Encourage children to use their free time benefits by learning an additional language, playing sports or music, and change a social idea that part time job for the poor. In current situation some students have their own business to do like the net idol or presenter and make money more than 100,000 baht a month.

For further study

1) There should be a study of factors that influence the decision to participate in the underground digital economy into different categories such as factors influencing the decision to gamble, factors affecting the decision to buy illegal things.

2) There should be a study of underground digital economy value which compare and after the digital era.

Bibliography

Mr. Anuch Arpabhirom , head of the Thailand Trends Monitoring Project (TTMP) (2546 BE). Report, analysis, synthetizing, and conclusion of events and trends in Thailand and other countries that affect Thailand. Issue 17, 2nd triannual (May – August, 2546 BE).

Ms. Jiraporn Petchdum, Mr. Paiboon Yamkasikorn et al. (2554 BE). Risk factors affecting deviated behavior of junior high school students: Nakorn Nayok case study. Nakorn Nayok Cultural Office.

Mr. Panuwat Kongrach (2554). The study of social network usage behavior of teenagers in Thailand: Facebook case study. Masters of Science, Program in Technology Management, College of Innovation, Thammasart University.

National Statistical Office. Nationwide statistical service, census and housing in 2010. Reference link: http://service.nso.go.th/nso/nso_center/project/search_center/23project-th.htm.

Article on social influence. Reference link: http://www.novabizz.com/NovaAce/Behavior/อิทธิพลทางสังคม.htm.

Anoop Singh, Sonali Jain-Chandra, and Adil Mohommad (2012) Inclusive Growth, Institutions, and the Underground Economy , IMF Working Paper , Asia and Pacific Department.

Mr. Kongkrit Leksrinak, Dr. Narong Ploydanai, Dr. Wicheanchoti Sukchotiratana. Gambling behavior of youth: Bangkok case study. Research journal KKU. (GP.) 12 (4) : Aug. - Dec. 2555 BE.

Talina Drabsch (2003) , The Economic and Social Implications of Gambling, Background Paper No 9/03 , NSW PARLIAMENTARY LIBRARY RESEARCH SERVICE,

Newman, Otto: Gambling: Hazard and Reward (London: Athlone Press, 1972) (PDF at University of Calgary)

Article “Behind the concept, digital economy, chamber of commerce supports via ICT group”. Toh Kao IT. The Council of Thai Chamber of Commerce 2557 BE. http://www.thaichamber.org/scripts/detail.asp?nNEWSID=13499

Tunwarujana Buranasuksakul, MD. Child and Adolescent Mental Health Rajanakarindra Institute. Source: http://www.smartteen.net/main/_admin/download/4-30-1387795341.pdf

"Digital Economy : know it, understand it, and use it" Ministry of Science and Technology. Source: http://www.most.go.th/main/index.php/product/sciencetalk/4054-digital-economy-.html

57% of Thais are gambling addicted by Thairath Online, 24 May 2557 BE. 08:40 http://www.thairath.co.th/content/424836

Article "Prohibited goods to be disposed". Thai Customs Department. Source: http://internet1.customs.go.th/ext/Prohibit/Prohibit.jsp

Economic Outlook 9th year, issue 1276, 6 June 2003 http://www.tfrc.co.th)

Kbank Research Year 8, issue 1088, 4 July 2002 http://www.tfrc.co.th

(Draft)

Decision Function to Underground Digital Economy

Tanpat Kraiwanit,Ph.D.

Faculty of Economics, Rangsit University, Thailand

*Corresponding Author: First Author dr.tanpat@gmail.com

Globalization makes our world become smaller and leads new technology to help comfort men to be developed. The fact that we can now communicate across the world quickly shows that technology is a factor driving the economy. It is not only economic bright side which is developed, but the underground economy has also entered the digital age. The objectives of this study are the teenage 13 up who are curious to try and lack judgment to decide what is right or wrong and the affecting factors participate in underground business via online data collection about 1200 samples in Thailand. It was found that the adolescents with behavioral modification involved in the underground economy in various ways, for instance, communications could now expand broadly, both in Thailand and overseas via the Internet. Moreover, the quantitative survey showed importance of education(X2), income(X3), residence(X4), place(X5), the device used(X6), and patterns of internet use(X7).

