



FACTOR AFFECTING SCUBA DIVER WILLINGNESS TO PAY  
IN THE CASE OF PURCHASING ON A TRIP  
FOR WATCHING MANTA RAY PURPOSE IN SIMILAN ISLAND

Supak Tangkamolsuk  
5704642122  
Faculty of Economics (International Program)  
Thammasat University

EE 489 Seminar in Industry Economics  
Semester 1/2017

## **Table of contents**

<b>Chapter 1: Introduction</b>	
<b>Statement of problem</b>	<b>2</b>
<b>Objective of the study</b>	<b>3</b>
<b>Scope of the study</b>	<b>3</b>
<b>Chapter 2: Literature review</b>	<b>3</b>
<b>Chapter 3: Methodology</b>	
<b>Research Methodology</b>	<b>7</b>
<b>Conceptual Framework</b>	<b>10</b>
<b>Theoretical Framework</b>	<b>11</b>
- Definition	
- Economic Theory	
- Marketing Framework	
- Demographic	
<b>Chapter 4: Finding &amp; Results Analysis</b>	<b>14</b>
<b>Chapter 5: Conclusion &amp; Suggestion</b>	<b>29</b>
- Overall conclusion	
- Implication	
- Suggestion for future study	
- Limitations of the study	

**FACTOR AFFECTING SCUBA DIVER WILLINGNESS TO PAY  
IN THE CASE OF PURCHASING ON A TRIP  
FOR WATCHING MANTA RAY PURPOSE IN SIMILAN ISLAND**

---

**SUPAK TANGKAMOLSUK  
5704642122**

**Abstract**

This study aims to investigate the willingness to pay (WTP) of Thai scuba divers when deciding to purchase a package diving trip for manta ray watching by liveaboard boat in Similan Islands and determinant the factors that affect their WTP. The data were collected by conducting online and hard copy questionnaires from 200 divers who at least have one time scuba diving experience. This study uses open-ended contingent valuation survey and OLS regression Model to analyze the data.

The findings show that, 200 divers have average WTP at 22,858.50 baht, average preference WTP if they are able to set price themselves at 16,429.50 baht and average of entrance WTP is around 183 baht which is lower than its actual price 200 baht per day. Regarding the 7P's marketing mix and demographic factors significantly affect their WTP and decision making to dive for manta ray watching purpose.

The determinant factors that are statistically significant to willingness to pay in case of manta ray watching are those market elements which involving with service comprising of physical evidence and people factors from 7P's marketing mix. Besides, for demographic factors, there are only income and level of diver certification that most affect WTP of scuba divers. And there are no any factors affect the entrance fee willingness to pay.

# I.INTRODUCTION

## Statement of problem

In these days, tourism is emerging as a growth industry. Marine tourism or ecotourism becomes one of the aspects which makes contribution to Thai economy. Scuba-diving tourism is becoming a major economic factor, measures are being taken in many tropical countries to meet both the tourism demand and the need to protect the environment (Treeck, Schuhmacher, 1999; Hawkins, Roberts, 1992).

In these days, the demand for tourism increases dramatically due to Thai benchmarking report of World Travel and Tourism Council, Travel and Tourism generated a total impact of \$US 72 billions of Thailand's GDP in 2014, particularly the coastal and marine tourism. The marine tourism can be categorized into two types which are general coast or island sightseeing and recreation activities included snorkeling and scuba diving. The recreation activity like snorkeling requires only 2-3 equipment to experience the marine attraction. In fact, scuba diving requires particular and more sophisticated equipment. Accordingly, the cost involved with scuba diving is typically higher for example, the cost for taking scuba diving courses, cost of buying or rental equipment or even the cost for diving package and any other service offering such as safety and facilities quality.

Even though there is the limitation in term of market size since it is a niche market targeting only certified diving license customers, cost and service standard, the return in scuba diving industry is relatively high. Besides, the dive sites in Similan Islands contained with various tropical fish, rare expected creatures, healthy coral reefs and crystal water attract more tourists and contribute to a high growth.

Manta ray is an oceanic creature that most of scuba divers expect to see and dive with them. Similan Island is the only location in Thailand that has high possibility to see manta ray. Generally, the season for manta ray in Similan is from mid-October to mid-May. The reason of the specific time chance to see them according to their seasonal migration for feeding habits. The hot weather and oceanic current brings a rich plankton the depth to surface between January and May. The two best dive sites at Similan Islands to spot manta ray are Koh Bon and Koh Tachai pinnacle. (Thailand Manta Trust, 2017).

Due to the fact that there is more competitiveness and new entrant in industry especially the foreign scuba diving companies, tours, and diving service providers, Thai producers may not be able to compete with them regarding to the weaknesses of lower quality and standard. In addition to similarity in price and promotion, it is difficult to differentiate the product from competitors.

On this ground, the study of scuba divers' willingness to pay when deciding to purchase a package diving trip for manta ray watching by liveaboard boat in Similan Islands will be advantageous to producer side. To illustrate, Thai producers are able to come up with market strategy in term of setting price based upon customer WTP. Besides, the 7P's marketing mix factors in this study will be beneficial for them in term of improving the factors that most affect customer decision and WTP. Simultaneously, it helps producers able to provide better service and reach customer satisfaction and return for a repurchasing.

## **Objectives of the study**

This study is aimed to analyze two following objectives

- To estimate scuba diver willingness to pay for manta ray watching when purchasing on a package diving trip for manta ray watching by liveaboard boat in Similan Islands.
- To study and analyze the 7P's marketing mix and demographic factors that affect scuba diver willingness to pay on a package diving trip for manta ray watching by liveaboard boat in Similan Islands.

## **Scope of study**

This study will focus only WTP of dive recreation activity in the case of manta ray watching tourism concentrating on Similan National Park only. Other dive recreation activities or other marine National Park will not be included in the study.

## **II. LITERATURE REVIEWS**

### ***1. Estimating the Economic Benefit of SCUBA Diving in the Similan Islands, Thailand.***

Regarding to *Sorada Tapsuwan & John Asafu-Adjaye (2008)*, it generally focuses on Similan Island information linked to consumer willingness to pay (WTP) and consumer surplus for visiting this Island by using the contingent valuation method (CVM) as a tool to estimate. Following by estimating WTF for the charge of entrance fee, the result of this study is to express diver expenditure which become a revenue and create growth in diving industry. The evidence shows international tourism has increasingly been seen as a driver of economic development since the 1960s, especially in many less developed countries (LDCs) generating income and employment, and contributing to government revenues and national income (*OECD, 1967; Lea, 1988; Harrison, 2001*). The increasing growth of more active leisure affects the rapid expansion. Global demand for scuba diving has risen rapidly since the 1990s (*Hall, 2005*). Scuba diving as a recreational activity has grown, on average, 12% since the 1970s according to the world's biggest diver certifier, PADI, which alone by 2009 had certified over 18.5 million divers (*PADI, 2010*). In this case, the study is also able to indicate the differences of consumer behavior toward nationality which oversea divers have higher level of WTP to accept a proposed fee than Thai. As a result, the income level is a significant factor affecting their expense behavior. Another outcome shows that divers with more dive experience have lower probability of accepting charged fee than less experience. The result can be explained by the concept of diminishing marginal utility. This study also precedes by pilot survey with several questionnaires on target population. The main survey comprised adult certified scuba divers while the dive leader, dive masters and dive instructor are excluded in this cas. In sum, the estimation of WTP level can identify Similan National Park's economic gain annually and how the park management could use the concept of price discrimination to capture consumer surplus for Thai and foreign divers.

### ***2. Understanding the Potential Economic Impact of SCUBA Diving and Snorkeling: California by Linwood H. Pendleton and Jaime Rooke (2006).***

This study identified economic value as marine recreational activities significantly contribute to local and regional economic well-being. The total number of people participating in all forms

of marine recreation in California and Florida is expected to increase (Leeworthy et al. 2005). Scuba diving generates value for participants and local businesses that involved or support this activity. Due to the fact that this activity generates both market and non-market values. For the market value of diving usually is assessed by examining how much money that divers contribute to the local economy through spending on equipment and services. Hence, the focus of market-based studies is on gross expenditures. On the other hand, for non-market values represent the value that divers place beyond what they have to pay to access these resources. Non-market values are often associated with outdoor recreational resources, including dive sites, and have been shown to generate substantial economic value beyond the expenditures generated (see Cesar 2000 and Pendleton 1995). These non-market values represent a true net economic, capture the added economic well-being that divers enjoy. In this literature, primary method is used to estimate the non-market value of recreational diving. One is the travel cost used to estimate the trade-offs diver make between travel costs (time and trip expense) and dive trip. The gross expenditure by divers generate revenues for local firms and businesses by divers support jobs and wages for dive charter captains, crews and all employees involving in tourism industry like those who work at local hotels and eateries (Leeworthy and Wiley 2002).

### ***3. Dive Tourism and Local Communities: Active Participation or Subject to Impacts? Case Studies from Malaysia***

In this paper by ***Bilge Daldeniza and Mark P. Hampton (2012)*** covers economic aspects of local community life were affected by dive tourism. Throughout this paper, it uses local participation approaches considered dive tourism as a form of niche market industry. The paper mostly uses qualitative questionnaires that aims to listen to 'local voices' and obtains data in short, intensive field visits by examining dive tourism in a developing country. The key concept is to concern tourism impacts on local communities and participation in term of creating career to local labor as it indicates strong economic linkage to local community, an alternative forms of income generation apart from fishing industry within area. Therefore, these induce the gross expenditures by divers who generates net revenues for local firms and businesses. With these expenditures provide jobs and wages for dive captains and crews, worker and employees at local hotels and eateries, and other ancillary services. To illustrate, diving shops have contract with their employees and funding for professional dive training to become a dive master, leader or dive instructor, guest houses souvenir stores, water boatman or snorkeling tour operators. Furthermore, there are some dive shops which provide diving lesson and full package diving trip. Within this business, it also induces employment rate as well.

### ***4. The socio-economic value of the shark-diving industry in Fiji. GMS Vianna, JJ Meeuwig, D Pannell, H Sykes and MG Meekan (2011).***

Within this paper, the authors quantified the economic revenue generated by shark diving and the distribution of those revenues to local stakeholders involved with the industry, including businesses and local community. The estimation was based on self-administered questionnaires as to collect information on the cost and benefit of shark-diving industry. The conservative approach was applied to calculate in this study. The calculation was designed to

reduce the risk of overestimating; total number of divers visiting the country and proportion of tourists engaged in dive activities gathered from Fiji International Visitor Survey, all expenditures of the divers visiting Fiji primarily engage in shark-diving activities and the expenditures of divers who visited Fiji for reasons other than diving with sharks, but chose to engage in shark-diving while in the country. The study shows the result of the survey, the factors that lead diver expenditure are their motivation to visit Fiji, their satisfaction with diving experience, the categories of accommodation, living costs, diving applicable, domestic transfers and other activities while in Fiji (eg. land tour). Moreover, the depth interview went through Fijian citizen employed by diving industry. The result of the survey was used to calculate the several values in annually term. The analysis reflects estimated total economic revenue and the magnitude of key components of that revenue.

