

**SZENT ISTVÁN  
UNIVERSITY**

**THE REGIONAL CHARACTERISTICS OF MARKET  
INFORMATION TRANSFER SYSTEM IN THE RICE  
PRODUCTION IN THE MEKONG DELTA, VIETNAM**

**The theses of Ph.D. dissertation**

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# **I. INTRODUCTION**

## **1.1. Actuality of the research topic**

After the economic resolution in 1986 Vietnamese economy changed positively; its agricultural sector achieved a great development, especially in the rice subsector. Rice has an important role in Vietnamese life and economy. According to the General Statistics Office (GSO) rice subsector is occupying 40% of gross output of the Vietnamese agriculture, 9.3 million households are planting paddy (65% of rural households) and over 70% of the national labor force are employed in the rice production (Asia Development Bank, ADB). Rice consumption in Vietnam accounts for about 60% of the daily per capita calorie intake (Rice today, 2002). According to the FAO Vietnam is the 5<sup>th</sup> largest rice producer and the 2<sup>nd</sup> rice exporter in the world. Foreign currency revenue from rice export has significantly contributed to the development of the Vietnamese economy. According to the GSO during the period of 2007 to 2013 Vietnam exported on average 6.265 million tons of rice with its value of 2.936 billion USD per year. The Mekong Delta is the rice granary in Vietnam. This region has contributed to the 50% of the national rice output and 90% of the rice export. However, the main issue in rice sector in the Mekong Delta is the rice the market problem: When there is a good harvest the rice price is low and rice farmers' profit is not high. According to a study of Tran Cong Thang, Do Lien Huong, Le Nguyet Minh in 2013 the average income of rice farmers from rice production in the Mekong Delta is very low with 535000VND/month (about 24USD/month). Therefore, the question is that how rice farmers in the Mekong Delta could sell their rice at higher prices to increase their profits and incomes.

The reality shows that the Vietnamese government and governmental agencies have also had activities and programs to provide rice market information to farmers through television, radio, newspapers, internet but a few rice farmers in the Mekong Delta have accessed to and used these information sources. On the contrary, the government has mainly supported farmers in their rice production such as new varieties, advanced technologies, pesticides, fertilizers, etc. More and more rice is produced by farmers in the Mekong Delta so the demand of market information is higher and higher to sell a bigger amount of rice at higher prices. Farmers in the Mekong Delta have received market information from their friends, other farmers, relatives and traders who are informal sources. The quality of market information from the informal sources is often not good.

Market information system plays an important role in raising the efficiency of economic performance and the success of the marketing process that depend to a large extent on the marketing information

system and on the success of each element in this system (Sultan Freihat, 2012). Some current research has indicated that market information is an important factor that helps farmers enter the market better, sell more products at higher prices. But there are not good models of MIT in Vietnam and through this my research will propose a model of MIT that is suitable in the Vietnamese conditions, a developing country with low income and weak infrastructure.

## **1.2. Reasons to choose the research topic**

Market information transfer system in the agriculture has already been studied in the world but it is a new topic in Vietnam. There is not research about MITS, the primary data and information about MITS in Vietnam so we do not know the strengths and the weaknesses of the current MITS, how to improve the MITS to meet the market information demands of rice farmers. Therefore, this is need to be done in my research.

Market information has an important role in the production and trade of farmer households respectively sharing market information is one of the most effective ways of improving supply chain performance (Riikka Kaipia, Helena Lakervi, 2005). Market information changes the farmers' position in the value chains and increases the selling prices of farmers because it increases farmers' bargaining power against buyers and- improving the competition with traders- farmers are able to sell their rice at a higher price (Daichi Shimamoto, Hiroyuki Yamada, and Martin Gummert, 2014; Marcel Fafchamps and Bart Minten, 2011). Market information expands the market and increases the sale volumes for farmers on different markets to improve their income (Robert Jensen, 2007; Jenny C. Aker, 2010; Julien Labonne and Robert S. Chase, 2009). Market information changes the behaviour of farmers. Farmers can modify the date of market or connect directly to wholesalers or larger-scale middlemen rather than smaller intermediaries, they change according to where they market their crops, they switch markets to capture better prices and identify where to deliver their products. Some farmers develop a two-way trade, bringing products back from the market to sell them in their own rural communities.

The demands of improving the market information system is imperative and significant to rice farmers in the Mekong Delta, Vietnam for the following reasons:

➤ The competitive pressure of rice farmers in the Mekong Delta is gradually growing: With the development of science and technology rice farmers in the Mekong Delta have produced more and more rice output, many rice farmers need to sell a bigger amount at the same time so they will be

under the competitive pressure from other farmers in the Mekong Delta, in Vietnam and even from international farmers. They need to find the larger markets to sell more rice at higher prices.

➤ There are more and more intermediates between rice farmers and final customers and export companies in the Mekong Delta and these intermediates became a barrier for the market information flow in the rice value chain, even they can distort the market information to gain advantages in the bargain making a wider gap of market information between participants in the rice value chain. Therefore, we need a good model of MIT to reduce the negative impacts of intermediates in the rice value chain, help farmers access to accurate, timely and adequate market information.

➤ Rice farmers in the Mekong Delta have been accessing to many market information sources at the same time but their main issue is that how to effectively use the market information and to distinguish between the good and bad information. In fact, the main market information sources of rice farmers are the informal sources such as relatives, friends, and private traders (Luu Thanh Duc Hai, 2003) and nobody controls and monitors these informal sources. As a result, the quality of market information from these sources provided to rice farmers is often not good because of the exclusiveness of these sources in the management and distribution of market information in the rice value chain. Meanwhile, the formal market information sources have often been disappointing because the market information disseminated from these sources to rice farmers is slow, they are in the wrong form and they are infrequent. Besides, rice farmers in the Mekong Delta have been limited in accessing to and using market information because of their low ability; many of them can access to market information but cannot analyze and use it and maybe they don't have modern devices either to access to market information via Internet, papers, mobile phone, etc. So we think that we need to build a model of MITS that provides the best and objective market information to rice farmers so that they can be self-confident to use this market information.

### **1.3. Research aims**

As reflected in the abovementioned, the main aims in my research are followings:

- To investigate the rice market information needs of rice farmers in the Mekong Delta.
- To identify the rice market information providers to farmers in the Mekong Delta.
- To investigate the type of market information provided to farmers in the Mekong Delta.
- To investigate the market information channels to farmers in the Mekong Delta.
- To investigate the utilization of market information by farmers in the Mekong Delta.
- To investigate the strengths and weaknesses of MITS in the Mekong Delta.