Whereas $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

$P = \frac{1}{1+e^{-Z}}$ P is probability to involve in underground business

There was a statistically significant relationship between the young Thai and the underground in the digital economy. The government does not allow the youth to enter internet café before 3 pm and after 10 pm on a week day, and educate the public about the role for people along with strictly enforcement. The government should set off time of internet cafe not open 24 hours and strictly bans youngsters to play before 3 pm and after 10 pm on a weekday. As the youth who have no knowledge about computer law and regulations. Thus, the government should educate and organize them to comply with law. The government should establish the cyber police department to control and arrest illegal shops. Create the campaign encourage and focus on the copyright products only.

Keywords Decision Function, Underground Economy, Digital Economy.

Background and importance problem

Digital technology is what helps drive economic growth across to reach their full potentials with the development of new technology. With this change of globalization, on the bright side, it is not just the economy which is being developed, but also includes the underground economy which has a dark side too, having entered the digital age. In terms of underground economy of Thai youth involvement as online gambling, it is very simple, especially Thai youth is curious and will be involved in the underground economy easily.

Purpose of study

In the study of underground digital economy, objectives to study the factors that have made teenager as well as decision to involve in the underground digital economy.

Scope of research

1) The scope of the area is in Thailand involved teenager used computer online at least 1 hour a day

2) The scope of the population and the sample focused on teenager who participated in underground digital economy.

Conceptual framework

(Independent variable) (Dependent variable)

Figure 1.1 The conceptual framework of the study.

The conceptual framework deployed in this study is Thai youth between the ages of 13up and the personal factors including sex, age, education, revenue, the internet using behavior as the independent variables, which is also the dependent variable, is the Thai youth who involved in the underground digital economy.

Terminology in the research

Underground Digital Economy - In Thailand, the cause of the underground economy as patronage system and authoritarian social – political, the accumulation of funds at the initial stage, the scourge of drugs, prostitution – hired wife, gambling and illicit trade, including the struggling of the poor to survive on a daily basis Arephapirom, 2003.

Underground Digital Economy in this study classified into 3 groups as follows:

Online gambling is gambling for money or other things with a fortune by predicting or guessing the consequences in the future and these can be done through digital media.

Pornography media means goods or media that are related to sexuality, including sex-phone and Live Sex.

Illegal product is a product that has a law banning imported or exported outside the country strictly.

Theories and Related Research

Underground Digital Economy has emerged when the underground economy has entered the digital age. In this paper, it refers to a various underground economy that is appeared in the form of digital media or when the digital media is used to facilitate the access to underground economy, for a marketing campaign, or to escape from the authority.

Affecting Factors

1) Formal economy or capitalist market economy, despite their ability to dominate the market, they cannot completely replace the traditional exchanges.

2) Formal economy or capitalism usually support groups with large capital and obstruct groups with less capital to enter the market.

3) Resulted from the flaws of the economy system and politics in the formal market itself, taken the opportunity to establish influences to seek for profit by using force to infringe or violate the law causing the emergence of the underground economy.

There have been two important concepts on gambling i.e. Conservatism and Positivism. Conservatism focuses on moral resulting in gambling prohibition from the

government and society. However, Positivism emphasizes on a unit of analysis study or the study on each individual and disregarding the environment as a factor.

Newman (1972: 11) stated that both Conservatism and Positivism were influenced by Functionalism and Positivism, which were main concepts in sociology at that time and focused on searching for the good order of the society.

(Veblen, 1932: 276) stated that in the 19th century, high society had demonstrated wealth and social status by gambling, which was a recreational activity.

(McMillan, 1996: 20) sees that gambling behavior is not a crooked behavior but rather a recreational or a stress-relieving activity from work.