### ***5. Customer satisfaction with scuba diving in Mauritius***

Due to the study of *P. Naidoo, P. Ramseook-Munhurrin and Y. Sahebdeen (2016)* determines diver perception and understand their needs as to improve and provide them better dive experience. The study reveals the five factors that maximize divers general satisfaction namely; boat facilities and dive site, safety, diving equipment, helpfulness and expertise of staff, marine environment. Based on the quantitative survey of this study was used Servqual dimension, multi-item scale method to assess customer perceptions of service quality and retail businesses (Parasuraman et. al., 1988). Servqual dimensions contain tangibles, responsiveness, empathy, reliability and assurance. Furthermore, satisfaction judgement with the dive tourism experience depends on the success of social relationships such as dive buddies, socialization, staff efficiency and friendliness or the satisfaction across healthy reef, good water condition and visibility, seeing unique underwater formation, relaxing and experiencing natural surroundings. The administered questionnaires were conducted to both local and tourists divers around island through dive centers. The variables in the questionnaire were separated by using demographic characteristics which are aged and genders. The survey instrument were then subjected to Exploratory Factor Analysis (EFA) which identified the constructs that underlie a dataset based on the correlations between variables (Tabachnik & Fidell, 2001; Field, 2009).

### ***6. The Global Economic Impact of Manta Ray Watching Tourism***

Another study by *Mary P. O'Malley, Katie Lee-Brooks, Hannah B. Medd (2013)* discussed that manta ray watching activity has expanded and generated significant economic benefits in term of direct economic impact for comprising direct expenditures by using gross expenditures. This study utilized dive operator surveys, internet research providing the first global estimate of direct economic impact of manta ray watching tourism and examines the potential of its consumptive use. There are 23 countries were focuses on as manta ray watching tourism presents an attractive economic economic alternative. Manta ray dives has been associated with tourism expenditures included the proportion of tourist expenses such as food and other purchases. According to this study, benefit transfer approach is used to estimate associated tourism expenditures called Hoyt. Hoyt applied ratios of "total expenditures". Yet, the expenditure data from studies focused on similar marine tourism activities, mainly shark diving or whale watching. Due to its similarity, it might be able to be applied this tool to manta ray watching tourism as well. From each of these studies, it extracted average total expenditure

per trip (and/or per day) and average expenditure on dives/whale watching tickets for each location analyzed.

### ***7. Recreational valuation of the coral diving activities at Similan island National Park in Thailand.***

The study was conducted by *Kitipop Phewmau (2013)* pointed out the the evaluation of the recreational value of the coral diving activity by applying the tool of Individual Travel Cost Method (ITCM). Tourism income is also an essential resource that can compensate income from major economic activities (Pathompituknukoon, Khingthong and Suriya, 2012). Income from tourism has also been proven that it can reduce poverty directly in multiple dimensions (Suriya, 2012b) and indirectly via the linkage between income distribution and poverty reduction (Techanan and Suriya, 2012). The purpose of TCM concept is to assess the recreation value of persons willing to pay for travel expense. The recreational value was the sum of consumer's surpluses. A dependent variable, the rate or number of visits to dive sites, was different from that in the Zone Consumer's Surplus Demand Curve Number of Visits (Time/ Year) Total Travel Expense (Baht/ Time). The use of ZTCM helps analyze aggregate data or zonal data due to different preferences but ITCM analyzed individual data. ITCM analyzed the individual data so this method was able to explain personal behaviors or preferences of each individual person. The research was decided to use ITCM which result in more accurate estimation than ZTCM. The data in this paper was collected from Thai Traveler for 386 samples who visited Mu Ko Similan National Park. The data is analyzed by Multiple Linear Regression Function. The coefficient of all 8 independent variables i.e. sex, age, educational level, student, job characteristic, income, substitute place and travel expense were proceeded into the Simple Linear Regression Formula. The number of visits had a negative relationship with travel expense, provided that the finding was in line with the Law of Demand. However, the samples of this study included Thai tourists only, provided that foreign tourists may have different travel behaviors and spending.

### ***8. The economics of worldwide coral reef degradation***

In this study *by Herman Cesar, Laretta Burke and Lida Pet-Soede (2003)* could be concluded that coral reefs are incredibly valuable ecosystem and create large amount of net benefit in goods and services to world economies, including tourism, fisheries and coastal protection. Economic valuation can help to ensure that coral reefs are properly taken into account in public decision-making and that financial resources both locally and globally. In addition, economic valuation is able to assess monetary losses to the economy when reefs are damaged as a result of human activities (e.g. ship groundings, oil spills). Below, new estimates are given of the reef value in monetary terms. In these days, people gain benefit and depend more on marine resources since they sustain source of nutrition and income. In tourism sector, countries with coral reefs always attract millions of scuba divers, yielding significant economic benefits to host countries. Reefs provide a variety of goods and services which have potential to grow annual net benefit. With globalization, tourism becomes world's largest industry employing and contributing to world GDP. Globally tourism is one of the top five sources of foreign exchange for 83% of countries. In addition, it is the fastest expanding industry with rapid growth in dive tourism. However, there is high increase in careless tourists which poses

a threat to reefs area. The study manipulates regression analysis to estimate the relationship among variables. As a consequence, there is a positive correlation between the number of dives per year and the observed of coral damage record since the income derived from tourism is threatened by the reef degradation.

### **III. METHODOLOGY**

In this section, it explains how the data was gathered and analyzed as to answer the research questions. The purpose of this research is to prove the willingness to pay of scuba diver and making decision while travel for manta ray watching during Andaman Ocean season (November-April) especially in Similan Island toward purchasing on diving trip (package).

#### ***Research Methodology***

##### **3.1 Pilot Survey**

Pilot survey is an informal exploratory investigation which serves as a guide for a larger study. The survey usually tests a small scale on a small sample of target population primarily to gain information to improve the efficiency of the main survey. Therefore, it is conducted in order to evaluate feasibility, time, cost, adverse events, and effect size (statistical variability) in an attempt to predict an appropriate sample size and improve upon the study design prior to performance of a full-scale research. Therefore, the pilot survey is applied to use in this study for the distributed survey.

##### **3.1.1 Population to study**

The population samples in this study are those scuba divers who have been diving in Similan Island by Liveboard boat. As to study their decision making in diving trip package purchasing, the result of the study will show how much in average that each scuba diving is willing to pay for a diving package. This might be beneficial for the supply side in order to understand more about their customer WTP. In this case, the use of WTP of scuba divers in a purpose of manta ray watching can be a tool for price setting and service development.

In addition, the average entrance fee WTP of scuba diving is estimated which it demonstrates that the Similan National Park could significantly gain revenue from entrance fee in order to run the costs of maintaining the park. Besides, this could be a tool to financial budgeting for environmental conservation program.

##### **3.1.2 Sampling Method**

Due to limited resources and time, it is necessary to focus on sample respondents for the investigation. In addition, it is not practical to use the whole population to conduct the survey since that process consumes a lot of time. Therefore, there are 200 respondents for an accurate analysis from specific group (Purposive Sampling) collecting from people who only have passed scuba diving courses or have diving license.

### 3.1.3 Period of study

The study is undertaken in five-month period analysis, August-December, 2017. This is included the two-month period of collecting primary data from scuba divers.

### 3.2 Variable of the Study

In this study, there are separated into two variables:

#### 1) *Independent variables:*

- 1.1) Demographic variable: gender, ages, education level, income per month and dive certification level.
- 1.2) Market variable: Marketing Mix factors (7P's)

#### 2) *Dependent variable:*

- 1.1) Willingness to pay of scuba divers
- 1.2) Preference willingness to pay of scuba divers
- 1.3) Willingness to pay for entrance fees

### 3.3 Hypothesis of the Study

#### 3.3.1 *Willingness to pay*

$H_0$  = There is no significant relationship between 7P's marketing mix, demographic factors and WTP of scuba divers.

$H_1$  = There is a significant relationship between 7P's marketing mix, demographic factors and WTP of scuba divers.

#### 3.3.2 *Preference Willingness to pay*

$H_0$  = There is no significant relationship between 7P's marketing mix, demographic factors and preference WTP of scuba divers.

$H_1$  = There is a significant relationship between 7P's marketing mix, demographic factors and preference WTP of scuba divers.

#### 3.3.3 *entrance Willingness to pay*

$H_0$  = There is no significant relationship between 7P's marketing mix, demographic factors and entrance fee WTP of scuba divers.

$H_1$  = There is a significant relationship between 7P's marketing mix, demographic factors and entrance fee WTP of scuba divers.

### 3.4 Data Collective Method

#### Primary Data

The quantitative method is applied and used to analyzed demand side. The process in this research are questionnaires or sample survey as it takes a considerable part from a large population and analyzes the sample in order to make meaningful interpretation and conclusion. The survey was spread through both online Google Form and by hard-copy questionnaires.

The researcher gather data from literatures, article, theories and other related research via internet combining with analytical survey. According to primary data, it can be used to analyze descriptive statistic which included the number, graph, pie chart and table shown in term of frequency, percentage, mean, mode and median. In addition, the study is also analyzed by regression. As for regression analysis, it will explain the relationship between the willingness to pay of scuba divers while travelling for manta ray watching in Similan island (variable Y) and (variable X) 7P's marketing mix factors, demographic variables such as gender, age, income, education level and diver certification level.

### **3.5 Data Used**

The study is collected from Primary data by distributed questionnaires from scuba diver who have ever bought scuba diving package trip for manta ray watching purpose in Similan Island or those certificated divers.

### **3.6 Measurement and Scaling Technique Used**

Techniques to gather the data is conducting questionnaires as to consider factors that affect scuba diver willingness to pay separated in to 4 sections:

Section 1: Opened-end questions are designed to find level of WTP of each individual.

Section 2: Multiple choices questions are constructed to ask their diving behavior and diving preference.

Section 3: Important rating questions concerning the factors relating to 7P's marketing mix that affect their decision and WTP.

Rating Scale: 7 Strongly Agree  
6 Agree  
5 Fairly Agree  
4 Neutral  
3 Fairly Disagree  
2 Disagree  
1 Strongly Disagree

Section 4: Chose only one question finding out demographic information of scuba divers (personal profile: gender, age, education, income and diver certification level)

1. Gender: Nominal Scale
2. Age: Ordinal Scale
3. Diver Certification Level: Ordinal Scale
4. Income per month: Ordinal Scale
5. Education: Ordinal Scale

### **3.7 Data Evaluation**

The questionnaires are ensured their completeness, accuracy, reliability and validity in order to put through the process of statistical analysis, then following by using computer program for further evaluating and analyzing.