- To investigate the factor to enhance or promote the effectiveness of MITS in the Mekong Delta.
- To propose the suitable model of MITS for the Mekong Delta based on my research.

#### **1.4. Research questions and hypotheses**

##### ➤ The research questions:

- What kinds of rice market information have market information providers been providing to rice farmers in the Mekong Delta?
- What kinds of rice market information channels have providers been providing to rice farmers in the Mekong Delta?
- How have farmers been using rice market information?
- What is the attitude of the farmers like related to market information transfer system?
- What are the strengths and weaknesses of MITS in the rice value chain in the Mekong Delta?
- What are the impacts of MITS on rice farmers in the rice value chain in the Mekong Delta?
- Which demographic factors of rice farmers in the Mekong Delta have been influencing their satisfaction level of MITS?
- What kind of rational, useful and pragmatic action plans can be generated for developing the recently weak situation of MITS in the rice value chain in the Mekong Delta, Vietnam?

##### ➤ The research hypotheses:

My research has been carried out depending on 5 hypotheses as follows:

**H1:** The rice farmers are not satisfied with the recent situation of MITS in the Mekong Delta.

**H2:** Rice farmers in the Mekong Delta utilize both the macro and micro rice market information in MITS for their rice production and trading.

**H3:** The demographic characteristics of rice farmers (age, gender, educational level, FO member, rice income, size of farmer household), amount of rice market information sources and amount of rice market information channels have strong and statistically verifiable relationships with farmers' satisfaction of MITS.

**H4:** The government supported the MITS development via the agricultural extension system in Vietnam.

**H5:** An action plan and training about MITS are useful and imperative to develop the current MITS in the rice value chain in Vietnam.

## II. EMPIRICAL PART

### 2.1. General methodologies of my empirical research

The empirical study was a process of interviews and survey in the Mekong Delta to identify and to quantify the market information flow in the rice value chain, market information sources, market information channels, the impacts of market information on rice farmers, the socio-economic characteristics of rice farmers influencing their satisfaction on MITS, etc. and it included 2 stages: The first stage was the qualitative study by interviews and the second stage was the quantitative study by questionnaire.

**Table 1: Empirical research process**

Specification	Research stages	
	Stage 1 (Structural Interviews)	Stage 2 (Questionnaires)
Aim of research	Understanding MITS, preparing the secondary survey	Determining market information sources and channels, measuring the impacts of market information, etc.
Research type	Qualitative	Quantitative
Research method	Structural Interviews	Questionnaire
Research area	An Giang	An Giang and Can Tho
Sample size	27	315
Time	21 <sup>st</sup> to 26 <sup>th</sup> October 2016	September 10 <sup>th</sup> to October 6 <sup>th</sup> 2017
Expectation outputs	Interview report, qualitative data, the questionnaire for the secondary survey	The quantitative data, the PhD dissertation

The Mekong Delta was chosen as a research area for 3 main reasons: The Mekong Delta is a rice granary of Vietnam; The demand of rice farmers in this area about rice market information is so high; and rice trading activities in the Mekong Delta have been developed the most in Vietnam.

An Giang and Can Tho in the Mekong Delta are 2 provinces/cities chosen to be subjects to my questionnaire survey because An Giang is a main rice producer and Can Tho is the political and economic center of the Mekong Delta where there are many rice traders and export companies.

## **2.2. Methodology of interview**

I chose An Giang to interview in this first stage because An Giang is a main rice producer and rice farmers in An Giang has a high demand of market information. The sample was chosen randomly. At first, I interviewed the leader of the An Giang agricultural extension center and after the interview I thanked the help of the director. I chose 3 districts in An Giang, in which there is a district with a large area of rice production (Thoại Sơn district), a district with a medium area of rice production (Châu Phú district) and a district with a small area of rice production (Chợ Mới district) to interview farmers and agricultural extension officers at district level. At each district, I interviewed the leader of the district of the agricultural extension station and 5 -7 rice farmers including both advanced and not advanced farmers. A staff of the district agricultural extension station helped me make the list of farmers and make appointments to interview them.

According to Mária Bernschütz (2011), in qualitative methodology the researcher can work with a sample of small numbers, there is no need to use a big sample. At this first stage, I made an interview with a size of research sample of 27 people: 19 rice farmers, 5 agricultural extension staffs, 2 leaders of farmer organizations and 1 village leader.

I was using the method of structural interview by question guides. And the process of data analysis was implemented in 2 steps:

- Step 1 is coding the data: The data coding is a process, I typed the answers of interviewees from records into a word file.
- Step 2: Data analysis: After data coding I gathered the answers of interviewees according to each OGZ question and classified the same answers and different answers of interviewees in each question. I meant that the qualitative data and information were classified and summarized by thematic dimensions which were created via my hypothesis.

## **2.3. Analysis of the interview**

### ***2.3.1. Rice farmers' demands of market information***

Rice farmers in the Mekong Delta need 2 kinds of rice market information: Macro-information and micro-information. The micro-information contains the following information: prices of each rice variety in their area that help them have an orientation to grow rice varieties at a higher selling price; the phone number and the address of traders that help farmers have many chances to call traders to

check the price information and then they will decide where to sell, whom to sell at the highest price. The macro-information includes the predictions about rice markets (market trends) to help farmers adjust their production plans to fit into these market trends and information about rice export of Vietnam that helps farmers orient their market and investment in their rice production. If information about rice export of Vietnam indicates that rice export of Vietnam is advantageous, the export price of Vietnamese rice is high, rice farmers can increase investment in their rice fields to increase rice yield and quality to raise their profits and the opposite.

**Table 2: The farmers’ demands of rice market information in the Mekong Delta**

	<b>Market information</b>
Micro-information	Prices of each rice variety
	Phone numbers of traders
	Address of traders
Macro-information	Prediction of rice markets
	Rice export situation of Vietnam

Source: Own survey

There are differences in rice market information demands among rice farmers. Large-scale farmers and advanced farmers need both micro-information and macro-information because they can analyze and use 2 kinds of information for their rice production and marketing, meanwhile the not advanced farmers often concern only micro-information.