From Friedman and Savage's theory on income, a decision to gamble has inverted relationship with income where lower income individual has a tendency to gamble more than the individual with higher income.

Social Influencing Factors

It can be categorized into two types as follow:

1) Unintentional social influence refers to the social influence of a person that affects the behavior of another person without any intention.

2) Intentional social influence refers to the event that a person's influence has an impact on the behavior of another person with the intention to be so.

Underground Lottery

In the end, the Government Lottery Office has decided to print out lottery tickets of two and three digits, similar to the underground lottery, to solve the overpriced lottery tickets, the government to pull out the enormous pool of money from the underground lottery business to become the government's revenue. Nevertheless, what the government should consider besides the increase in revenue is that the policy may promote the people to be obsessed more with gambling to the extent that the household income might decrease by purchasing government lottery rather than using that money to spend on their daily lives. 9th year, issue 1276, 6 June 2003 http://www.tfrc.co.th

A number of World Cup gamblers increased. Kasikorn Research Center estimated that around 500,000 people in Bangkok. Internet has become a medium for Thai gamblers to bet without limitation of distance and as Thai people are obsessed with gambling, gambling websites have created a page in Thai to exclusively facilitate Thai gamblers. There are two forms of gambling via the internet 1) bet via official gambling websites and 2) usage of email. However amidst the hype of World Cup betting that is spreading widely while the competition is getting more intensive.

Research Methodology

The target population for the collection of primary data used in this study is Thai youth aged 13years old up and have been using the Internet regularly 1200 cases.

The research are the two-part question to collect quantitative data is a tool used to collect data was open-ended questionnaires and closed-ended questionnaires which are available from the education purpose, conceptual framework, and related research documents.

Data collection

As the primary data from interviews with the Thai youth that was participated in the underground digital economy and responses from the questionnaire to keep away from the Thai youth between the ages of 13-21 years throughout the country, and Internet use focusing on specific by the board or the fan page of various educational institutions, including primary data from online questionnaire and secondary data is the information gathered from the study of books, journal, research documents, website, and information from other relevant sources.

Data analysis

In this research, the dependent variable is the decision to participated in the underground digital economy of Thai youth divided into participate and not participate, so it analyzes the factors that influence the decision to participated in the underground digital economy of Thai youth by using Logistic Regression analysis of Binary Logistic is used when the dependent variable Y is Dichotomous variable are variables that have only two value gives an estimate of the Y as a chance event that takes place, which is worth between 0 to 1. If using the linear regression equation is $\hat{Y}$ = a + bX. The value of $\hat{Y}$ may not be in the range of 0 to 1 or 0, or that may be less than the one shown by the line in Figure 3.1.

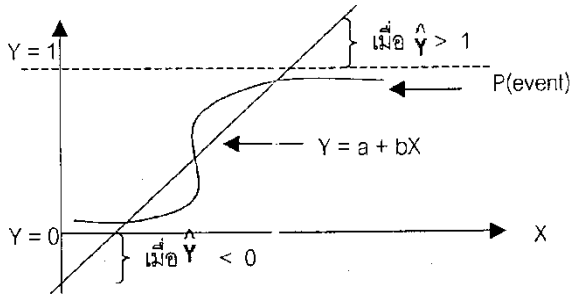


Figure 3.1 The non-linear graph of logistic and ranges from 0 to 1.

Simple linear regression equation or the equation shows the relationship between the Y with X will be in the form of linear as follows.

$$Y = \beta_0 + \beta_1 X + e$$

Or $$E(Y) = \beta_0 + \beta_1 X \qquad \text{By } -\infty < E(Y) < \infty$$

In logistic regression analysis when Y has only two values relationship to the X and Y is not in a linear, but the format will be in the form.

$$E(Y) = \frac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$$

So P (event) = P (event occurring) $= \dfrac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$

The equation is that the Logistic Regression Function $0 \le E(Y) \le 1$ หรือ$E(Y)$ = P(event) = P (event occurring) and P (no event) = P (events do not occurring) as