**3.7.1 Descriptive analysis:** is used to understand general information included their purchasing behavior and price preference by conducting questionnaire as following:

Section 1: Related to scuba diver WTP and other additional costs

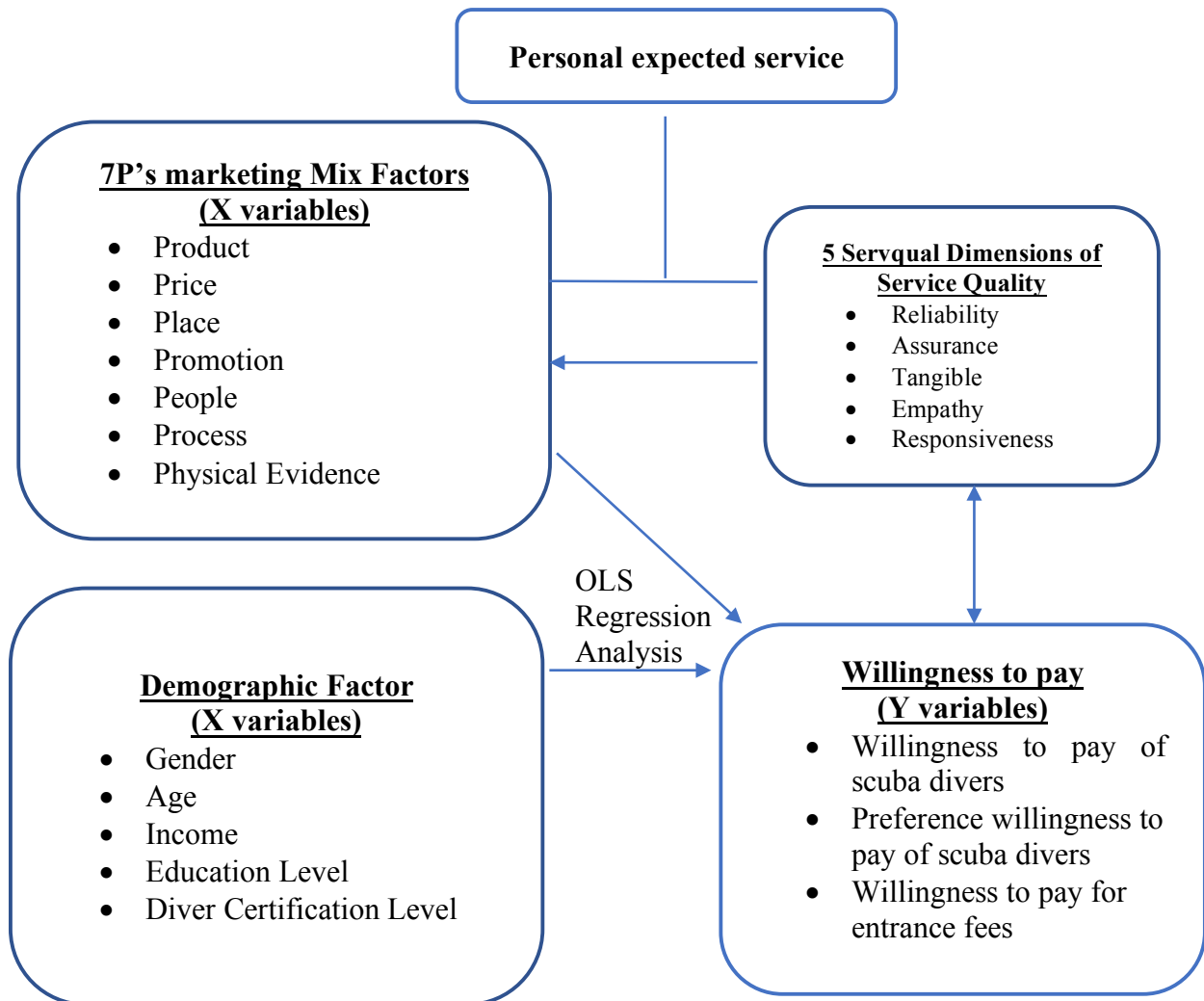
Section 2: Related to scuba diver behavior such as frequency and amount of time spent

Section 3: Factors that affect to WTP related to Marketing Mix(7Ps)

Section 4: Factors that affect to WTP related to Demographic factors

**3.7.2 Inferential Statistics:** is a statistical tool used to test hypothesis in order to find out the relationship of dependent and independent variables by Regression Analysis. F-test and t-test are used to test the differences of more than two variables which p-value has to be lower than 0.05. Then the study is concentrated only on statistically significant 7P's market mix factors and demographic factors that affect to respondents' WTP via the contingent ranking scores coming from each question from the questionnaires.

### 3.8 Conceptual Framework



The conceptual framework explains the overview of the method process in the study which the 7P's marketing mix and demographic factors induce the effect on consumer (scuba diving) WTP. Consumers generally begin with their personal expectation toward service from diving industry which the dimensions of service quality support the 7P's marketing mix factor. Each of dimension is used to check whether 7P's factors are effectively and practically serve customer satisfaction. Then, the conducting questionnaires and gathering collective data is implemented. In eventually, the study applies the OLS regression Model to analyze and find the relationship between variables X and Y.

### **3.9 Theoretical Framework**

In this paper, the main focus is on the factors that affect divers' WTP when purchase for diving trip (liveaboard package) as to watch manta ray in Similan National Park. The theoretical framework for the analysis is the 7P's marketing mix and several economic theories. The models will be used in analyzing the demand side which refers to scuba divers' willingness to pay. As a result, the theory definitions are following by:

#### ***3.9.1 Definitions***

##### **1. Travel and Tourism**

Tourism is travel for pleasure or business, also a theory and practice of touring, business of attracting, entertaining tourist and business of operating tours. Tourism can be domestic or international. Today, tourism is a major source of income for many countries, and affects the economy of both the source and host countries.

##### **2. Ecotourism**

Ecotourism is defined as leisure travel which provides tourists with an educational and adventurous experience visiting complex and fascinating ecosystems and their associated cultures and traditions. According to environmental and other organizations, ecotourism should minimize negative impact on both the environment and the culture. Ecotourism should inform tourists about to the environmental sustainability is required for their visit, and should also help local populations understand the importance and value of their home. Ecotourism can also help local economies by generating revenue and jobs, which further encourages the local population to preserve its environment. A good ecotourism operation should support community and encourage travelers to be culturally sensitive. Training and employing local people is as essential as purchasing local supplies and services to further stimulate the economy. In these days, many national governments are supporting the ecotourism trade for benefit to both their country and visitors. Tourist regions in many countries now rely on ecotourism as the primary source of revenue and growth.

##### **3. Recreation activity**

Recreation activity is an activity of leisure which is an essential element of human biology and psychology. Recreation activities are often done for enjoyment, amusement or pleasure considered to do for fun. Public space such as parks and ocean are essential venues for many recreational activities. Tourism has recognized that many visitors are specifically

attracted by recreational offerings. Recreation-related business and service is an important factor that drive economy.

#### **4. Scuba diving**

Scuba diving is a form of underwater diving where the diver uses a self-contained underwater breathing apparatus (scuba) which is completely independent of surface supply, to breathe underwater with a limited amount of time. Scuba divers carry their own source of breathing gas, usually compressed air, allowing them greater independence and freedom of movement. Scuba diving is mainly done for the attraction of undersea world.

#### **5. Liveaboard boat**

Liveaboard boat is a typical powerboats and cruise sail boats which are commonly used for living aboard, as well as houseboats designed primarily as a residence. With the high cost of housing, a liveaboard lifestyle is becoming more popular with people around the world. Scuba diving liveaboards in the recreational scuba diving industry, a liveaboard service offers its guests the opportunity to stay aboard for one or more nights, unlike a day boat operation. This allows time to travel to more distant dive sites. Normally, a liveaboard charter caters for between about ten and thirty passengers.

### ***3.9.2 Economic theory***

#### **1. Law of demand**

The law of demand is a microeconomic law that states, all other factors being equal, as the price of a good or service increases, consumer demand for the good or service will decrease, and vice versa. Due to the law of demand, the higher the price, the lower the quantity demanded since consumers' opportunity cost to acquire that good or service increases, and they must make more tradeoffs to acquire the more expensive product.

#### **2. Elasticity of Demand**

Price elasticity of demand shows the relationship between price and quantity demanded and provides a precise calculation of the effect of a change in price on quantity demanded. To predict consumer behavior, it is simply the proportionate change in demand given a change in price. A good with a price elasticity stronger than negative one is said to be "elastic" goods with price elasticity smaller (closer to zero) than negative one is said to be "inelastic." Goods that are more essential to everyday living, and have fewer substitutes, typically have lower elasticity; foods are a good example. Goods with many substitutes, or that are not essential, have higher elasticity. Goods that are considered luxuries, or whose purchase can be easily postponed, often have elastic demand (Price Elasticity of Demand by Patrick L. Anderson, Richard D. McLellan, Joseph P. Overton, and Dr. Gary L. Wolfram, 1997).

#### **3. Willingness to pay**

In economic, willingness to pay is the maximum amount that individual is willing to sacrifice to procure a good or avoid something undesirable. (Smith and Nagle 2002; Wertenbroch and Skiera 2002). The price of any goods transaction will be at any point between a buyer's willingness to pay and a seller's willingness to accept. Besides, knowledge about a

product's willingness-to-pay on behalf of its (potential) customers plays a crucial role in many areas of marketing management like pricing decisions or new product development. (A Review of Methods for Measuring Willingness-to-Pay Michael Hahsler, 2014)

#### **4. Five Servqual Dimension of service quality**

The adaptable dimensions for service providers in order to get to customer loyalty. Besides, it also shows how well the service performs and further for the improvement.

Service Quality divided into 5 dimensions:

- Reliability: promise to perform service dependably and accurately
- Assurance: convey trust and confidence being professional
- Tangible: physical facility and facilitating goods
- Empathy: approach and understand customer needs
- Responsiveness: consistently assist customers

#### **5. Travel cost method**

Generally, travel cost is the costs and time that people incur during their recreational trip to in natural resource site which can be used to infer the value of that site. By using travel cost method to analyze the demand side in scuba diving industry in Thailand, the primary data was collected by online survey as to get their insight and willingness to pay per trip included entrance fees, equipment rental cost, transportation cost, and other costs for any types of service.

### ***3.9.3 Marketing Framework***

#### **The 7P's of Marketing Mix**

The 7P's of the marketing mix is crucial tool that helps us understanding what products or services can be offered and how to plan for successful product offering. It is about putting the right product or combination with the place, at the right time and the right price. The 7P's model is the expansion of the 4P's model (marketing mix). The 7P's is usually used in service industries. It is the combination of marketing mix and service mix which is structured to determine direction of strategies in service sector.

