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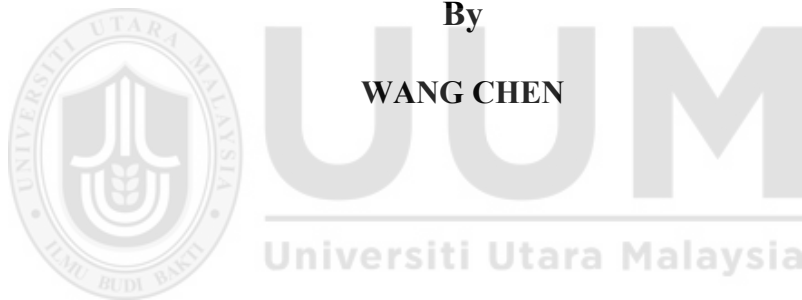
**INFLUENTIAL FACTORS OF CONTINUING USAGE OF
BICYCLE SHARING SYSTEM AMONG UUM
STUDENTS**



**MASTER OF SCIENCE
(INTERNATIONAL ACCOUNTING)
UNIVERSITI UTARA MALAYSIA**

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**INFLUENTIAL FACTORS OF CONTINUING USAGE OF
BICYCLE SHARING SYSTEM AMONG UUM STUDENTS**



**Project Paper Submitted to
Tunku Puteri Intan Safinaz School of
Accountancy, Universiti Utara Malaysia,
in Fulfillment of the Requirement for the Degree of Master of Science
(International Accounting)**

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ABSTRACT

With the development of the Internet economy, the concept of green environmental protection, low-carbon travel at home and abroad and the sharing of bicycles for time-sharing projects is booming. The shared bicycle is characterized by convenience, environmental protection, affordable and suitable for short-distance travel. It is an important way to solve the “last mile” travel. However, with the rapid development of shared bicycles system, a series of problems have arisen. The phenomenon of random and uninterrupted parking can be seen everywhere. The damage of shared bicycles is serious. Some bicycle companies are facing bankruptcy, resulting in the user's deposit being unable to be returned. Therefore, whether users will continue to use shared bicycles is a realistic issue worth exploring. Based on the expectation confirmation theory of information system continuous use, combined with the characteristics of the sharing bicycle system, factors such as perceived usefulness, satisfaction, expectation confirmation, user commitment, habits, and external environment are included in the model to study the effect of various factors on the user's willingness to continue to use. The study conducted a questionnaire survey through online methods, and collected 128 valid sample data, and mainly used SPSS20.0 and Smart PLS 3.0 software to perform descriptive statistical analysis, reliability and validity test and correlation analysis to verify the theoretical model proposed in this study. Through empirical research, it is found that habit, perceived usefulness, external environment, user commitment, and satisfaction have a significant positive impact on the willingness of shared bicycle users to continue to use,

Keywords: Shared bicycle, Willingness to continue to use, Expectation confirmation model

ABSTRAK

Dengan pembangunan ekonomi Internet, konsep perlindungan alam sekitar hijau dan perjalanan karbon rendah di dalam dan di luar negara, perkongsian basikal untuk projek perkongsian masa berkembang. Basikal yang dikongsi ini dicirikan oleh kemudahan, perlindungan alam sekitar, berpatutan dan sesuai untuk jarak dekat. Ini adalah cara penting untuk menyelesaikan perjalanan "batu terakhir". Bagaimanapun, dengan perkembangan pesat basikal yang dikongsi, satu siri masalah juga timbul. Fenomena tempat letak kereta rawak dan tidak terganggu dapat dilihat di mana-mana. Kerosakan basikal yang dikongsi adalah serius. Sesetengah syarikat basikal menghadapi muflis, menyebabkan deposit pengguna tidak dapat dikembalikan. Oleh itu, sama ada pengguna akan terus menggunakan basikal berkongsi adalah isu yang realistik yang patut dijelajahi. Berdasarkan teori pengesanan jangkaan sistem maklumat penggunaan berterusan, digabungkan dengan ciri-ciri sistem basikal perkongsian, faktor-faktor seperti kegunaan yang dirasakan, kepuasan, pengesanan jangkaan, komitmen pengguna, tabiat, dan persekitaran luar dimasukkan dalam model untuk mengkaji kesan pelbagai faktor mengenai kesediaan pengguna untuk terus digunakan. Kajian ini menggunakan kaji selidik kuesioner melalui kaedah dalam talian, dan mengumpulkan 128 data sampel yang sah, dan kebanyakannya menggunakan perisian SPSS20.0 dan Smart PLS 3.0 untuk melaksanakan analisis statistik deskriptif, kebolehpercayaan dan ujian kesahihan dan analisis korelasi untuk mengesahkan model teoretikal yang dicadangkan dalam kajian ini. Melalui penyelidikan empirikal, didapati kebiasaan, kebolegunaan yang dilihat, persekitaran luar, komitmen pengguna, dan kepuasan mempunyai kesan positif yang signifikan terhadap kesanggupan pengguna basikal yang dikongsi untuk terus digunakan,