P (event) = P (Thai Youth participated in the underground digital economy, or Y = 1)

P (no event) = P (Thai youth not participated in the underground digital economy, or Y = 0)

, so P (event.) = P (event occurring). $= \dfrac{e^{\beta_0+\beta_1 x}}{1+e^{\beta_0+\beta_1 x}}$

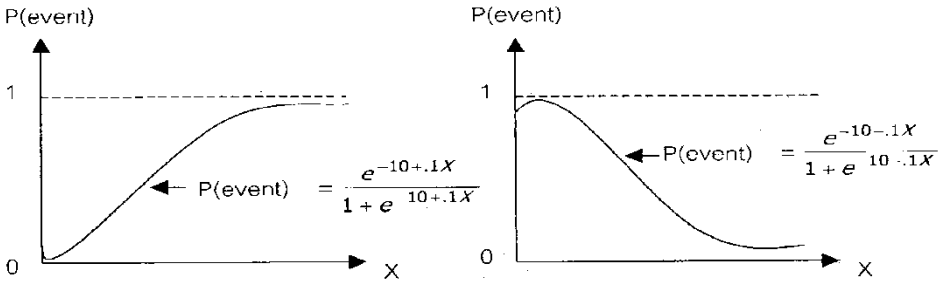


Figure3.2 Logistic graph when$\beta 1 > 0$ and Logistic graph when$\beta_1 < 0$

When independent variable more than 1 or independent variable is p ($p \ge 2$) Logistic Response Function is changing

$$\text{P (event)} = \frac{e\beta_0 + \beta_1 x_1 + ... + \beta_p x_p}{1 + e\beta_0 + \beta_1 x_1 + ... + \beta_p x_p}$$

$$\text{P (no event)} = 1 - \text{P (event)}$$

Finding the relationship between dependent variables and independent variables are not in the form of linear. It is to adjust the relationship in the form of linear by.

$$\text{Odds} = \frac{\text{P (event)}}{\text{P (no event)}}$$

$$\text{Log (Odds)} = \left(\text{Log} \frac{\text{P (event)}}{\text{P (no event)}} \right)$$

$$\text{OrLog (Odds)} = \beta_0 + \beta_1 X_1 + ...+ \beta_p x_p$$

This equation is linear and known as Logistic Response Function from the formula of the Odds will be found if the Odds are more than 1 indicates that the event has occurred, rather than chance will not

The estimate of Y is the estimated P (event) for estimation of coefficient $\beta_0, \beta_1, ..., \beta_P$ using Maximum Likelihood method. In the general regression equation used Least Square method is used to estimate $\beta_0, \beta_1, ..., \beta_P$ from equation $Y = Y = \beta_0 + \beta_1 X_1 + ...+ \beta_p X_p + e$

In general regression analysis provided that the errors have a normal distribution, but the Y has only 2 values 0 and 1 will make the error of e are the only 2 values, which is impossible that e have a normal distribution so it cannot be used normal regression analysis.

The terms of the regression analysis are the variance of the error or V (e) have a constant value of X, but in Logistic when Y has only 2 value and Y are the Bernoulli distribution. This makes the variance and the average has a relation. As a result, the condition that V (e) constant value would not be true. It is not possible to use normal regression analysis.

1) Wald Statistic is a test statistic value with the purpose to test the significance of the coefficient estimates of each β_i which is a model that has an impact on the risks that happen in the dependent variable.

$$Wald\_Statistic = \left(\frac{\beta_i}{S\tan dard\_Error\_of\_Estimate} \right)^2$$

2) Likelihood-Ratio Test is the ratio of the maximum value of the Likelihood function that belongs to the Full Model (L_1) with a Simpler Model of (L_0) used to

determine the model and the value of this ratio by converting the log will be Likelihood-Ratio Test Statistic as follows.

$$-2\log\left(\frac{L_0}{L_1}\right) = -2[\log(L_0) - \log(L_1)] = -2LL$$

This value is-2 Log Likelihood or- This test statistic has n Chi-Square distribution.