7P's is the strategy used in most operation or organization to analyze product before launching in the market. It is comprised of

- Product: Designing and forming of property that the product should be. The product should be able to serve consumer needs and should be what consumers expect to get.
- Price: Setting the appropriate price for product. The product should represent a good value and worth for.
- Place: The place to distribute the product. The product should be available and accessible to target consumer.
- Promotion: The various ways to help boost the sales of the product such as advertising, PR, personal selling, sales promotion.
- People: Having the right people is essential for business because they are closest to consumer, serve and play important role in service offering.

- Process: Building the system for consumers that is easily to access and convenient to use. The service that is provided and delivered to customer is part of what they willing to pay for.
- Physical Evidence: Almost all services include some physical elements. The service locations are attractive and convenient enough for consumer to feel great when being in that place and create differences to user's experience. For example, the comfort climate and environment that impress consumers desire to return to the place to get services.

### **Demographic**

Demographic is personal statistic information used as an important input to divide market segmentation and further formulate target customer in market.

1. Gender: variable that refer to consumption behavior and to observer which gender is likely to spend more. Many products are targeted toward one sex.
2. Age: element that impacts businesses. A company's products and services are more likely to appeal to certain age groups. Certain groups have different purchasing power than others.
3. Diver Certification Level: variable that categorize type or level of diver to see which level of the diver hold and impact on WTP.
4. Income per month: variable that can affect businesses. It also can reflect their sensitivity to price, people with comparatively lower incomes are more sensitive to price and, therefore, may prefer purchasing discount products. Value is a major determinant in the products they purchase.
5. Education: variable which indicate the level of education will most of the customers have and whether it affect to their purchase or not.

## **IV. FINDING AND RESULT ANALYSIS**

In this chapter, it refers to the result from questionnaires survey which from 200 respondents. The survey is distributed both online directly to targeted respondents and indirectly through those diving center, school, diving equipment shop and their webpage or Facebook page asking them to spread the questionnaires out. Then using STATA program for regression analysis which is used in order to find relationship between scuba divers' willingness to pay (dependent variable) and 7P's marketing mix factors, demographic factors (independent variable). However, the regression analysis will be discussed further in analyzing parts (part 3,4 and 5). For the descriptive statistics data can be categorized into 5 parts by following:

### ***Finding***

Part 1: Demographic data of 200 samples

Part 2: Diver behavior, experience and preference data of 200 samples

### ***Analyzing***

Part 3: Rating scale of 200 respondents' perspective toward 7P's marketing mix data

Part 4: Significant sub-factors of people factor from 7P's marketing mix

Part 5: Significant demographic factors of 200 respondents'

### Part 1: Finding-Demographic of samples

Considering from Gender, Age, Education, Income per month and Diver Certification level.  
(Table 1)

Personal data	Amount	percentage
1. Gender		
male	102	51
female	98	49
2. Age		
15-30	74	37
31-40	85	42.5
41-50	31	15.5
51-60	9	4.5
above 60	1	0.5
3. Income per month		
Less than 15,000	25	12.5
15,001-30,000	46	23
30,001-45,000	32	16
45,001-60,000	30	15
60,001-75,000	21	10.5
above 75,000	46	23
4. Education		
Secondary School	24	12
Bachelor degree or equivalent	115	57.5
Master degree or equivalent	56	28
Doctoral degree or equivalent	5	2.5
5. Diver Certification Level		
Discover Scuba Diver	3	1.5
Open water Scuba Diver	37	18.5
Advance Diver	105	52.5
Rescue Diver	19	9.5
Dive Master	14	7
Medic First Aid Diver	1	0.5
Instructor	21	10.5

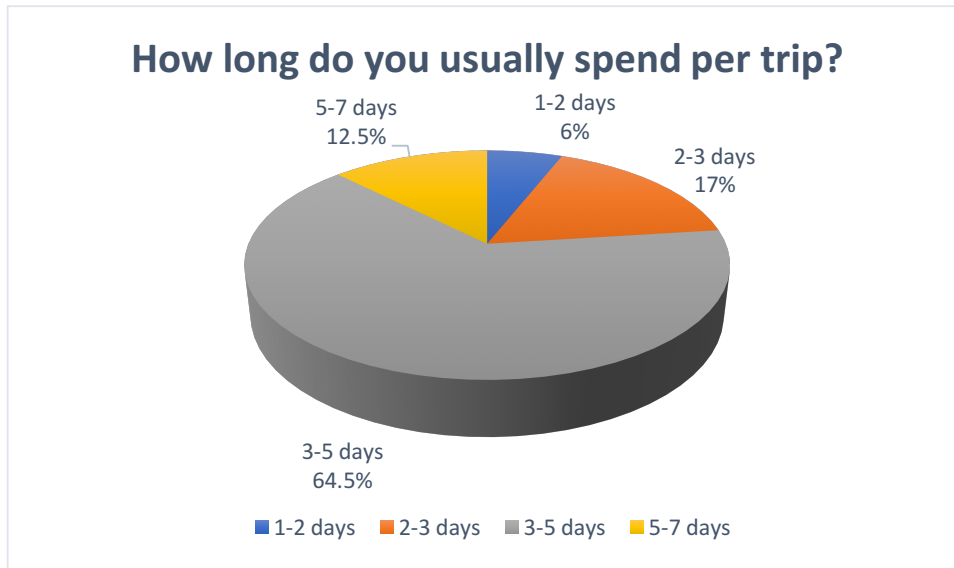
From Table 4.1, the demographic of the samples has the proportion of male at 51 percentage and female at 49 percentage respectively. The age of most samples is in between 31-40 which counted to be in working age with the percentage of 42.5 and the education level is fall into Bachelor degree or equivalent level. The largest proportions of samples have middle to high income, they have income per month around 15,001-30,000 and above 75,000 with equivalent amount of 16 and percentage of 23.

## Part 2: Finding-Diver behavior, experience and preference data

In order to analyze the factors that affect their willingness to pay on scuba diving for manta watching are taken into account. There is the length of time spent per trip, time cost and transportation cost, diving experiences and preference of scuba divers.

### *Diver behavior (Time cost)*

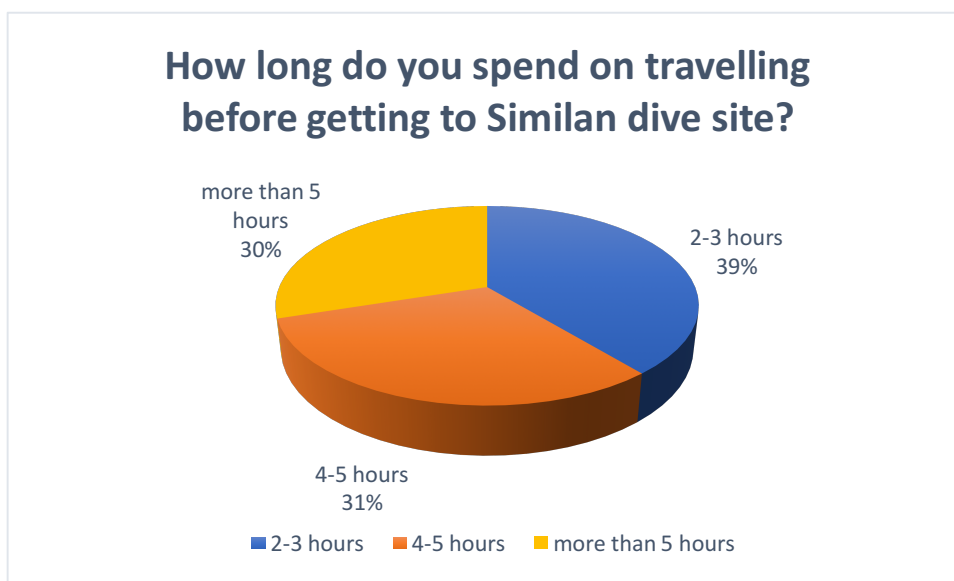
(Figure 1)



Source: The Google Form Questionnaires result/ Scuba diving for Manta ray watching at Similan Island Survey

Figure1, from survey demonstrates the time period which scuba divers spend per trip. The most length of time they spend is 3-5 days calculated in to 64.5 percent, following by 2-3 days with 17 percent, 5-7 days with 12.5 and 1-2 days with 6 percent, respectively.

(Figure 2)

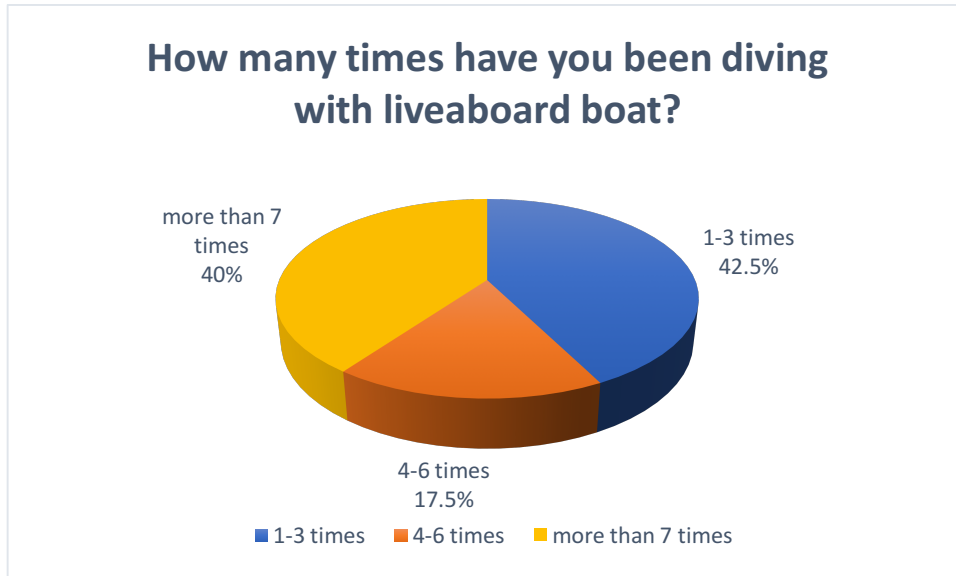


Source: The Google Form Questionnaires result/ Scuba diving for Manta ray watching at Similan Island Survey

Figure 2, from survey shows the time period which scuba divers spend on such mode of transportation before getting to Similan dive site. The most time spent is 2-3 hours considered as 39 percent following by 4-5 hours with 31 percent and more than 5 hours, respectively.