Kata kunci: Basikal berkongsi, Kesediaan untuk terus digunakan, Model pengesanan jangkaan

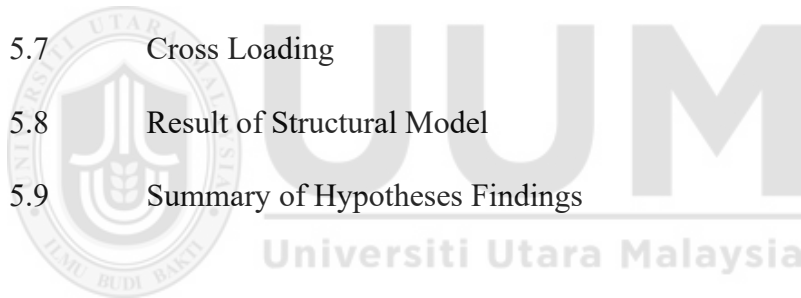
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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

In the year 1978, the paper named "Community Structure and Collaborative Consumption: A routine activity approach" proposed the term "sharing economy" firstly. The sharing economy notion relates to people or organizations with idle resources transferring the right to use resources for payment to others, and the consumer could use those resources at a reduced price.

Botsman and Rogers (2010) argues that leasing, bartering, lending, gifting, exchange, and cooperative organizations are considered as shared form models of sharing economy from individual activities perspective. A lease-based product or service is a type of shared economy. "Time-sharing lease", as its name suggests, is a model for completing short-term leases in hours or minutes.

In latest years, the bike sharing scheme has been receiving attention with the aim of growing cycle usage, enhancing the first last mile link and mitigating the environmental effect (Lu-Yi Qiu,2018). Malaysia together other world leaders has adopted sustainable agenda towards becoming a developed nation. In Malaysia, the government has acknowledged that transportation and mobility as a crucial element towards the sustainable development. Due to that, part of the strategy under by the 11th

Malaysia Plan is to encourage low carbon mobility which emphasizes on the usage of public transport (Economic Planning Unit, 2017). Bike-sharing seen as a way to promote the viability of public transport. Identified that the benefits of bike sharing include reducing road congestion and energy consumption, reducing emissions, physical activity benefits, private financial savings, and supporting transportation links.

With the increasing demand of users, the shared bicycle industry has developed rapidly. Its convenience, environmental protection, practical benefits and short-distance characteristics have brought convenience to users, and solved traffic congestion and environmental pollution to some extent. However, it also brought a series of problems. The phenomenon of no piles caused by chaos and stagnation was everywhere. Some shared bicycles lacked a positioning system and could not be managed in a timely and effective manner, which caused some bicycles to be seriously damaged. Subsequently, whether people will keep on utilizing shared bikes system is a genuine issue worth investigating now.