3) Hosmer-Leme show Goodness of Fit Test is a statistics test using the Chi-Square distribution to test hypotheses that result from an analysis by the LRA (Logistic regression analysis), there are no different from the observed data.

ROC curve analysis (www.mathworks.com)

The ROC curve is a plot the values of False positive rate (1-specificity) in the X axis and the True positive rate (Sensitivity) in the axis Y when the cost of a False positive and False negative has a value equally to set positivity criterion near the upper left corner most. So the graph of the test approaches to the upper left corner most or the area under the graph most is better. To plot ROC curve of case 1.1 and case 1.2 as follows.

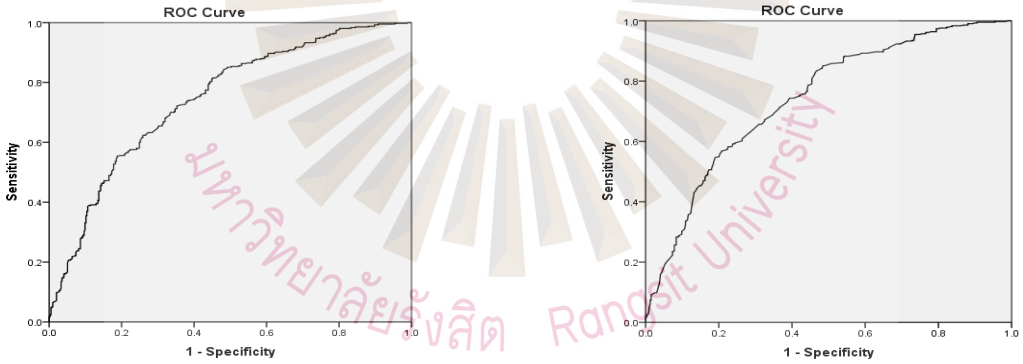


Figure 1 show the curve of the ROC Curve of the case 1.1 and case 1.2 when the response variable classified into 2 groups.

From Figure 1 show the curves of the ROC Curve of the case 1.1 and case 1.2, respectively. The ROC Curve of the case 1.1 had an area under the graph at 0.743. The ROC Curve in case 1.2 had an area under the graph at 0.741. It means model in case 1.1 could be used better than the model in the case of 1.2.

Case 1.1 use all independent variables

Case 1.1 is used all variables as age, education level, revenue, living, location to use the internet, internet devices and internet usage pattern. Results in Table 1 and 2 are as follows.

Table 1 shows the results of Multivariate Analysis Method = Enter (cases 1.1 using all independent variables).

Variable	Symbol	coefficient	Sig.
Constant	-	-7.274	.000
Age	X_1	.000	.998
Education level	X_2	.123	.002
Revenue	X_3	.059	.544
Living	X_4	.068	.442
Location to use Internet	X_5	.359	.010
Internet devices	X_6	.294	.000
Internet usage patterns	X_7	.506	.000

The model will be as follows $P = \frac{1}{1+e^{-Z}}$ when P is the probability that Thailand youth is participating in the underground digital economy.

By $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

The model has a value -2 Log likelihood is equal to 968.562, a value Cox & Snell R^2 equals 0.174 and a NagelkerkeR^2 values are equal 0.232 means that this model can be used to describe data at 23.2%.

The Test Hosmer and Leme show find the model fit.

H_0 :fit H_1 :not fit

From the Chi-square test was equal to 11.927 and the Significance of 0.154, more than 0.05 suggests that the model is fit.

Testing Omnibus.-Tests of Model Coefficients to test the hypothesis.

H_0 :The opportunity to participate in the underground business of Thai youth do not depend on the 7 independent variable.

H_1 :The opportunity to participate in the business of underground youth with at least 1 independent variables.

From the values of the Chi-square test equal to 155.070 and the value of Significance is equal to 0.000 that mean H0 is rejected shows that the opportunity to participate in the underground digital economy of Thai youth depends on independent variables at least 1.