***Diver experiences***

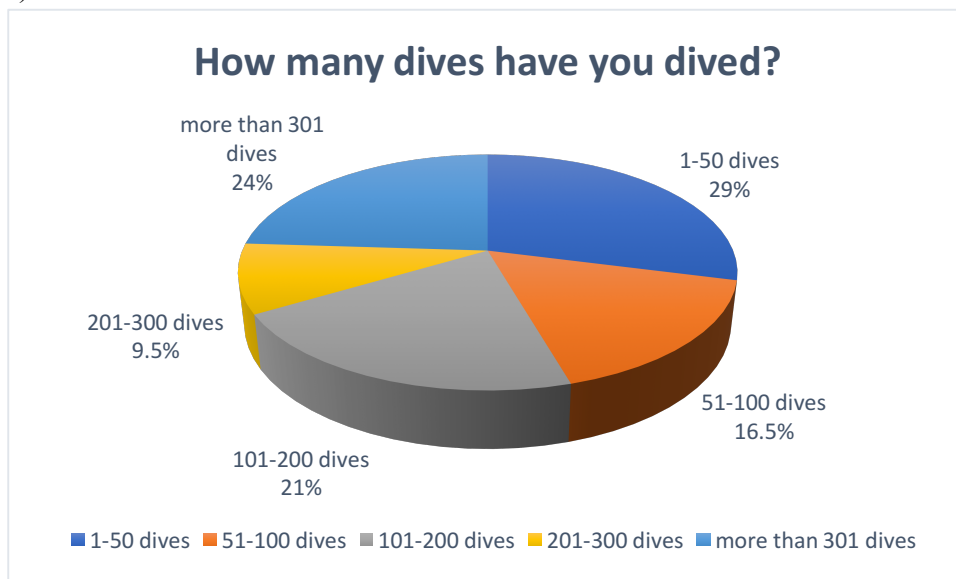
(Figure 3)



Source: The Google Form Questionnaires result/ Scuba diving for Manta ray watching at Similan Island Survey

Figure 3, the pie chart represents divers' experience related to their past experience toward liveboard boat. There is 42.5 percent have been on liveboard boat 1-3 times, while more than 7 times with 40 percent and 4-6 times with 17.5 percent.

(Figure 4)

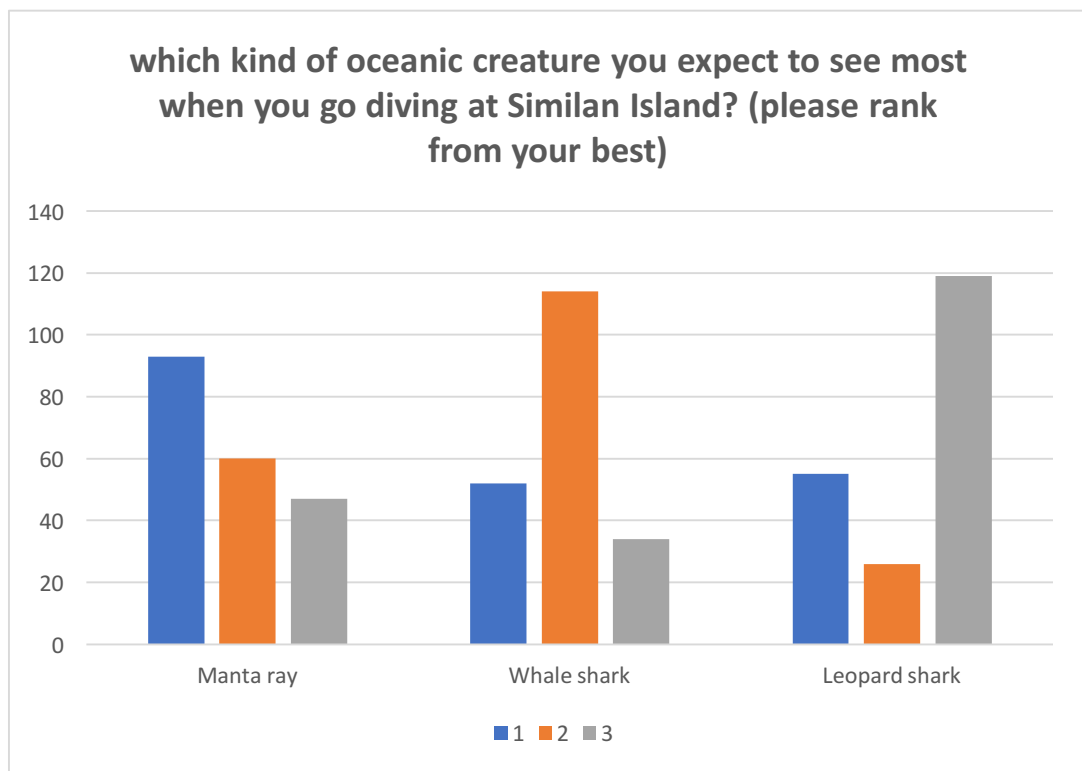


Source: The Google Form Questionnaires result/ Scuba diving for Manta ray watching at Similan Island Survey

Figure 4, the pie chart is used to show the result from survey about the recent number of dives that the divers have been done. Most of respondents have diving experience in between of 1-50 dives considered as 29 percent, 24 percent of respondents with more than 301 diving experience, following by 21 percent of respondents who have 101-200 dives experience, 16.5 percent of respondents with 51-100 dives and 9.5 percent of respondents having 201-300 dives experience.

***Diving preference***

(Figure5)



Source: The Google Form Questionnaires result/ Scuba diving for Manta ray watching at Similan Island Survey

(Table 2)

Oceanic creature	1 <sup>st</sup> rank	2 <sup>nd</sup> rank	3 <sup>rd</sup> rank	Total
Manta ray	93	60	47	200
Whale shark	52	114	34	200
Leopard shark	55	26	119	200

When asking the respondents about their preference or expectation toward oceanic creature that they desire to see while going on a diving trip, the result is ranked and represented by bar chart above. From the bar chart, it is obvious that the most preference oceanic creature is manta ray followed by whale shark and leopard shark which has lowest rank. It could be simply observed in numerical by the Table 2. 93 of 200 respondents rank manta ray to be their first preference oceanic creature. And 114 of 200 respondents rank whale shark to be their second

expectation while leopard shark is ranked to be the last preference to see with 119 respondents giving it as the third preference.

**Part 3: Analyzing-Rating scale of respondents’ perspective toward 7P’s marketing mix data**

In this part, the analyzing from 7P’s market mix factors will explain about conceptual framework better and more practical. The 7P’s marketing mix and demographic are the main factors that impact willingness to pay of samples (200 scuba divers). The Ordinary Least Square regression (OLS), or often called linear regression is applied for explaining the multiple depending on the number of explanatory variables by using STATA program as a tool for statistical analysis.

In this case, the OLS model writes:

$$Y_1 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 x_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

$$Y_2 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 x_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

$$Y_3 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 x_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

where

$$X_i = \begin{bmatrix} \text{avg\_product} \\ \text{price} \\ \text{avg\_place} \\ \text{avg\_people} \\ \text{avg\_physical} \\ \text{gender} \\ \text{age} \\ \text{income} \\ \text{education} \\ \text{divercerti} \end{bmatrix} \text{ and } \alpha_i = \text{constant}$$

**Willingness-to-pay**

$$Y_1 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 x_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

here,  $Y_1$  = WTP per one diving trip of 200 respondents

**Hypothesis**  
 $H_0$  = There is no significant relationship between 7P’s marketing mix, demographic factors and WTP of scuba divers.  
 $H_1$  = There is a significant relationship between 7P’s marketing mix, demographic factors and WTP of scuba divers.

(Table 3) The OLS regression of WTP:

Number of observation	200
Prob > F (F-value)	0.0010
R-squared	0.1427

(Table 4) The OLS regression of WTP:

7P's Marketing Mix Factors	Coefficient	P-value	Result
avg_product	-1431.161	0.270	not statistically significant
price	-1606.742	0.112	not statistically significant
avg_place	-431.2487	0.726	not statistically significant
avg_people	2063.703	0.081	not statistically significant
avg_physical	3118.716	0.049	statistically significant
gender	-909.91	0.66	not statistically significant
age	-1427.107	0.246	not statistically significant
income	1614.624	0.014	statistically significant
education	-1914.473	0.236	not statistically significant
divercerti	3542.028	0.004	statistically significant
_cons	6142.353	0.225	not statistically significant

Table 3, the OLS regression results show a 95% confidence interval for the coefficient. Generally, p-value need to be lower than 0.05 to show a statistically significant relationship between  $X_i$  and  $Y_1$ . The p-value of the model which tests whether  $R^2$  is different from 0. R-square shows the amount of variance of  $Y_1$  explained by  $X_i$ , in this case 7P's marketing mix and demographic factors explain about 14.27 percent of the variance in WTP.

The p-value for the whole regression is fall into 0.001 which is lower than 0.05 meaning that the regression model is statistically significant, so all  $X_i$  variables is able to well-explained  $Y_1$  and it rejects  $H_0$  hypothesis.

Table 4, the two-tail p-values test the hypothesis that each coefficient is different from 0. To reject the hypothesis ( $H_0$ ), the p-value has to be lower than 0.05. In this case, avg\_physical, income and diver certification level are statistically significant in explaining WTP of respondents.

The interpretation of the relationship between variable  $X_i$  and  $Y_1$ :

- **Price  $X_2$**

When  $X_2$  (price) is increased by 1 unit,  $Y_1$  will decrease by 1606.742 units. With p-value of 0.112 meaning that price factor is not statistically significant. However, it can be interpreted by the law of demand. When the price goes up, the demand or WTP will decrease (negative relationship). Hence, in this case, if the price of diving package for manta ray watching increases by 1 unit, the WTP will decrease about 1,607 baht.

- **avg\_physical  $X_4$**

When  $X_4$  (avg\_physical) is increased by 1 unit,  $Y_1$  will increase by 3118.716 units. With p-value of 0.049 which is lower than 0.05. It means that people factor is statistically significant. As a result,  $X_4$  is used to explain  $Y_1$  well. So, if the average physical evidence factor; healthy coral reef, high possibility to see manta ray and quality of facilities, increases by 1 unit, scuba diver is willing to pay more around 3,119 baht.

- **Income  $X_7$**

When  $X_7$  (income) is increased by 1 unit,  $Y_1$  will increase by 1614.624 units. With p-value of 0.014 which lower than 0.05 meaning that income is statistically significant. As a result,  $X_7$  is

used to explain  $Y_1$  well. So, if the average income of scuba divers increases by 1 unit, they are willing to pay more by around 1,615 baht.

- **Diver certification level  $X_9$**

When  $X_9$  (diver certification level) is increased by 1 unit,  $Y_1$  will increase by 3542.028 units. With p-value of 0.004 which lower than 0.05 meaning that the level of diver certification is statistically significant. As a result,  $X_9$  is used to explain  $Y_1$  well. So, if the level certificated of scuba divers increases by 1 unit or level, they are willing to pay more about 3,542 baht.

In sum, the analysis from the interpretation reveals three factors that most affect Scuba diver's willingness-to-pay. There are physical evidence, income and diver certification level. Therefore, the study will be mainly concentrated on these three factors in further analysis.