1.2 Problem Statement

Universities are the ideal places to apply bike sharing systems. This is due to three key issues, namely financial constraints, air quality issues and reduced availability of land for most universities (Fund, et al. 2012). Moreover, universities are known as “small cities” which will have direct and indirect impacts on environment as their large-size population and various activities being carried out in campuses (Alagbe & Alalade, 2013). In addition, universities are the most ideal hub for innovation and idea's development as well as establish awareness on how to integrate sustainability in daily

life (Jain & Pant, 2010). Bike sharing system has been a visible and tangible pace towards greener campus where it shows a long-term commitment to better transportation and healthy living (Heda, 2012). Still, bike sharing system can help more people transfer at a lower cost, at the same time, beneficial the environment when compared to other transportation (Gardner & Gaegauf, 2014). There are over 65 colleges and universities promote the bike sharing system as sustainable transportation in Europe (Shaheen, Guzman & Zhang, 2010).

However, the study (Toit, 2013) conducted at University of Pretoria, South Africa showed that individual private cars dominate the mode of transport used in their campus as it generated more than half of all trips within the main campus. Besides that, previous research conducted in Universiti Kebangsaan Malaysia (UKM), there are 81% of students involved in riding bus and private car within the campus (Makki, et al., 2012). Thus, it can be said that motorized vehicles still the main transportation mode used by university students.

Therefore, there is a need to promote the bike sharing system in campus to achieve sustainable goals. After implement the system, it's critical to find out the intention of students to continue to use this system in campus.

1.3 Research Questions

Based on the perspective of users, this study examines factors that affect people's continued use of shared bicycles. Through empirical analysis, hoping to solve the following problems:

1. Is there a relationship between the user's expectation of the usage of shared bicycle system and user's perceived usefulness among UUM students?
2. Is there a relationship between the user's expectation of the usage of shared bicycle system and user's satisfaction among UUM students?
3. Is there a relationship between the user's perceived useful of sharing bicycle system and user's satisfaction among UUM students?
4. Is there a relationship between the users' perceived usefulness of shared bicycle system and user's willingness to continue using among UUM students?
5. Is there a relationship between the users' satisfaction with shared bicycles and willingness to continue to use among UUM students?
6. Is there a relationship between the user's commitment to sharing bicycles platform and willingness to continue to use among UUM students?
7. Is there is a relationship between the user's habit towards sharing bicycles system and willingness to continue to use among UUM students?
8. Is there a relationship between external environment in which the user uses the shared bicycle and willingness to continue to use among UUM students?

1.4 Research Objectives

This study seeks to define factors that affect the readiness of consumers to continue using a shared bicycle system. The goals of this research are shown below based on the research issues:

1. To examine the relationship between the user's expectation of the usage of shared bicycle system and user's perceived usefulness among UUM students?
2. To examine the relationship between the user's expectation of the usage of shared bicycle system and user's satisfaction among UUM students?
3. To examine the relationship between the user's perceived useful of sharing bicycle system and user's satisfaction among UUM students?
4. To examine the relationship between the users' perceived usefulness of shared bicycle system and user's willingness to continue using among UUM students?
5. To examine the relationship between the users' satisfaction with shared bicycles and willingness to continue to use among UUM students?

6. To examine the relationship between the user's commitment to sharing bicycles platform and willingness to continue to use among UUM students?
7. To examine the relationship between the user's habit towards sharing bicycles system and willingness to continue to use among UUM students?
8. To examine the relationship between external environment in which the user uses the shared bicycle and willingness to continue to use among UUM students?

1.5 Significance of the Study

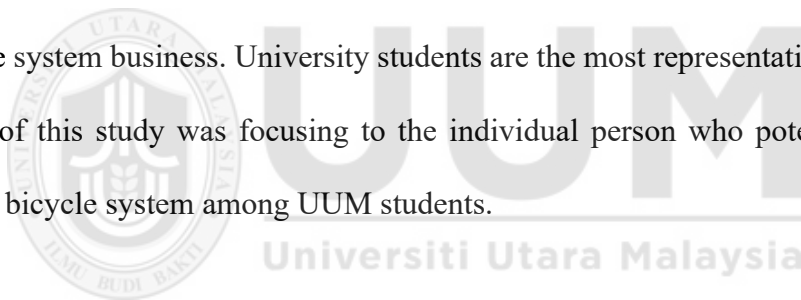
The time sharing bicycles system emerging as a representative of sharing economy still very short, previous studies are more concerned about the business model, problem countermeasures and user experience of sharing bicycles while studies on the willingness of users to keep on using shared bicycles system are moderately deficient. Based on expectation confirmation theory of continuous use of information systems and social cognitive theory, combined with TAM, This study conducts empirical research on the willingness of users to continue using a shared bicycle system in order to enrich theoretical research on the willingness to continue using it.