The model found that the variable of, the internet usage pattern is the most valuable because it is the highest coefficient is 0.506, followed by the location to use the internet, the variable coefficient 0.359, with variable age, revenue and living are significant than 0.05 means the variables age, income and living was not statistically significant, which may be caused by Multicollinearity problem, therefore, analyses the data again.

Case 1.2 use Locals significantly

To analyze the variables again by using technique Forward Stepwise statistics Wald statistic, which is technique analyzing selected Locals significantly to be imported into the model. The variables that are not significant are cut off as the table 2

Table 2 shows the results of the Multivariate Analysis Method = Forward Stepwise (Wald) (case 1.2 use locals significantly).

Variable	Symbol	coefficient	Sig.
Constant	-	-6.834	.000
Education level	X_2	.135	.000
Location to use Internet	X_5	.365	.009
Internet devices	X_6	.296	.000
Internet usage Patterns	X_7	.505	.000

Model is as follows: $P = \frac{1}{1+e^{-Z}}$ where P is the probability that Thailand youth is participated in the underground digital economy.

By $Z = -6.834 + 0.135(X_2) + 0.365(X_5) + 0.296(X_6) + 0.505(X_7)$

The model has a value -2 Log likelihood equal to 969.738, the value of Cox & Snell R^2 equal to 0.173 and the value of NagelkerkeR^2 equal to 0.231 means that this model can be used to describe data at 23.1%.

The Test Hosmer and Leme show find the model fit.

H_0 :fit H_1 :not fit

From the Chi-square test the value was 7.995 and the Significance was 0.434 which more than 0.05 shows that the model is fit.

The test Omnibus Tests of Model Coefficients in order to test the hypothesis.

H_0 :The opportunity to participate in the underground business of Thai youth do not depend on the 4 independent variables.

H_1 :The opportunity to participate in the underground business of Thai youth with at least 1 independent variables.

From the Chi-square test was the equivalent of 153.895 and the Significance of 0.000 that H0 is rejected show that the opportunity to participate in the underground digital economy of Thai youth depends on the independent variables at least one.

From the model, found that the variable of internet usage pattern was the most valuable because it was the highest coefficient at 0.505. Follow by, the variable of location to use the internet is coefficient at 0.365 coefficient and the using internet devices at 0.296.

Back-Testing

Testing the actual values that occur with the values of forecast Model in all cases. To test Back Testing at Cut values at various levels (between 0 – 1), which the v Cut Value was the value of decided to participate the underground business. If the forecast value less than the Cut Value would determine Thai youth not to participated in the underground business. And if the forecast value was higher than or equal to the Cut Value would determine Thai youth to participate in the underground business. The Back Testing to select the most suitable form of case 1 as follows.

Table 3 shows the results of the Back Testing of case 1.1 .

Cut Value	Forecasting / True value	Not participate	Participate	% Correct	Total
0.50	Not participate	289	105	73.4%	811
	Participate	157	260	62.4%	67.7%
0.55	Not participate	309	85	78.4	811
	Participate	181	236	56.6	67.2
0.60	Not participate	326	68	82.7	811
	Participate	208	209	50.1	66.0

The results of Back Testing in the case of 1.1 found that the analysis of factors that affect the decision to participate in the underground digital economy is the best available the Cut Value at 0.50. From the table it can be seen that this model can calculate the probability that make Thai youth participate in the underground digital economy was total 67.7%, when considering only accuracy in the participation found that the high accuracy of 62.4% that is if the variables in the case 1.1 of Thai youth to calculated according to the equation, it was found that the score was more than 0.5 means a chance 62.4% that Thai youth will participate in the underground digital economy.

Table 4 shows results Back Testing of cases 1.2.