#### Part 4: Analyzing- Significant sub-factors of physical evidence

Physical evidence factor can be divided into three sub-factors as following:

- 1) Healthy coral reefs and water clarity
- 2) High possibility to see manta ray
- 3) High quality of facilities offered from diving boat

##### 1) *Analyzing-Physical Evidence sub-factor: Healthy coral reefs and water clarity*

(Table 5)

Physical Evidence sub-factor	Coefficient	P-value	Result
healthyreef	1477.936	0.033	statistically significant
gender	573.8442	0.685	not statistically significant
age	-1045.801	-0.52	not statistically significant
income	-1211.685	-0.99	statistically significant
education	1447.643	0.027	not statistically significant
divercerti	3641.694	0.002	statistically significant
_cons	7636.01	0.092	not statistically significant

The result from regression in Table 5, the p-value of coefficient healthy reef is equal to 0.033 which is lower than 0.05. Thus, the healthy reef sub-factor is statistically significant to WTP.

Hence, it is compatible that physical evidence has strong impact on WTP since it is one of 7P's factors involving in service sector. Because of the environment in Similan that experienced by most of visitor, it can be guaranteed with its extravagant marine life and pristine underwater landscape that attracts divers from around the world. Thus, many divers from around the world nominate Similan Islands as their top dive destinations. According to Andaman Sea creating perfect water conditions, it makes the underwater visibility extremely high and suitable for diving. Besides, the seawater has an average temperature of 25 degrees Celsius, which is perfect for dive safaris. This makes it possible to dive without a wetsuit in most of the Similan reefs. In this case, it implies that scuba divers take the healthy reefs and clarity of water as one of the criteria when they deciding to pay on a diving package.

**2) Analyzing-Physical Evidence sub-factor: High possibility to see manta ray**

(Table 6)

Physical Evidence sub-factor	Coefficient	P-value	Result
High possibility	777.7742	0.258	not statistically significant
gender	-700.4971	0.729	not statistically significant
age	-1417.575	0.255	not statistically significant
income	1604.873	0.014	statistically significant
education	-1909.711	0.242	not statistically significant
divercerti	3564.608	0.003	statistically significant
cons	11192.72	0.013	not statistically significant

The result from regression from table 6, the p-value of coefficient high possibility to see manta ray is 0.258 which is higher than 0.05. Thus, the high possibility to see manta ray is not statistically significant to WTP. Thus, the sub-factor of high possibility does not affect scuba diver WTP.

The high possibility to see manta ray seems to be the key factor that impact scuba diver WTP. In fact, most of scuba diver disregard this factor regarding to the result from regression toward divers perspective. By majority, when they decide and spend money on diving in Similan as expecting to see manta ray, they acknowledge that there is a great absence of seeing them since the manta ray arrival is unpredictable. The divers prefer exploring the Similan Islands due to many different dive sites, including those that provide beginners with a gentle dive among delicate and beautiful reef systems.

Apart from that, they will have the more opportunity to see a variety of other marine species such as turtles, sharks, little critters like seahorses, nudibranchs and harlequin shrimp. All of these are more possible factors and reasons affecting their purchase and return to Similan dive sites. The failure or disappointment of not seeing manta ray does not affect their WTP or repurchase. Some scuba divers also claim that another reason for them to dive is not those manta ray or fishes. Indeed, it is for leisure, relaxing, spending time with their family and friends by escaping from their regular stressful life and job. In addition, related to the survey, some divers are concerning more on other factors and seeking more on other certain types of service. For example, they tend to look for other facilities provided on the boat such as entertainment or special meals.

**3) Analyzing Physical Evidence sub-factor: High quality of facilities offered from liveboard boat**

(Table 7)

Physical Evidence sub-factors	Coefficient	P-value	Result
Facility quality	1537.18	0.028	statistically significant
gender	-803.9501	0.687	not statistically significant
age	-1290.478	0.295	not statistically significant
income	1552.043	0.017	statistically significant
education	1806.687	0.264	not statistically significant
divercerti	3210.736	0.008	statistically significant

_cons	8424.395	0.045	not statistically significant
-------	----------	-------	-------------------------------

The result from regression from Table 7, the p-value of coefficient high quality of facilities offered from liveboard boat is equal to 0.028 which is lower than 0.05. Thus, the quality of facilities sub-factor is statistically significant to WTP.

Aside from diving, another factor that scuba divers are taking into account when purchasing on such for manta ray watching diving package is the quality of facilities provide along the trip from liveabroad boat. Liveboard boat is a type of boat that divers need to stay over nights on the boat for the whole trip. Most of the time divers spend during the trip is on the boat, the actual diving time period takes at most 5 hours per day and no longer than that. As a result, their WTP usually depends on the convenient, comfortable, excellent-value facilities. They expect to get great experience from high quality of facilities such as hygienic bathroom and bunk beds within each cabin has its own large window as enabling divers to enjoy privacy and natural light. Simultaneously, the air-conditioned and comfortable sofas in common lounge or the upper deck is provided for dining, socialized activities and sleepig under the stars at night are optional.

The reliable standard and safety is also considered as one of the most critical element affecting their WTP. Therefore, liveboard boat would rather creating trust by allocating well-designed and safety to the whole part of the boat, particularly main diving deck where everyone’s diving equipment is stored properly and get ready to dive. Plus, excellent communicate system which the captain is able to see what is happening on the dive deck as to keep divers safely along the trip.

**Part 3: Analyzing-Rating scale of respondents’ perspective toward 7P’s marketing mix data**

***Preference Willingness-to-pay***

$$Y_2 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 x_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

Where,  $Y_2$  = preference WTP per one diving trip of 200 respondents.

(preference WTP is the maximum WTP that customer truly willing to pay if they are able to set price per trip by themselves)

***Hypothesis***  
 $H_0$  = There is no significant relationship between 7P’s marketing mix, demographic factors and preference WTP of scuba divers.  
 $H_1$  = There is a significant relationship between 7P’s marketing mix, demographic factors and preference WTP of scuba divers.

(Table 8), The OLS regression of preference WTP:

Number of observation	200
Prob > F (F-value)	0.0001
R-squared	0.1714

(Table 9), The OLS regression of preference WTP:

7P's Marketing Mix Factors	Coefficient	P-value	Result
avg_product	-135.0655	0.879	not statistically significant
price	300.1932	0.664	not statistically significant
avg_place	-518.2874	0.538	not statistically significant
avg_people	2061.826	0.011	statistically significant
avg_physical	-846.7538	0.432	statistically significant
gender	573.8442	0.685	not statistically significant
age	435.9414	0.605	not statistically significant
income	-1825.007	0.001	statistically significant
education	1908.906	0.100	not statistically significant
divercerti	1908.906	0.021	statistically significant
cons	5358.548	0.123	not statistically significant

Table 8, the regression shows a 95% confidence interval for the coefficient. Generally, p-value need to be lower than 0.05 to show a statistically significant relationship between  $X_i$  and  $Y_2$ . R-square shows the amount of variance of  $Y_2$  explained by  $X_i$ , in this case 7P's marketing mix explain about 17.14 percent of the variance in WTP.

The p-value for the whole regression is fall into 0.0001 which is lower than 0.05 meaning that this regression model is statistically significant, so all  $X_i$  variables is able to well-explained  $Y_2$  and it rejects  $H_0$  hypothesis.

From Table9, the two-tail p-values test the hypothesis that each coefficient is different from 0. To reject hypothesis ( $H_0$ ), the p-value has to be lower than 0.05. In this case, avg\_people, income and diver certification level are statistically significant in explaining WTP of respondents.

The interpretation of the relationship between variable  $X_i$  and  $Y_2$  :

- **avg\_people  $X_3$**

When  $X_3$  is increased by 1 unit,  $Y_2$  will increase by 2061.826 units. With p-value of 0.011 which is lower than 0.05. It means that people factor is statistically significant. As a result,  $X_3$  is used to explain  $Y_2$  well. So, if the average quality of service from people (dive master, staffs) increases by 1 unit, scuba diver is willing to pay more about 2,062 baht.

- **Income  $X_7$**

When  $X_7$  (income) is increased by 1 unit,  $Y_2$  will increase by 1460.497 units. With p-value of 0.001 which lower than 0.05 meaning that income is statistically significant. As a result,  $X_7$  is used to explain  $Y_2$  well. So, if the average income of scuba divers increases by 1 unit, they are willing to pay more by about 1,461 baht.

- **Diver certification level  $X_9$**

When  $X_9$  (diver certification level) is increased by 1 unit,  $Y_2$  will increase by 1908.906 units. With p-value of 0.021 which lower than 0.05 meaning that the diver certification is statistically

significant. As a result,  $X_9$  is used to explain  $Y_2$  well. So, if the level certification of scuba divers increases by 1 unit or level, they are willing to pay more about 1,909 baht.

In sum, the analysis from the interpretation demonstrates three factors that most affect Scuba diver's willingness to pay are people, income and diver certification level. Therefore, the study will be mainly concentrated on these three factors in further analysis as following:

**Part 4: Analyzing- Significant sub-factors of people**

People factor can be divided into three sub-factors as following:

- 1) Informative Dive Master and Dive Leader
- 2) Dive Master and Dive Leader service
- 3) Staff service

*1) Analyzing-People sub-factor: Informative Dive Master and Dive Leader*

(Table 10)

People sub-factors	Coefficient	P-value	Result
informative dive master	789.8081	0.074	not statistically significant
gender	574.8719	0.674	not statistically significant
age	595.1405	0.481	not statistically significant
income	1383.985	0.002	statistically significant
education	-1722.639	0.121	not statistically significant
divercerti	2197.507	0.007	statistically significant
cons	5399.759	0.062	not statistically significant

The result from regression in Table 10, the p-value of coefficient informative dive master and dive leader is 0.074 which is higher than 0.05. Thus, the informative dive master and dive leader sub-factor is not statistically significant to preference WTP.

Although the good instruction from dive master and dive leader is part of the key elements of service in diving industry as to serve customer satisfaction, being informative and well-instructed providing knowledge about diving (water depth, water temperature, equipment, brief, under water signs and communication) does not affect scuba divers' WTP. This is because the divers have already known those the basic knowledge by learning from diving courses like communication signs, diving information or dive site before diving at any destinations. If the dive master or dive leader is being informative, the divers only expect for such review or additional interesting information. Some prefer searching information by themselves. Other, on the other hand, have their own equipment such as dive computer to measure water temperature and water depth. On this ground, being informative of dive master and leader is not necessary for scuba diver. In other words, it means that this kind of service from people in diving industry is not correlated to WTP of scuba divers.

### 2) Analyzing-People sub-factor: Dive Master and Dive Leader service

(Table 11)

People sub-factors	Coefficient	P-value	Result
dive master service	1139.776	0.011	statistically significant
gender	496.6616	0.714	not statistically significant
age	531.3591	0.526	not statistically significant
income	1375.363	0.002	statistically significant
education	-1632.497	0.138	not statistically significant
divercerti	2009.711	0.014	statistically significant
_cons	3793.33	0.189	not statistically significant

The result from regression in Table 11, the p-value of coefficient dive master service is equal to 0.011 which is lower than 0.05. Thus, the dive master service sub-factor is statistically significant to preference WTP.