*“We need the detailed information to bargain with traders such as prices, traders’ addresses, and phone numbers in our community to call them to ask and compare with information from other traders. In addition, we also concern about rice export of Vietnam because it will affect the rice prices in the domestic field. If the rice export of Vietnam is good, the rice price will increase”* (Farmer in Châu Phú district).

### **2.3.2. Sources of rice market information**

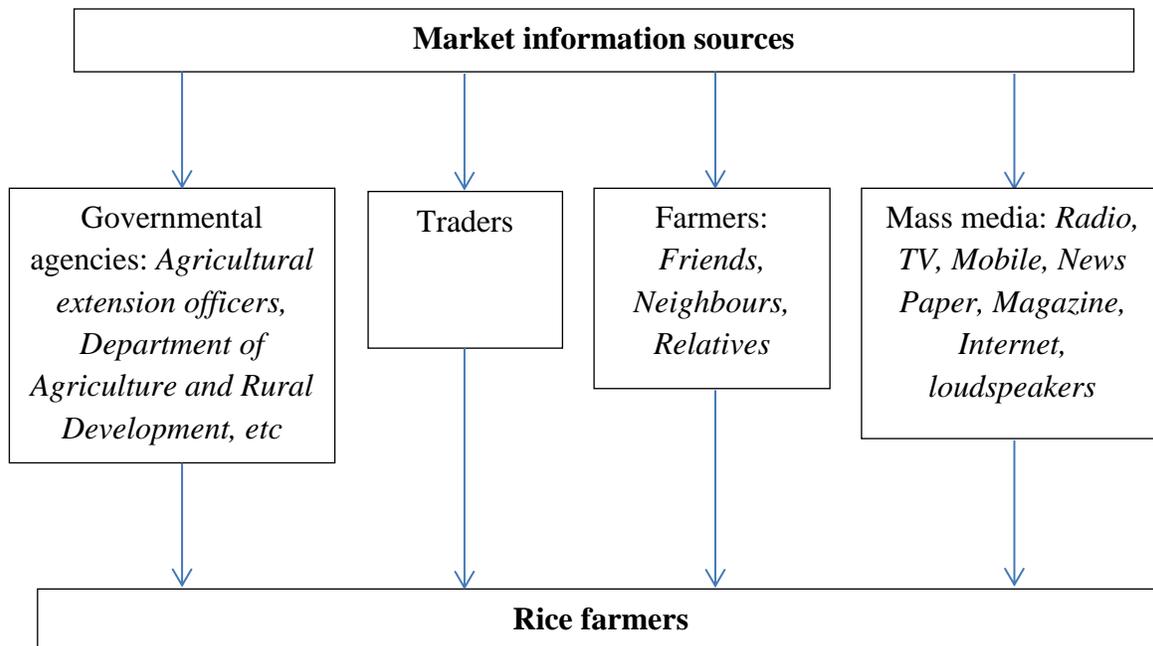
Rice farmers in the Mekong Delta have been accessing to many different sources of market information simultaneously to compare and make decisions in their rice production and marketing. However, their main sources of market information are still traders and friends because it is easy for them to access to these sources and the quality is good, especially in case of market information from other farmers. The market information from other farmers was collected from many different sources

and analyzed by themselves; then they shared it with other farmers and so the quality of market information is very good.

*“My family has accessed to many sources of market information such as friends, TV, traders, etc. However, only market information from friends is good because we meet each other frequently and they have information from many other sources and in different areas of rice production so they analyzed and recognized the price trend in a short term. I can use market information from them to bargain with traders in a good way. The market information from traders is also important because they buy our rice, they had a big voice in bargain process with us. Market information from TV, radio, newspaper is not good because it is common information (a farmer in Thoại Sơn district).*

*There is an exchange of information about price among farmers. The market information from farmers is the most accurate. They got market information from many different sources and it is selected and analyzed. We can use this market information to bargain with traders” (Farmer in Châu Phú district).*

**Diagram 1: Rice market information sources of farmers in the Mekong Delta**



Source: Own survey

### 2.3.3. Impacts of market information on rice farmers

Market information has a remarkable impact on farmers. Interviewees reckoned that market information has 4 main influences on farmers: (1) Increases the selling prices of farmers; (2) Improves

the farmers' income; (3) Reduces the risks in rice production and trade; (4) Changes the farmers' position in the value chains.

## 2.4. Methodology of the questionnaire

### 2.4.1. The process of sample choice

At this stage, the size of the research sample was bigger more than it was at the first stage to ensure the effectiveness of the data analysis later. 315 questionnaires with rice farmers have been conducted at the second stage altogether.

**Table 3: Research area and the sample size in the questionnaire**

<b>Selection</b>	<b>Criteria</b>	<b>Sources of information</b>	<b>Sample selection</b>
Provinces	Representative provinces of the Mekong Delta, Vietnam: A province is a representative of rice production and a province is a representative of rice trade	Statistical data from the General Statistic Office of Vietnam	- An Giang was the top rice producer - Can Tho was the rice market center
Districts	3 districts per province, in which there is a district with a large area of rice production, a district with a medium area of rice production and a district with a small area of rice production	- Provincial statistics - Local authorities	- An Giang: Cho Moi district, Thoai Son district, Chau Phu district. - Can Tho: O Mon district, Phong Dien district, Thoi Lai district.
Households	- 50 rice households per district in Can Tho and 55 rice households per district in An Giang - 10% poverty household → Average rate of poverty in the Mekong Delta - 15% of research sample was member of rice farmer organizations	Local authorities	315 rice households

Thanks to the advice of the leader of the Provincial Agricultural Extensions Center and the statistical data about rice production area, I chose 3 districts per province to do the questionnaire, in which there is a district with a large area of rice production, a district with medium area of rice production and a district with a small area of rice production. In An Giang, I surveyed 3 districts: Chau Phu, Thoai Son and Cho Moi. In Can Tho, those 3 districts were Thoi Lai, O Mon and Phong Dien.

I randomly chose 50 rice farmers per district in Can Tho and 55 rice farmers per district in An Giang to do questionnaires. The sample total was 315 respondents.

Household selection: The process of household selection was done under the assistance of agricultural extension officials at district level. In each district, the first step was that I gave criteria to agricultural extension officials for the selection of the households: a certain amount of rice producers, about 10% of the sample were poor rice producers. This was the average rate of poverty in the Mekong Delta, Vietnam. And it was about 15% of the sample who were joining rice farmer organizations to diversify the survey sample. Based on these criteria, agricultural extension officials listed the rice households and made the date for the questionnaire.