Cut Value	Forecasting / True Value	Not participate	Participate	% Correct	Total
0.50	Not participate	290	104	73.6	811
	Participate	163	254	60.9	67.1
0.55	Not participate	312	82	79.2	811
	Participate	181	236	56.6	67.6
0.60	Not participate	323	71	82.0	811
	Participate	205	212	50.8	66.0

The test results of Back Testing in the case 1.2 showed that the analysis of the factors influencing the decision to participate in the underground digital economy that is the best available Cut Value at 0.50.From the table, it can be seen that this model can calculate the probability that makes Thai youth into the underground digital economy was 67.1% overall. When considering only accuracy in participation only, it was found that the high accuracy of 60.9% that means if the variable in the case 1.2 of Thai youth to calculated according to the equation, it was found that the score was more than 0.5 that means a chance 60.9% that Thai youth will participate in the underground digital economy.

The results of Back Testing of cases 1 can conclude that the model in the case of 1.1 the Cut Value is 0.50. This case can calculate the probability that Thai youth participate in the underground digital economy by considering only the participation, the most accurate of 62.4%. It is able to evaluate the opportunity for Thai youth to participate in the underground digital economy from general information and internet usage behavior of Thai youth.

Therefore, it can be concluded that the model in Equation 1.1 can be used to describe the data better than the model in Equation 1.2 by both the test-2 Log-likelihood and

Cox & Snell R2 Testing. Nagelkerke R2 testing, the analysis of ROC curve and Back Testing were in effect in the same way.

Conclusions

Finding the factors that affect the decision to participated in the underground digital economy of Thai youth with the general information is independent variable found that most appropriate which use 7 variables are statistically significant include: age, education level, revenue, living, location to use internet, internet devices and internet usage patterns.

From the above data can be created as a function of the decision to participate in the underground digital economy by using general information of Thai youth is variable to Model as follows: $P = \frac{1}{1+e^{-Z}}$ where P is the probability that Thai youth to be participated in the underground digital economy

And $Z = -7.274 + 0.123(X_2) + 0.059(X_3) + 0.068(X_4) + 0.359(X_5) + 0.294(X_6) + 0.506(X_7)$

By X_1 is Age

X_2 is Education level

X_3 is Revenue

X_4 is Living

X_5 is Location to use the internet

X_6 is Internet devices

X_7 is Internet usage patterns

Discussion

The results of the research with theoretical concepts and research-related could be conclude that Thai youth who live at dormitory or the residential will have the opportunity to participate in the underground digital economy rather than the youth who live with their parents, which similar to Leksrinag, Ploydanai and Sukshotirat (2012) that to study the gambling behavior of youth in the case study of Bangkok. It found that the majority of youth gambling at friend house or a friend's shelter, and conformity with Seritanon (2011) to study the effect of media exposure, the obscene sexual behavior of university students: application of randomized response technique and the solutions to prevent exposure to pornography. It found that the most of the students exposed to pornography via the Internet system in social

media through Smartphone and Facebook, focusing on to look at the friends 'house and dormitory.

In gambling, it was found that Thai youth started gambling through acquaintances to persuade and known web gambling online through a banner ad. The method opening an account to play online gambling can be done easily via digital media and play it to earn money easily correspond to Leksrinag, Ploydanai and Sukshotirat (2012) that found that social factors that affect gambling on most levels are to have a friend play a gamble and structural factors that make the gambling is in high sequence is to get the news media with content about the gambling, the playing gamble with technology and modern payment system can be accessed easily and the factors of attitude and motivation in gambling is a channel to earn money and want to return the money lost.

The infringement of copyright goods found that Thai youth buy pirated goods because It is cheaper and product copyright too expensive to be purchased in accordance with Lekprayoon (2010), who has studied the subject goods infringing intellectual property rights and the value of the brand can be found that the pirate goods can be seen selling in general, which is caused by the current popularity from consumers but are not willing to pay the high price and counterfeit goods cost less than it is worth more.

Suggestion

For Policy Maker

The government should set off time of internet cafe. The government should educate and organize the young to comply with law. The government should establish the cyber police department to control and arrest illegal shops. Create the campaign encourage and focus on the copyright products only.