It is an undeniable fact that all service industries are required to deliver the best service performance to their customer. In diving industry, the great customer service from dive master and leader means helping customers efficiently, in a friendly manner. It also involves giving customers a good first impression of the business, with a friendly greeting and helpful attitude. It determines customer's needs and solving problems quickly will lead to satisfied return customers. It is essential to be able to handle issues for customers and do your best to ensure they are satisfied. To illustrate, dive master and leader is greeting divers with warm and welcome, exclusively taking care of them for first meeting until the trip end, quickly finding diving equipment if they forget bringing their own or immediately assisting for any emergency underwater. Lots of scuba divers also claims that diving experiences with manta ray of dive master and leader is also what they concern with. If dive master or leader have no experience of seeing manta ray, the divers will not trust in their ability to lead them during the trip.

Thereby, providing good service is one of the most important elements to achieve high level WTP of scuba diver. In addition to the survey, the quality of the service is also related to the amount tip that the divers will give to dive master and leader. The better service they receive, the higher they pay the tip.

### 3) Analyzing-People sub-factors: Staff service

(Table 12)

People sub-factors	Coefficient	P-value	Result
staff service	1526.235	0.001	statistically significant
gender	372.1747	0.781	not statistically significant
age	397.8431	0.631	not statistically significant
income	1381.298	0.002	statistically significant
education	-1632.677	0.133	not statistically significant
divercerti	1863.905	0.021	statistically significant
_cons	2093.451	0.463	not statistically significant

The result from regression in Table 12, the p-value of coefficient staff service is equal to 0.001 which is lower than 0.05. Thus, the staff service sub-factor is statistically significant to preference WTP.

It can be obviously seen that scuba divers have to bring several diving equipment with them, most of them are heavy. Thus, divers would prefer the staffs or crews helping them carry those equipment since they arrive the dock until transferring them to the boat. Furthermore, the divers also expect a responsive performance when they asking for insufficient commodities such as blanket, pillow and tissue.

In conclusion, an excellent service from local staffs on the boat who are willing to assist and pleased with service mind induce the higher WTP of customers or in this case is scuba divers. The better service provides, the greater customer experience or satisfaction they get. So, when they can assure that the service provider will serve them exceptional service, they are willing to pay more.

### Part 3: Analyzing-Rating scale of respondents' perspective toward 7P's marketing mix data

#### *Entrance fee Willingness-to-pay*

$$Y_3 = \beta_0 X_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \alpha_i$$

Where,  $Y_3$  = entrance fee WTP of 200 respondents

(Table 13), The OLS regression of entrance fee WTP:

<b>Hypothesis</b>	
$H_0$	There is no significant relationship between 7P's marketing mix, demographic factors and entrance fee WTP of scuba divers.
$H_1$	There is a significant relationship between 7P's marketing mix, demographic factors and entrance fee WTP of scuba divers.

Number of observation	200
Prob > F (F-value)	0.7640
R-squared	0.0335

(Table 14), The OLS regression of entrance fee WTP:

7P's Marketing Mix Factors	Coefficient	P-value	Result
avg_product	7.157243	0.150	not statistically significant
price	-1.761045	0.648	not statistically significant
avg_place	5.068731	0.282	not statistically significant
avg_people	-3.530423	0.435	not statistically significant
avg_physical	-4.415393	0.464	statistically significant

gender	-7.698639	0.331	not statistically significant
age	-3.000369	0.524	not statistically significant
income	2.49235	0.317	statistically significant
education	-4.991636	0.420	not statistically significant
divercerti	-0.0962146	0.983	statistically significant
_cons	176.0667	0.000	not statistically significant

Table 14, the regression shows a 95% confidence interval for the coefficient where p-value need to be lower than 0.05. It shows a statistically significant relationship between  $X_i$  and  $Y_3$ . R-square represent the amount of variance of  $Y_3$  explained by  $X_i$ , in this case 7P's marketing mix explain about 3.35 percent of the variance in WTP.

The p-value for the whole regression is fall into 0.7640 which is higher than 0.05 meaning that this regression model is not statistically significant, so all  $X_i$  variables is not well-explained  $Y_3$ .

The interpretation of two-tail p-values test the hypothesis, each coefficient should be different from 0. To reject this, the p-value has to be lower than 0.05. In this case, when observing through p-values of each  $X_i$  variables, all of them are higher than 0.05 meaning that none of them are statistically significant. As a consequence, the  $X_i$  variables in this linear equation are unable to explain  $Y_3$ .

It can be concluded that there is no significant relationship between 7P's marketing mix, demographic factors and entrance fee WTP of scuba divers.

### **Part 5: Significant demographic factors of 200 respondents'**

From the results from OLS regression for both WTP and preference WTP equations, there are 2 demographic factors which are Income and Diver Certification Level factors affecting WTP of scuba divers. Plus, when analyzing the sub-factors of 7P's marketing mix, these 2 demographic factors still statistically significant in each sub-factors and have positive relationship with WTP.

- ***Demographic factor-Income factor***

If the income of divers increases they are willing to pay more for watching manta ray diving trip. Since scuba diving and manta ray watching package by liveaboard boat is considered as a high-cost involved recreation activity. The package selling by service providers is normally expensive. This can be related to the elasticity of demand, as if price increases, the elastic or sensitive to price divers will decrease their quantity demand purchasing on a diving trip while substitute by other types of leisure or activities. On the other hand, the more excellent facilities provided or newness of liveaboard boat is, the higher price diving package will be. Therefore, it could be linked with Engel's law economic theory that when the income increases, people do not increase their quantity of demand. In fact, they prefer to consume and willing to pay more for better quality in service as choosing the higher quality of liveaboard boat.

- ***Demographic factor- Diver Certification Level factors***

The rank of diver certification level affects their willingness to pay. In the level of diving certification is usually involved with diving experience or number of dives. Those who are in the rank of dive master, dive leader or dive instructor typically have more experience than

divers in the lower ranks since they have to pass professional training program, safety and risk management career courses in order to be specialized enough to guide other divers. That is to say, as to create reliability in their career, they need to get more diving experiences. The more frequency or opportunity diving with manta ray experience dive master have, the better knowledge and experience they are able to share and guide other divers. So, they have more tendency to pay out for achieving in their career and expectation of seeing manta ray.

In this case, dive master and instructor are considered to be part of supply side who provide service to demand side from lower rank divers like open water or advance divers. The implication from survey also conveys that lots of divers prefer choosing to go diving with dive master or instructor who have plenty of dive experiences and been diving with manta ray. For this reason, the higher the rank of qualification, the more willingness to pay for manta ray watching recreation activity. Moreover, bringing divers to see manta ray is part of their job so it is reasonable that they are more likely willing to pay as to provide service to customers.

## V. CONCLUSION & SUGGESTION

In this chapter is separated into 4 parts: Overall conclusion, Implication, Suggestion for future study and Limitations

### 1) Overall Conclusion

#### 1.1 Conclusion-Average level of three main willingness to pay

Scuba diving industry in Thailand has been continuously growing based upon the gradual growth in marine tourism. Due to the change in lifestyle, people tend to spend money more on leisure in a form of tourism. The trend of scuba diving recreation activities become widely popular not just among adult but also more of teenagers participated in this kind of activity. In these days, the competition among diving service providers is more highly intense thanks to the increase in new entrants from foreign diving providers.

In this study has the main objectives to estimate the level of scuba divers' willingness to pay when deciding to dive for manta ray watching and factors affecting their willingness to pay. The descriptive statistics from questionnaires are used to answer research questions together with result from OLS regression of t-test analysis. The questionnaires are conducted to get consumer perception and insight asking with open-ended question and important rating questions. The result of the study reveals the specify preference price or willingness to pay level and the factors that most affect to their WTP.

(Table 15)

Y variable	mean	max	min	SD
WTP (per trip)	22,858.50	100,000	700	14,100.55
Preference WTP (per trip)	16,429.50	80,000	0	9,825.38
Entrance fee WTP (per day)	183.4	500	0	50.55

The study is principally based on the distributed survey on 200 Thai samples through online and offline channels with 102 of male and 98 females. The result from the survey as shown in Table 15 above, three main WTP are aimed to find which are first, the average WTP

of scuba divers is equal to 22,858.50 baht, second, the average preference WTP if they can set the diving package price by themselves is 16,429.50 baht and the average entrance fee WTP is about 184 baht which is lower than its usual 200 baht per day entrance fee.

As a consequence, service provider or supply side is able to utilize the results in this part for price strategy as to set the price based upon their WTP when deciding to purchase on diving package for manta ray purpose. The producers can observe the difference of divers' true willingness to pay and their preference WTP if they are able to set price by themselves. It shows a high difference between these two values since the average willingness-to-pay level of 22,858.50 is closer to the market price. While the preference WTP at 16,429.50 might be too low for producers to set at this price. Because the producers might not be able to cover production or operational cost and lead to lose in eventually. Besides, the too low price might affect customer perception because they might perceive it as a low quality and low standard service.

## 1.2 Conclusion-Average level of additional costs willingness to pay

(Table 16)

WTP for additional cost	Total	Number of divers	Percentage	Average WTP (baht/day)
Fins for rent	200	101	50.5	81.85
Mask for rent	200	102	51	68.05
Wet suit for rent	200	105	52.5	116.94
BCD for rent	200	128	60	222.61
Regulator for rent	200	130	65	213.38
Nitrox Tank for rent	200	116	58	248.99

For the WTP of additional costs of those equipment for rent, by the result from the survey found that most of them prefer to bring their own equipment rather than renting from the boat. Since most of the diver after finished diving course and get their diving certification, they are likely to invest to buy diving equipment for long term. They prefer to personally own equipment rather than sharing with others. However, the average WTP of diving equipment for rent per day comprises of, Fin 81.85 baht/day, Mask 68.05 baht/day, Wet suit 116.94 baht/day, BCD 222.61 baht/day, Regulator 213.38 baht/day and Nitrox Tank 248.99 baht/day.

From the results in this part could be very useful for service providers especially the liveaboard boat to store and provide diving equipment for rent to those divers in case that they forget to bring their own equipment. Since the WTP toward diving equipment is reveal, producers are able to set the price relied on their preference price or even capture more consumer surplus if WTP level is higher than regular price. To support this effort, pricing strategists need more fundamental customer information such as WTP and to satisfy the benefits that they seek from service.

### 1.3 Conclusion-Average level of additional costs involving with services willingness to pay (Table 17)

WTP	Total	Number of divers	Percentage	Average WTP
Entertainment (Karaoke)	200	54	27	890.40 (baht/trip)
Special meals (seafood, barbeque)	200	113	56.5	555.75 (baht/meal)
coastal sightseeing package tour	200	72	36	167.44 (baht/trip)
dive master and boat assistants Tips	200	170	85	929.66 (baht/trip)

From Table 17, the WTP of other additional costs which involved with service including entertainment, special meal, coastal sightseeing tour package and tips for dive master and boat assistants. As it is shown in Table 18 that 56.5 percent of 200 respondents are willing to pay for special meal while 85 percent of respondents are willing to pay the tips to dive master and boat assistants. This also links with the interpretation from OLS regression in people factor that the divers take quality service from dive master and boat assistants as one of the factor affecting their WTP.