The main tool of my quantitative study was to collect the data to meet the research purposes and objectives. Using the questionnaire was useful for me to gain the data and information in an effective and significant manner. My questionnaire was designed with 3 main parts and 25 questions to collect the required basic information (Age, sex, education level, family size, total income, rice income, etc.), to find out the current MITS in the rice value chain in the Mekong Delta, Vietnam: Rice market information sources, rice market information channels, rice market information utilization of rice farmers, the impacts of MITS on rice farmers, advantages and disadvantages of MITS, etc.

#### ***2.4.2. The process of data analysis***

In my thesis, qualitative data had been analyzed before and then the quantitative data was analyzed in order to provide support to the results of qualitative data. SPSS was used for all statistical analyses and the data is entered into SPSS. Wrong and missing data were verified with the original questionnaires.

Descriptive statistics such as frequencies, percentages, means, etc. were used to present the variables. Binary Logistic Model was performed to identify the socio-economic characteristics of rice farmers influencing the farmers' satisfaction of MITS in the Mekong Delta, Vietnam.

*Model specification:*

$$Y = \log [P/1-P] = \log Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \mu$$

Where Y = Market information satisfaction

$\beta$  = regression coefficient explaining changes caused in Y by changes in the independent variables.

Market information satisfaction = 1;

Market information dissatisfaction = 0

X1 = Age (in years) of the respondents

X2 = Gender of the respondents (0=Female; 1=Male)

X3 = Educational level (Years)

X4 = Household size (amount of people)

X5 = Member of farmer organization (0=Not member; 1=Member)

X6 = Rice income (Million VND)

X7 = Amount of market information channels

X8 = Amount of market information sources

$\mu$  = Error term

## **2.5. Analysis of questionnaire**

### ***2.5.1. Socio-economic characteristics of respondents***

#### **a) Demography of the respondents**

Age: Age is a factor that can impact the rice farmers' participation in MITS. Young people are more dynamic to seek and use the market information, they have the improved knowledge and technology to easily access to the market information. The average age of the respondents was 47 years. The majority of the respondents (31%) was between the age of 41 and 50 years. The 30% of the respondents who was in the 51-60 age group, followed by 24% in the 31-40 age group. Also, the 20-30 age group accounted for 8% and the over- 60 age group represented 7% of the respondents.

Gender: Gender can influence the decision on rice production and the trade of the family as well as their participation in MITS. Both male and female can have different knowledge, various ways of organizing knowledge, and different ways of preserving and transferring knowledge (Edda Tandi Lwoga, 2010). In a Vietnamese family, the husband has a bigger voice in all activities of the family and therefore, they will decide on the market information sources they access to, how to analyze the market information and how to use it. In the research sample, male occupies 74%, higher than female (26%).

Educational level: Educational level of rice farmers will influence their market information access, analysis and usage. Educated people have advantages in the accessing, analyzing and using market

information. The findings of this research show that 43% of the respondents attended high schools, 43% of the respondents were students at secondary schools and the remainder (N=45; 14%) had attained the primary education.

Household size: Household size may have an impact on the effect of market information seeking. Big families have more and more opportunities to seek and get good market information because they have many relationships, many sources of market information and many channels of market information. An average size of a respondent's family in this my research is 5 people, in which 33% of the sample has a household size of 4 people, 5- people families seize 24%, 16% are 6- people family, 14% are 3- people family, over 6 -people families hold 9% and 2-people families are 4%.

Member of farmer organizations (FO): Joining of rice farmers to a farmer organization influences the effectiveness of their rice production and trading and also their satisfaction level of MITS. Theoretically, rice farmers who are members of farmer organizations have more and more opportunities than non-member farmer organizations to get rice market information so they have a higher satisfaction level of MITS. Only 14% of the respondents took part in the farmer organizations and 86% of the respondents were not members of the farmer organizations.

Annual income: The annual income of the respondents may influence the accession to and the usage of market information. The high income households often have a good ability to access to the great market information, in addition they can invest in technique to easily access to and get market information as well as they also have more relationships with many sources of market information. The income distribution of rice farmers in the study area. The average income of a rice farmer household in the Mekong Delta, Vietnam was 133.4 million VND/year (about 6000 USD/year). 30% of the respondents earned between 91 and 120 million VND, 27% of the respondents had an income over 150 million VND, 23% of the respondents earned from 61 to 90 million VND, 17% of the respondents earned between 121 and 150 million VND and only 3% (N=8) earned between 30 and 60 million VND.

Rice income of rice producers: Rice income of rice farmers can influence their market information seeking and usage. Rice farmers with a higher rice income have the ability to search and use market information in more effective ways. The average income from rice of respondents was 70.9 million VND/year (about 3200USD/year), seizing 53% of the total income of a rice household. It means that rice has an important role in the economy of the rice household. The majority of the respondents (N=127; 40%) had a rice income between 31 and 60 million VND, 27% of the respondents had a rice

income from 61 to 90 million VND, 13% of the respondents earned from rice between 91 and 120 million VND, 12% of the respondents had an income under 30 million VND from rice, 4% of the respondents (N=14) were between 121 and 150 million VND and only 4% of the respondents (N=11) had an income over 150 million VND.

Rice training: Over the past 20 years, the Vietnamese government have promoted the rice training programs to improve the technical level of rice farmers in order to increase the rice yield and quality, to improve rice farmers' income and profits. Therefore, almost all Vietnamese rice farmers joined the rice training courses. The findings show that 85% of the respondents took part in the rice training courses and only 15% have not joined yet.

Overall, the demographic characteristics of the respondents indicated that the respondents can have enough ability and knowledge to access to, analyze and use the market information in an effective manner. They had the knowledge, experience and an economic condition to access to market information.

#### b) Effectiveness of rice production

MITS influences the effectiveness of rice production so we want to know how effective the rice production of rice farmers is in the Mekong Delta is. The majority of rice farmers in the Mekong Delta, Vietnam still evaluated that the rice production was effective with a percentage of 66% of the respondents but also 21% of the respondents indicated that it was not effective and higher than the very effective rice production size with a rate of 13% of the respondents. This proves that a high rate of rice farmers in the Mekong Delta under-effectively produced rice and one reason for this is the low effect of their rice trading because of a lack of rice market information.