The success of time-sharing leasing model is not only concerning the first time use by the users, but also concerning whether users will continue to choose after the first time use. For now, the issues of decreasing amount of users and market shrinking is facing by shared bike business. It is necessary to explore how to keep existing users for the

development of bicycles in practical. By constructing a factor model that influences the willingness of shared bicycle users to continue to use, this paper provides guidance to the operators of shared bicycles and their promoters in the specific marketing promotion process.

1.6 Scope of Study

According to Zhang Zan (2018), the users of shared bicycle system aging mainly between 18 and 27. The education level of the users is higher, mainly based on undergraduate education. Most part of the shared bicycle system users are from low and middle-income group. Therefore, the young group is the main force of the shared bicycle system business. University students are the most representative samples. The scope of this study was focusing to the individual person who potentially will use shared bicycle system among UUM students.



1.7 Organization of the Chapter

This study consists of six chapters.

Chapter1: Introduction. This chapter introduces the research background, research problems and objectives, research significance, scope and organization of this paper.

Chapter 2: Focusing on a review of existing literature on research on a shared bicycle system business model, research on a shared bicycle profit model and shared bicycle

user experience research. On the basis of a literature review, this chapter then discusses the theoretical framework adopted and the assumptions generated for this study.

Chapter 3: Research framework. Combine with Tam and ECT-ISC to construct a willingness to continue to use model.

Chapter 4: Discussing the methodology of studies. This involves research design, variable measurements, engaged population and sample, process of information collection, questionnaire design. At the end of this section, statistical methods used to infer this survey are described.

Chapter 5: Data analysis. Based on the results of questionnaire survey, this part uses SPSS22.0 and SmartPLS3.0 software to analysing the data collected, and also to verify the research model and hypothesis.

Chapter 6: Conclusions and recommendations. This chapter draws the research conclusion form research results, determines the influencing factors affecting the users' willingness to continue to use the shared bicycle system, proposes suggestions for the shared bicycle system platform and put forward the study's limitations and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Literature review of shared bicycle research

Research on shared bicycles mainly focuses on sharing bicycle system business model, profit model and user experience enhancement. Meanwhile, most of them take the brand named Mobike and OFO as research cases.

2.1.1 Research on shared bicycle business model

Zhou Kunwei (2017) takes as an instance the OFO shared bike, based on the business model of product testing, distinguished leadership, technological advancement and product vision, analyzed the key points of value creation in the practice of each link, aimed at providing a reference for corporate business model under sharing economy. Luo Xiu (2017) based on Internet thinking, analyzed the business model of shared bicycles from the six elements, which are customer level, marketing model, partnership, cost structure and profit model, aimed to provide innovative business models for other enterprises. Wang Hao (2017) from the shared economic business model O2O perspective, combined with the OFO shared bicycle case, elaborated on the related concepts of shared economy and O2O, the driving factors of the shared economic business model, and the analysis of the case of shared bicycles.

The Su Baizhang (2017) study analyzed the population, capital and technical power of the shared economy, using bicycle sharing as an example, analyzed the external environment and the main body of the shared economy, and proposed a proposal to strengthen the sharing of economic security. Analyzing the similarities and differences between shared bicycle designs in China, Chang Jiarui (2017) discovered that distinct business models demonstrate distinct financial and social benefits in the practice of sharing economy. It has practical significance for the exploration of modern business models under the mobile Internet conditions. Feng Ruirui (2017) analyzed the commercial operation of the shared bicycles companies named ofo and Mobike, found that the business model of ofo is more in line with the sharing economy, however the business model of Mobike is more professional in bicycle rental, concluded that whether shared bicycles belong to the sharing economy needs to be judged according to the company's business model and business principle.