Being a service provider, the improvement in providing sufficient with high quality of special meals is likely to be most possible and worth to achieve customer expectation and WTP. Plus, it also contributes to the higher tips willingness to pay for the satisfied service from dive master and boat assistants. Therefore, these two factors should be primary consideration before reviewing the rest factors (entertainment or coastal sightseeing package tour).

The result of average WTP in Table 17 above obviously demonstrates that the WTP of scuba divers toward service in term of entertainment, special meal and dive master and boat assistant tips is higher than the WTP toward diving equipment for rent. Therefore, comparing products and service, the service provider should concentrate more on those type service provided by human-intensive than on products for rent (Table 16). Since, the service served by human contributes to higher satisfaction and lead to higher WTP.

### 1.4 Conclusion-Demographic factors

For the demographic factors, since scuba diving is a marine recreation activity that required high purchasing power for all of involving cost for example, specific diving equipment and package tour cost. Majority of the divers have high income, most of them have high income of 15,001-30,000 baht and above 75,000 baht per month. Thus, according to the finding from questionnaire and OLS regression, they are sensibly support one another that income is an obvious factor that affect WTP. Another demographic factor that affect their WTP is the level of their diver certification meaning that the higher the rank of qualification, the more willingness to pay for manta ray watching recreation activity.

However, scuba diving is a recreation activity that does not scope only for male or female meaning that it is accessible for all. Hence, gender does not affect WTP. The age of divers is in the between of 15 to 50 years old which is the suitable rank for this adventurous type of activity. It means that scuba diving is approachable for everyone at least they should have physically fit and decent health condition. So, age is not the factor that affect WTP as well. While the academic education level does not affect WTP at all as scuba diving is required sophisticated skill, specific diving knowledge and experience.

Hence, the service provider such as marketers of liveaboard boat companies would rather take the demographic information into consideration in term of defining the main target groups. And the marketing campaign or promotion had better be correlated to their needs and convey the right message matching with their perception. For example, if they want to exercise price strategy of bundling strategy.

Bundling strategy, firms often allow customers to purchase components individually, as well as offering a bundle. It can increase profits when customers have different tastes (different willingness to pay) for the two products. They can offer the diving package together with special meals offered or higher the price by saying that it is already included those meals in a package. Thereby, firms are able to gain more profit, compete with other competitors in market and get two different groups of customers who have different WTP level at a time.

### **1.5 Conclusion-7P's marketing mix factors**

In sum, there are two factors and tow sub-factors 7P's marketing mix that affect or contribute to higher level WTP and preference of scuba diver when decide to dive for manta ray watching. There are physical evidence and people 7P's marketing mix while the demographic factors are income and diver certification level. Other factors do not affect WTP and preference WTP of the scuba divers. On the other hand, there is no any 7P's marketing mix or demographic factors affect entrance feel WTP.

So, for the physical and people marketing mix strategy, it also links to the five servqual dimension service quality as it supports firm to be able to reach customer satisfaction and prolong their loyalty by improving specific quality. That is to say, the reliability and tangibles is related to standard safety and quality of facilities in liveaboard boat. The assurance can be provided and functioned by the profession and experience of dive master. Lastly, it is the empathy and responsiveness in term of service mind of dive master and boat assistants. With all these five dimensions can be adaptably used to determine and form product differentiation strategy. Since the service offer by most liveraboards is likely to be substitute but not perfect substitute. Goods are different in term of quality and all consumers would prefer one to the other if they were sold at the same price. The use of product differentiation would be one of the most criteria for customers to choose one service over another.

As a result, firms should improve and guarantee the quality of service offer. Due to the fact that people factor is one of the most affecting customer WTP, training employees well is a preliminary objective for firms to do such as letting them reflect on a task they have performed and improved at greater rate. Training commences during the induction program and continues throughout an employee's career. Giving and encouraging employees time to think about what they have done and learned will be quicker and more reinforced. Besides,

service producers should give some positive feedback as to encourage them to keep developing their good performance, annual evaluation as to review and improve their performance or correct mistake.

Then, following by the improvement in quality of facilities and safety. Producer commits to providing safe processes, and maintaining safe equipment to ensure a safe and healthy working environment for all. Conducting safety policy is part of continuous improvement. The accident prevention process and allows producer to witness first hand on any safety related issues and to heighten awareness of health and safety issues for example, double checking the engine before the boat taking off for the trip and examining the durability of diving deck.

Whereas, another physical evidence sub-factor is healthy coral reef and water clarity considered as an external or uncontrollable factor for service producers. According to the study claim that human activities are the main cause of negative impact to marine ecosystems in term of threatened coral reef, seagrass beds and mangrove. The tourism industry impacts water quality through construction and maintenance of tourist infrastructure, recreational boating, and certain activities of the cruise industry. Tourist infrastructure increases the pressure on existing sewage treatment plants and can lead to overflows during peak tourist times such as water quality is the discharge of sewage into waterbodies with limited flushing or nearby shellfish beds which can contaminate shellfish. (Tourism and Socio-environmental Effects, Maximiliano Korstanje - Tourism Geographies – 2011)

Even service producers in diving industry are core contributor generating growth in scuba diving industry and are the one that involve closely to marine environment, they should also play important role and responsibility to encourage ecotourism. They had better heighten awareness of the value of nature and be a leader introducing the environmentally conscious behavior and activities to preserve the environment. Likewise, for boating system itself is using cleaner production techniques and providing way to minimize environmental impacts. In other words, they also can play a key role in providing environmental information and raising awareness among tourists of the environmental consequences of their actions. For example, buying things with less packaging, encouraging divers do not use disposable items or any plastic into the water while they are on the boat during the trip. By doing this in long term, it helps sustainable marine environment and life as to prolong tourism in diving industry.

## **2) Implication**

This study would be useful for service providers or marketers, particular scuba diving industry in Thailand. It provides deeper understanding about Thai scuba divers behavior, perception and willingness to pay through the service when diving for manta ray watching purpose. It also helps segmenting and focusing on the right target group so they can come up with more effective marketing strategies and operational plans. The study could be adaptable as following:

- This study is studied factors that most affecting WTP of Thai scuba divers when buy a trip for manta ray watching purpose. As a result, supply side or those diving service providers could effectively applied using it for strategic plans and operations such as price strategy and marketing promotion.

- This study demonstrates the 7P's marketing mix factors that most affect scuba divers' WTP, physical evidence and people factors. Accordingly, the service providers especially liveboard boats, the closest provider to customers, could utilize it in order to improve and develop the quality service of those factors in their operations and services. For example, training the boat assistants or staffs to deliver excellent service with service mind.
- The scuba diving service providers should create trust by increasing standard through company's safety policy. Since the standard and safety is another substantial correlated to scuba diver (customer) WTP which they are taking into account and expecting to get from service. They should guarantee and take responsibility to any dangerous situation that may cause to diver's life, provide an emergency aid for any injury offer and safety insurance or monetary compensation.
- The most potential target group with highest willingness to pay is those who have high income divers. Therefore, they can target the right group of customers as to serve best service to them achieving their satisfaction.

### 3) Suggestion for future study

- The survey should be distributed and collected from more than 200 respondents in order to minimize variability and uncoverage bias. A small size affects the reliability of a survey's result because it leads to higher variability which may lead to bias, the most common case of bias is a result of non-response as some respondents do not have an opportunity to participated in the survey. The too small sample size may increasingly lead to inaccurate result and further away from entire population. Therefore, in order to get more accurate result, the survey should be as large sample size as possible.
- The study should be exercised with some in-depth interview in order to make it more effective in term of understanding scuba divers insight and perception toward diving service of manta ray watching recreation activity.
- The study is only done on demand side. It would be more practical if other important elements throughout marine tourism such as supply side, marine national park sustainability and the negative impact on marine environment has been done as well.

### 4) Limitations of the study

#### ▪ *Time constraint:*

Due to a large amount of questions and sub-questions in questionnaire, it might create some bias since they skip some questions, in hurry and not willing to respond to the survey.

#### ▪ *Sample size:*

Regarding to the time limitation of project due date and time constraint of distributing the survey, the sample size is not sufficiently large.

#### ▪ *Distributed channels constraint:*

According to the limited number of scuba diving school or diving equipment shops in Bangkok and the far distance from one to another, it contributes to a difficulty in distributing hard-copy questionnaires.

## BIBLIOGRAPHY

- A contingent valuation study of scuba diving benefits: Case study in Mu Ko Similan Marine National Park, Thailand John Asafu-Adjaye-Sorada Tapsuwan - Tourism Management – 2008
- Adjusting For Sample Selection Bias In The Individual Travel Cost Method I. Dobbs - Journal of Agricultural Economics – 1993
- Corrigendum to ‘Socio-economic value and community benefits from shark-diving tourism in Palau: A sustainable use of reef shark populations’ [Biological Conservation 145 (2012) 267–277] G.m.s. Vianna-M.g. Meekan-D.j. Pannell-S.p. Marsh-J.j. Meeuwig - Biological Conservation – 2012
- Customer satisfaction and Scuba-diving: Some insights from the deep Martin Maccarthy-Martin O'neill-Paul Williams - The Service Industries Journal – 2006
- Dive Tourism and Local Communities: Active Participation or Subject to Impacts? Case Studies from Malaysia Bilge Daldeniz-Mark Hampton - International Journal of Tourism Research – 2012
- Environmental Cost–Benefit Analysis Using the Hedonic Price Method The Economic Valuation of the Environment and Public Policy
- Estimating the Economic Benefit of SCUBA Diving in the Similan Islands, Thailand Sorada Tapsuwan-John Asafu-Adjaye - Coastal Management – 2008
- Letters Journal of Neuropsychiatry - 2011
- Scuba Diving, Snorkeling, and Free Diving K Dimmock - Water-Based Tourism, Sport, Leisure, and Recreation Experiences – 2007
- Similan Islands Diving <https://similan-islands.com/diving/>
- The economic value of shark-diving tourism in Australia Charlie Huveneers-Mark Meekan-Kirin Apps-Luciana Ferreira-David Pannell-Gabriel Vianna - Reviews in Fish Biology and Fisheries – 2017
- The Global Economic Impact of Manta Ray Watching Tourism Mary O’Malley-Katie Lee-Brooks-Hannah Medd - PLoS ONE – 2013
- Tourism and Socio-environmental Effects, Maximiliano Korstanje - Tourism Geographies – 2011
- Willingness to Pay: Measurement and Managerial Implications Kamel Jedidi-Sharan Jagpal - Handbook of Pricing Research in Marketing