#### c) Some difficulties in rice farmers' rice selling

Vietnamese small-scale farmers have faced many difficulties in their rice selling and my research indicates that 100% of the respondents faced some difficulties when they were selling their rice. There were 6 main difficulties for rice farmers in the Mekong Delta, Vietnam they met when they were selling rice to traders: Low Infrastructure, low selling price, few buyers, no market information, inaccurate and inadequate market information, and they don't know where to sell.

**Table 4: Some difficulties of farmers in rice selling (%)**

Difficulties	Yes	No	Rank
Low Infrastructure	19	81	5
Low selling price	97	3	1
Few buyers	54	46	4
No market information	11	89	6
Inaccurate and inadequate market information	91	9	2
Don't know where to sell	57	43	3

Source: Own survey, 2017

### 2.5.2. Rice market information transfer system (MITS)

#### a) Market information sources

The market information source is a very important part in MITS because information sources will affect the quality of information the farmers will get. Information source is an institution or individual that creates or brings about a message (Starasts, A. M., 2004) and hence, there are many kinds of different sources: media, radio, TV, personal experience, books, journal and magazine articles, expert opinions, internet, extension agents, etc.

**Table 5: Rice market information sources of rice farmers in the Mekong Delta, Vietnam**

Market information sources	%	Rank
Farmers, relatives, friends	100	1
Traders	91	3
Collectors	99	2
Farmer Organizations	11	7
Newspapers	4	11
Radio	8	9
Television	64	5
Internet	10	8
Extension services	34	6
Village leaders	70	4
Other governmental agencies	6	10

Source: Own survey, 2017

Rice farmers in the Mekong Delta, Vietnam have been accessing to market information from 2 kinds of market information sources (Formal sources: Governmental agencies, newspaper, radio, television, internet, etc. and Informal source: Traders, collectors, farmers, internet, village leaders, farmer organizations, etc.). And the most important source for rice farmers in the Mekong Delta, Vietnam is other farmers, followed by collectors and traders, village leaders, television, extension services, farmer organizations, Internet, radio, other governmental agencies, newspapers.

b) Market information channels

The market information channel is a very important element in MITS. It influences the market information quality, the information dissemination speed, the amount of market information receivers, etc. A good channel of market information is a channel with a fast speed of information dissemination, a low cost and a big amount of users.

**Table 6: Market information channels used by rice farmers in the Mekong Delta**

Market information channels	%	Rank
Newspapers	4	7
Radio	8	6
Television	67	3
Internet, Email, web	10	5
SMS, Telephone	95	2
Meetings	100	1
Visitings	4	7
Loudspeakers	37	4
Bulletin	1	9

Source: Own survey, 2017

Rice farmers in the Mekong Delta, Vietnam used 9 market information channels to get market information and among them, meetings and phone were the most important channels for rice farmers, the next are television, loudspeakers, Internet, radio, newspapers, visitings and bulletin.

c) Rice market information utilization

Rice farmers in the Mekong Delta, Vietnam used rice market information for 7 purposes as follows: Negotiating with traders, deciding where to sell the products, deciding when to sell, deciding what to plant in the next season, deciding who to sell to, deciding the selling price and sharing with other

farmers as well as negotiating with traders, sharing with other farmers and deciding where to sell were the main purposes of market information usage of rice farmers in the Mekong Delta, Vietnam.

**Table 7: Rice market information usage of rice farmers in the Mekong Delta, Vietnam**

<b>Rice market information usage of rice farmers</b>	<b>Yes</b>	<b>No</b>	<b>Rank</b>
Negotiating with traders	98	2	1
Deciding where to sell the products	72	28	3
Deciding when to sell	42	58	6
Deciding what to plant in the next season	45	55	5
Deciding whom to sell	66	34	4
Deciding the selling price	40	60	7
Sharing with other farmers	97	3	2

Source: Own survey, 2017

d) Rice farmers' satisfaction level of MITS in the rice value chain

Farmers' satisfaction level of market information system is an important norm that reflects the gap between the farmers' needs of market information and the meeting of the market information system with those needs. Rice farmers' satisfaction of market information system was not high. The 38% of the respondents had a low satisfaction of MITS. 34% of the respondents indicated that they had a medium satisfaction of MITS. The rate of the respondents with a very low satisfaction of MITS in the sample was 14%. Meanwhile, 13% of the respondents had a high satisfaction level of MITS. And only 1% of the respondents were at a very high satisfaction level. There are many reasons for low farmers' satisfaction of MITS such as lack of market information sources and channels, low quality of market information, etc. and these reasons will be analyzed in the next parts of this research.

e) The influence of the socio-economic characteristics on rice farmers' satisfaction of MITS

Rice farmers' satisfaction level of MITS in the rice value chain in the Mekong Delta, Vietnam depends on many factors such as policy environment, their socio-economic characteristics and the rice market information sources as well as channels. In this research I ignored the policy environment because in fact, the Vietnamese government did not have any policies to promote the provisions of rice market information to rice farmers. I used the socio-economic characteristics of rice farmers (age, educational level, FO membership, and rice income), the amount of rice market information sources and the

amount of rice market information channels rice farmers accessed to and used to gain rice market information for Binary Logistic model to determine which factors influenced significantly the rice farmers' satisfaction of MITS.

The data in table 8 shows that at 5% level of significance, educational level, rice income and the amount of market information channels significantly impacted rice farmers' satisfaction of MITS and the rest of the factors (age, FO member, the amount of market information sources) didn't have significant influences on rice farmers' satisfaction of MITS.

**Table 8: The socio-economic characteristics influence rice farmers' satisfaction of MITS**

Variables	B	S.E.	Wald	df	Sig.
Age	.031	.021	2.095	1	.148
Educational level	.166	.081	4.226	1	.040*
Rice income	.019	.008	6.366	1	.012*
Channel amount	1.405	.309	20.623	1	.000*
Source amount	-.036	.208	.030	1	.862
FO member	.135	.614	.049	1	.825
Constant	-8.606	2.414	12.710	1	.000
N = 315					
Sig = 0.000					
-2 Log likelihood = 187.100					
Nagelkerke R Square = 0.349					
Percentage correct = 86%					

\* *The statistic is significant at 5% level*

Source: Own survey, 2017

- The educational level of respondents had a significant and positive influence on rice farmers' satisfaction of MITS (B = 0.166; Sig. = 0.022) at a significant level of 5%. This suggests that the higher the educational level of the respondents is the more considerable their satisfaction of MITS is. It can be inferred that rice farmers with a high educational level had a significant ability to seek and use market information in an effective way.