For parents

They should provide computers in common room or area at home that is easily visible and observe their behavior in internet using. They should find an opportunity to visit the children regularly, or call frequently when children go out of the private dorm or living rent home alone. Encourage children to use their free time benefits by learning an additional language, playing sports or music.

For further study

1) There should be a study of factors that influence the decision to participate in the underground digital economy into different categories such as factors influencing the decision to gamble, factors affecting the decision to buy illegal things.

2) There should be a study of underground digital economy value which compare and after the digital era.

Bibliography

Mr. AnuchArpabhirom , head of the Thailand Trends Monitoring Project (TTMP) (2546 BE). Report, analysis, synthetizing, and conclusion of events and trends in Thailand and other countries that affect Thailand. Issue 17, 2nd triannual (May – August, 2546 BE).

Ms. JirapornPetchdum, Mr. PaiboonYamkasikorn et al. (2554 BE). Risk factors affecting deviated behavior of junior high school students: NakornNayok case study. NakornNayok Cultural Office.

Mr. PanuwatKongrach (2554). The study of social network usage behavior of teenagers in Thailand: Facebook case study. Masters of Science, Program in Technology Management, College of Innovation, Thammasart University.

National Statistical Office. Nationwide statistical service, census and housing in 2010. Reference link: http://service.nso.go.th/nso/nso_center/project/search_center/23project-th.htm.

Article on social influence.Reference link: http://www.novabizz.com/NovaAce/Behavior/อิทธิพลทางสังคม.htm.

Anoop Singh, Sonali Jain-Chandra, and AdilMohommad (2012) Inclusive Growth, Institutions, and the Underground Economy , IMF Working Paper , Asia and Pacific Department.

Mr. KongkritLeksrinak, Dr. NarongPloydanai, Dr. WicheanchotiSukchotiratana.Gambling behavior of youth: Bangkok case study.Research journal KKU.(GP.)12 (4) : Aug. - Dec. 2555 BE.

TalinaDrabsch (2003) , The Economic and Social Implications of Gambling, Background Paper No 9/03 , NSW PARLIAMENTARY LIBRARY RESEARCH SERVICE,

Newman, Otto: Gambling: Hazard and Reward (London: Athlone Press, 1972) (PDF at University of Calgary)

Article “Behind the concept, digital economy, chamber of commerce supports via ICT group”.Toh Kao IT. The Council of Thai Chamber of Commerce 2557 BE. http://www.thaichamber.org/scripts/detail.asp?nNEWSID=13499

TunwarujanaBuranasuksakul, MD. Child and Adolescent Mental Health Rajanakarindra Institute.Source: http://www.smartteen.net/main/_admin/download/4-30-1387795341.pdf

"Digital Economy : know it, understand it, and use it" Ministry of Science and Technology. Source: http://www.most.go.th/main/index.php/product/sciencetalk/4054-digital-economy-.html

57%of Thais are gambling addicted by Thairath Online,24May2557 BE. 08:40 http://www.thairath.co.th/content/424836

Article"Prohibited goods to be disposed".Thai Customs Department. Source: http://internet1.customs.go.th/ext/Prohibit/Prohibit.jsp

Economic Outlook9th year, issue 1276, 6 June 2003 http://www.tfrc.co.th)

Kbank Research Year 8, issue 1088, 4 July 2002 http://www.tfrc.co.th

Detector performance analysis using ROC Curves. Retrieve from www.mathworks.com

Plagiarism Checking Report

Created on May 7, 2017 at 10:58 AM

Submission Information

ID	SUBMISSION DATE	SUBMITTED BY	ORGANIZATION	FILENAME	STATUS	SIMILARITY INDEX
477413	May 7, 2017 at 10:58 AM	tanpat.k@rsu.ac.th	มหาวิทยาลัยรังสิต	Decision Function to Underground Economy.docx	Completed	0.00 %

Match Overview

NO.	TITLE	AUTHOR(S)	SOURCE	SIMILARITY INDEX
No data available in table				

Match Details

TEXT FROM SUBMITTED DOCUMENT	TEXT FROM SOURCE DOCUMENT(S)