- Rice income had a significant influence on rice farmers' satisfaction of MITS (B = 0.019; Sig. = 0.012) at a significant level of 5%. This asserts that respondents with a higher rice income had a higher

satisfaction of MITS than rice producers with a lower rice income. In fact, rice producers with a large area of rice production, a big output of rice and a high income from rice had often high demands of market information and they were also active to seek market information to get better information.

- The amount of market information channels also significantly and positively influenced the rice producers' satisfaction of MITS ( $B = 1.405$ ;  $Sig. = 0.000$ ) at a significant level of 5%. It has been inferred that rice farmers with more and more channels of market information had more and more satisfaction of MITS. Rice farmers with many market information channels were convenient to gain market information and had many chances to access to good market information.

f) Impacts of MITS on rice farmers

MITS had 9 impacts on rice farmers in the Mekong Delta, Vietnam: Increasing the income, increasing the selling price, improving the ability of market participation, enlarging markets, reducing the market risks, reducing the production risks, reducing the waste, improving the production plan, and increasing the negotiation, increasing the number of negotiations with traders, increasing rice income, increasing the selling price and improving the ability of market participation are the main impacts of MITS on rice farmers in the Mekong Delta, Vietnam.

**Table 9: Impacts of MITS on rice farmers in the Mekong Delta, Vietnam**

<b>Impacts of MITS on rice farmers</b>	<b>Yes</b>	<b>No</b>	<b>Rank</b>
Increasing the rice income	91	9	2
Increasing the selling price	89	11	3
Improving the ability of market participation	85	15	4
Enlarging markets	58	42	7
Reducing the market risks	68	32	6
Reducing the production risks	42	58	8
Reducing the waste	24	76	9
Improving the production plan	73	27	5
Increasing the negotiation	93	7	1

Source: Own survey, 2017

g) The advantages of MITS for rice farmers in the Mekong Delta, Vietnam

MITS had 5 main advantages for rice farmers in the Mekong Delta, Vietnam: Easy access, accurate market information, easy understanding of information, easy use, low cost. Easy access, low cost and

easy use of market information are the biggest advantages of MITS for rice farmers in the Mekong Delta, Vietnam.

**Table 10: Advantages of MITS for rice farmers**

<b>Advantages of MITS</b>	<b>%</b>	<b>Rank</b>
Easily accessible	82	1
Accurate market information	20	5
Easily understandable market information	22	4
Easy use of market information	27	3
Low cost	48	2

Source: Own survey, 2017

h) The disadvantages of MITS for rice farmers in the Mekong Delta, Vietnam

MITS had 6 main disadvantages for rice producers in the Mekong Delta, Vietnam: Low quality of market information, lack of market information sources, lack of market information channels, the lack of diversification, inconvenience to access, and lack of governmental participation. The low quality of market information, lack of market information sources, the lack of the diversification of market information are the most important disadvantages of MITS for rice farmers in the Mekong Delta, Vietnam.

**Table 11: Disadvantages of MITS for rice farmers**

<b>Disadvantages of MITS</b>	<b>%</b>	<b>Rank</b>
Low quality of market information	73	1
Lack of market information sources	52	2
Lack of market information channels	22	5
No market information diversification	31	3
Inconvenience to access	11	6
Lack of governmental participation	24	4

Source: Own survey, 2017

### **2.5.3. Rice trainings for rice farmers**

Rice farmers in the Mekong Delta, Vietnam were willing to take part in 6 rice training courses in the future: Technical processes, input materials use, market information, rice market, rice seed technical

processes, and rice policies. Among these 6 training courses, 60% of the research sample wanted to join in the rice technical process to increase their rice productivity and quality, 57% wanted to take part in rice market (how to trade) to raise their rice prices and profits, 41% were willing to participate in trainings on input material utilization to use it more effectively, 51% wanted to join in the rice market information trainings to get and use rice market information in a more effective manner, 16% were willing to take part in trainings in technical processes of rice seed production and lastly, 3% wanted to participate in trainings on rice policies.

Training about MITS for rice farmers in the Mekong Delta, Vietnam is useful and imperative to develop the current MITS of the rice value chain because farmer's knowledge about MITS was low, they have not been trained about MITS and so they are willing to be trained about MITS to improve their trading activities.

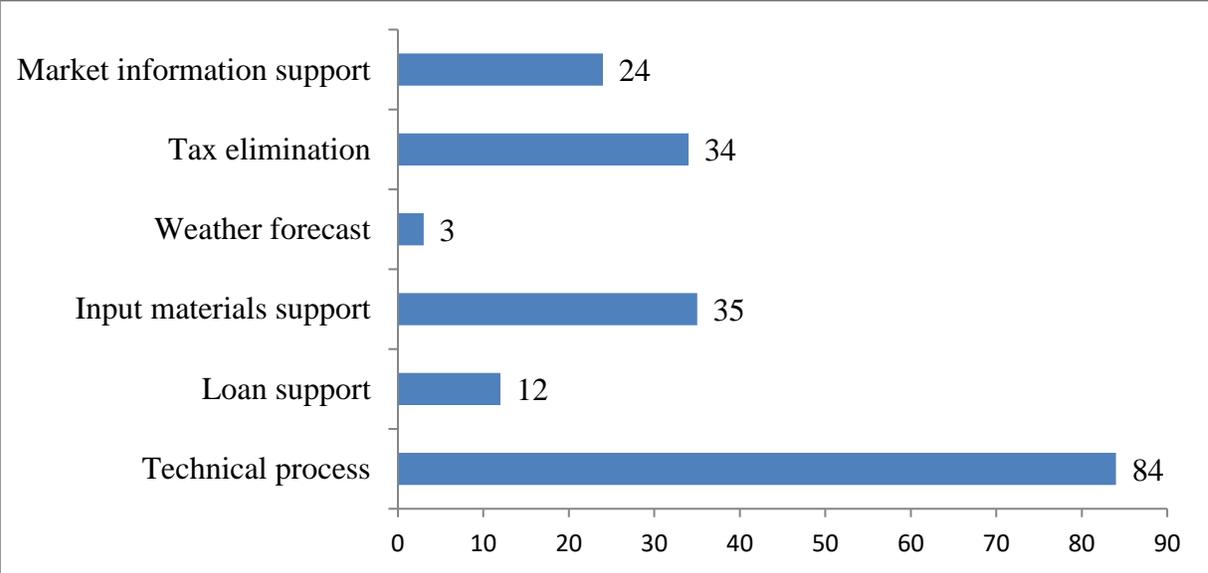
There are 3 main parts in a MITS: Market information collection, market information analysis and market information utilization. I asked rice farmers that "What is the most important part in a MITS?" and the majority of rice farmers in the Mekong Delta, Vietnam claimed that rice market information utilization was the most important part in a MITS with 41% of the research sample. 39% of the research sample said that rice market information collection was the most important part in a MITS and 20% of the research sample asserted that rice market information analysis was the most important part in a MITS. This demonstrates that a good model of MITS should focus on improving rice market information utilization of rice farmers and then on how to quickly and conveniently collect rice market information and lastly on rice market information analysis.

#### ***2.5.4. Supports of government for rice farmers***

Rice production is an important subsector in the agricultural industry of Vietnam. It significantly contributed to the socio-economic development, ensured the national food security and also provided foreign currency to the Vietnamese economy by exporting. Some research showed that rice farmers' income and profits in the Mekong Delta, Vietnam were very low and to improve this the Government gave many supports to rice farmers.

The Vietnamese Government had 6 main supports for rice farmers in the Mekong Delta, Vietnam: Technical processes, loan, input materials (seed, pesticide, and fertilizer), weather forecast, tax elimination, and market information.

**Figure 1: Governmental supports for rice farmers in the Mekong Delta, Vietnam**



Source: Own survey, 2017

### III. CONCLUSIONS

#### 3.1. Conclusions

MITS have an increasing role in developing the agricultural products value chains in the world on the basis of the findings of the literature review. Many countries are applying MITS in reality to raise the transparency and to reduce inequality of market information in the value chain especially between farmers and traders. Farmers with good market information can sell more and more of their products increasing the selling prices and incomes, etc.

Rice production of Vietnam achieved the great results in the last 30 years with an increasing output. But the yield and the area of rice production in Vietnam touched the ceiling so to develop rice sector Vietnam needs improving the trading activities and bettering the current MITS is a choice.

Along with the development of sciences and technologies and rice land accumulation the rice output of a household in the Mekong Delta, Vietnam has significantly raised and in turn it puts rice farmers under a high pressure to sell more and more at the same time at a high price. So farmers need to be provided with the good market information to make their informed decisions.

My research has attempted to describe and analyze the current MITS in the rice value chain in the Mekong Delta, Vietnam to propose solutions to upgrade the current MITS. Besides the strengths of the current MITS such as low cost, fast speed of market information dissemination there are some weaknesses of MITS such as the low quality of market information, lack of channels and sources of market information, lack of participation of governmental agencies in MITS, etc.

Rice farmers' demands of rice market information in the Mekong Delta, Vietnam were high to serve their rice production and trading. Almost all farmers were willing to get more and more market information. There are 2 kinds of market information that farmers want to know: Macro and Micro market information but almost all farmers in the Mekong Delta, Vietnam want to be provided with micro market information such as price, phone number of traders, etc. and some large scale farmers need Macro market information such as rice export, export prices, total of rice quantity of Vietnam, etc.

There are 2 kinds of market information sources in the rice value chain in the Mekong Delta, Vietnam: Formal and informal. Rice farmers have been approaching simultaneously many sources to meet their demands but the informal sources such as farmers, relatives, neighbors, collectors, traders, etc. are still important for rice farmers in the Mekong Delta because it is easy to access to these sources at a

low cost. In addition, rice farmers need to have funds and skills to get market information from formal sources.

The main channels of market information in the current MITS in the rice value chain in the Mekong Delta that farmers are using to get market information are phone calls and face-to-face meetings because these channels are convenient at low costs. Modern channels such as internet, newspapers, television, etc. are not suitable for farmers in Vietnam because rice farmers need to have funds and skills to use them.

The quality of market information is an important factor in MITS but farmers in the rice value chain in the Mekong Delta, Vietnam have been getting a low-quality market information. The price is the main kind of market information provided to farmers from the current MITS. Besides, MITS in the rice value chain in the Mekong Delta, Vietnam is being run mainly by private traders where there is not management and supervision of the quality of market information provided to farmers.

Training farmers is a solution to develop MITS in the rice value chain in the Mekong Delta because in addition to the low capacity of rice farmers in market information collection, analysis and utilization, Vietnamese State also focused on training technical process to farmers so farmers' knowledge about MITS in Vietnam is rather low. It means that we need to hold trainings about MITS for farmers.

To design the good model of MITS for Vietnam and to improve the weaknesses of the current MITS I need to understand which factors are influencing the current MITS in the rice value chain. My research indicated that 3 factors: Educational level, rice income and amount of market information channels have significantly influenced the satisfaction of rice farmers on MITS. And we can see that among these 3 factors Vietnam can improve 2 factors, the education level and the amount of market information channels to develop MITS through training farmers to increase their educational level and designing a new model of MITS where farmers have more and more channels to get market information, meanwhile one factor, the rice income is dependent on the farmers themselves.

My research showed that the governmental agencies have a big role in developing MITS in the rice value chain. The participation of the governmental agencies in MITS increased the belief and confidence of rice farmers in MITS, in the rice market information they got, but because of the lack of budget the participation of the governmental agencies in MITS in Vietnam were rather limited. It is recommended that the Vietnamese State need to have policies and budget to encourage the governmental agencies such as the agricultural extension system, FOs, village leaders to join in MITS.

The agricultural extension system in Vietnam has responsibility to collect and analyze market information to transfer them to farmers, village leaders and FOs who are living in the same communities with farmers to ensure the fast speed of market information dissemination at a low cost so that more and more farmers can access to them.

### **3.2. New scientific findings of my dissertation**

The first new finding of the dissertation is that this research is the first comprehensive study about MITS in Vietnam about both research methodologies and contents. MITS is a new topic in Vietnam and the previous research only studied some aspects of MITS. I hope that this research will be the first basic for the next research about MITS in Vietnam and this dissertation will also be a good literature source for researchers who will carry out research on MITS. Besides, I think that this dissertation will serve as a valuable literature source for agricultural managers and policy makers in Vietnam so that they can see the general picture of the current MITS in Vietnam and can propose policies and programs to improve the current MITS.

The second new finding of my dissertation is that after the research I proposed a good model of a new MITS for the rice value chain in Vietnam that can solve the limitations of the current MITS. My desire in the future is that this model should be applied in reality to prove its applicability and in addition, there are many other models for other agricultural products in Vietnam proposed by my model.

The third new finding of my dissertation is that the satisfaction level of rice farmers in Vietnam was still low because of the lack of good sources of market information, the lack good channels of market information, the low quality of market information, the lack of participation of Vietnamese governmental agencies in MITS, etc.

The last new finding of my dissertation is the considerable changes of MITS in my research with MITS in the researches in the past (5-10 year ago) in Vietnam in general and in the Mekong Delta in particular. Nowadays farmers have more knowledge, skills and abilities to access to and get more and more market information than farmers in the past but the satisfaction level of the present farmers is not high because they have been producing more and more rice and a high pressure on selling more and more rice at the same time and within short time they demand more and more rice market information with more and more frequency because rice market information has been changing every day.

### **3.3. Some suggestions for the future research**

The big role of MITS in the rice value chain was confirmed in this research so I recommend that the future researches should study MITS in other value chains of the main agricultural products in Vietnam where farmers also have a high demand of market information.

My research studied MITS in the whole value chain of rice so the findings of my research may not be the facts in the special value chains in the rice sector. The future research should focus on studying MITS in the special value chains such as rice export value chain, domestic value chains, short value chain (aromatic rice value chain) and long value chain (normal rice value chain) because there are differences in demands, sources, channels of market information in each chain.

A new model of MITS for the rice value chain in Vietnam was proposed based on my research and hopefully this new model will be applied in reality to test its suitability under the Vietnamese conditions.

In summary, my research on MITS in the rice value chain in the Mekong Delta was scientifically performed and its findings showed that MITS significantly and positively influenced rice farmers in the Mekong Delta, Vietnam. In addition, it had still many obstacles to be solved to improve its effectiveness. Therefore, based on the findings and recommendations above I propose a new model of MITS that is suitable for conditions of the rice value chain in the Mekong Delta, Vietnam and I do hope that I will have chances to introduce this model to the Vietnamese government, managers, policy makers, actors in the rice value chain in the near future through articles, workshops, trainings, etc. to try to apply them on the fields. Hopefully, the new model of MITS for the rice value chain in the Mekong Delta, Vietnam will really solve the current obstacles of MITS helping rice farmers' access to and use rice market information in an effective manner for their rice production and trade to enhance their rice profits and income.

## SUMMARY

This is the farmers' increasing demand for adequate, accurate, relevant and timely market information in the agricultural sector to improve their production and trading, especially in the developing countries like Vietnam where there is a bigger and bigger integration into the international market and an increasing pressure on their product selling. Farmers' lack of rice market information in the Mekong Delta, Vietnam is a main reason to implement this research: the Market information transfer system (MITS) towards farmers in the rice value chain in the Mekong Delta, Vietnam. The aims of the research are to study the current MITS in the rice value chain in the Mekong Delta, Vietnam (farmers' demand of rice market information, rice market information sources, rice market information channels, rice market information utilization, the weaknesses and strengths of MITS, etc.), to evaluate farmers' satisfaction level of the current MITS in the rice value chain, to analyze factors influencing farmers' satisfaction level of MITS and to propose a new model of MITS to improve the weaknesses of the current MITS in the rice value chain in the Mekong Delta, Vietnam.

I used the mixed methodology (both qualitative and quantitative methods) in my research to interview 27 interviewees and survey 315 rice farmers in the Mekong Delta within 2 years: 2016 and 2017. The research tools I used are structured question guide and questionnaire. All analyses were run by SPSS software.

The research shows that MITS has an increasing big role in developing the rice value chains in the Mekong Delta, Vietnam. MITS helped rice farmers in the Mekong Delta increase the income as well as the selling price, improve the ability of market participation, enlarge markets, reduce the market risks, reduce the production risks, reduce the waste, improve the production plan and increase number of negotiations.

The current MITS in the rice value chain in the Mekong Delta, Vietnam is described and analyzed in the research. Almost all rice farmers need micro market information to make their informed decision in rice production and trading, meanwhile macro market information is looked for by large-scale farmers. Farmers and traders are the main sources of market information for farmers because they can easily access to it at a low cost, other sources of market information such as internet, newspaper, governmental agencies, television, farmer organization, etc. are used by a small mount of farmers because of the high costs and skills to use and access to these sources. Phone calls and face-to-face meetings are the priority channels of rice farmers because for them it is easy to use these channels,

the good effect of information exchange and the fast speed of information transfer, meanwhile modern channels such as internet, newspaper, television, bulletin, etc. are used by less farmers to get rice market information. After having rice market information rice farmers in the Mekong Delta, Vietnam use them to negotiate with traders, decide where to sell the products, decide when to sell, decide what to plant in the next season, decide whom to sell to, decide the selling price and share them with other farmers.

Rice farmers in the Mekong Delta, Vietnam have been active to access to one and more sources of rice market information to get market information that meets their demands. However, their satisfaction level of the current MITS in the rice value chain is still low due to the low capacity and economic conditions of rice farmers, the lack of good sources and channels of rice market information, the low quality of rice market information, the lack of the participation of governmental agencies in MITS, etc.

In addition, there are some new scientific findings in this research. This is the first comprehensive study about MITS in Vietnam about both research methodologies and research contents. A new model of MITS is proposed on the basis of the results of the research. Nowadays farmers have more knowledge, skills and abilities to access to and get more and more market information than farmers in the past but the satisfaction level of the present farmers is not high because they have been producing more and more rice and there is a high pressure on selling more and more rice at the same time and within short time as rice market information has been changing every day.

Some suggestions for the future research: The future research should study MITS in other value chains of the main agricultural products in Vietnam where farmers also have a high demand of market information. The future research should focus on studying MITS in the concrete value chains such as rice export value chain, domestic value chains, short value chain (aromatic rice value chain) and long value chain (normal rice value chain) because there are differences in demands, sources, channels of market information in each chain. Vietnam needs to run a project to apply the new model of MITS for the rice value chain in reality to test its suitability under the Vietnamese conditions.

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