2.1.2 Research on shared bicycle profit model

Ge Wenjing (2017) considers the shared bicycle profit model Mobike and Ofo as a study of the artifacts by assessing the status of shared bicycles, building a shared bicycle value network model from a value creation, transmission, acquisition and realization point of view, and proposing an effective profit model for start-ups, development and maturity period of shared bicycle companies, thereby achieving the sustainable development of shared bicycle companies. Li Linfeng (2016) takes Mobike as an example to explore its sustainable profit model, path and specific methods, concluding that enterprises should formulate reasonable and feasible policies in human resource management, brand strategy and standardized management to

maximizing economic benefits. Dong Wenzhu (2017)'s study, represented by Ofo and Mobike, presents the current situation of shared bicycles from the three aspects of profit model, which are user experience and public order, explored the future direction of shared bicycles development. Guo Mengyi (2016) pointed out that the exploration of the profit model is still a difficult problem in the shared bicycle industry. In the overall operation of the enterprise, the cost of management, operation and maintenance are relatively high. And that, the rental income alone cannot make considerable profits, nor can it sustain long-term development. At the same time, sharing bicycles still has problems such as being occupied by individuals, illegal parking, and repeated damage of the car locks, are all increased the cost of operation and management. Sheng Di (2017) from the aspects of shared platform supervision, security credit, and rights protection proposed a profitable operation strategy model. Wang Jiangang (2017) mainly discusses the improvement path of shared bicycles profit model, analyzes the future direction of sharing bicycles, and studies the development model that could in line with the disciplines of shared bicycle industry.

2.1.3 Shared bicycle user experience research

The definition provided in ISO 9241-210 is the most important definition of customer experience: all responses and outcomes of the user's product, system or service that is used or expected to be used, i.e. the psychological feeling, physical stimulus, and mental and physiological responses that arise during the user-product interaction.

Attiyah Al-Atawi (2016) used the binary logit model to investigate car-sharing users' behaviors and attitudes based on family survey information and to evaluate the validity

of introducing a car sharing program. Liu Yang (2017) used customer interaction images and service prototypes as instruments to analyze the primary issues that exist in the current shared bicycle scheme from the point of view of service design, and suggested the three-party model of user, corporate and government enhancement in the perspective of big data. Commercial cross-industry collaboration, as well as strategic interventions, guide consumers to deliberately retain private savings, encourage the algorithmic upgrading of the entire internal company setting, and introduce fresh thoughts to fix the sharing of bicycle systems issue.

Yu Jia (2017) through a survey of 200 college students from 25 colleges and universities in Beijing, found that there are still many colleges and universities that have not set up intensive shared bicycle parking spots or that college students have never heard of or even used shared bicycles system, meanwhile sharing bicycles system also have problems in the supervision and management of bicycle companies, the lack of government support, and the low degree of individual acceptance of shared bicycles. Li Wei (2017) analysed the moral reasons behind the chaos of citizens sharing bicycles system, and put forward some suggestions on how to promote the sharing of bicycles out of moral predicament and flourish.

In summary, regarding the research on shared bicycles, there are many articles in the news reports. Results of the studies have given greater attention to studying how consumers tolerate the shared bicycle system as a warmth service. Still in the original phase, study on the desire to continue using shared bicycle system.

2.2 The theoretical basis for the desire to continue to use bicycle users

Bhattachajee first proposed in 2001 the willingness to continue to use information systems as “subjective tendency of individuals to continue using information systems”. Park (2014) believes that the willingness to continue to use is the continued willingness of users to use a system without interruption after adoption. Therefore, this study defines “the willingness to continue to use shared bicycle system” as following: a subconscious inclination for consumers to continue using bicycle facilities after sharing. Research by academics on the willingness to continue the use of consumers in latest years is based on the expectation confirmation theory of the technology acceptance model and ongoing use of the information system, by constructing models for different research objects, and developing and perfecting theoretical models.

2.2.1 Technology Acceptance Model, TAM

Davis (1989) proposed a Technology Acceptance Model (TAM) based on the logic of behaviour and the theory of planned behaviour, as shown below:

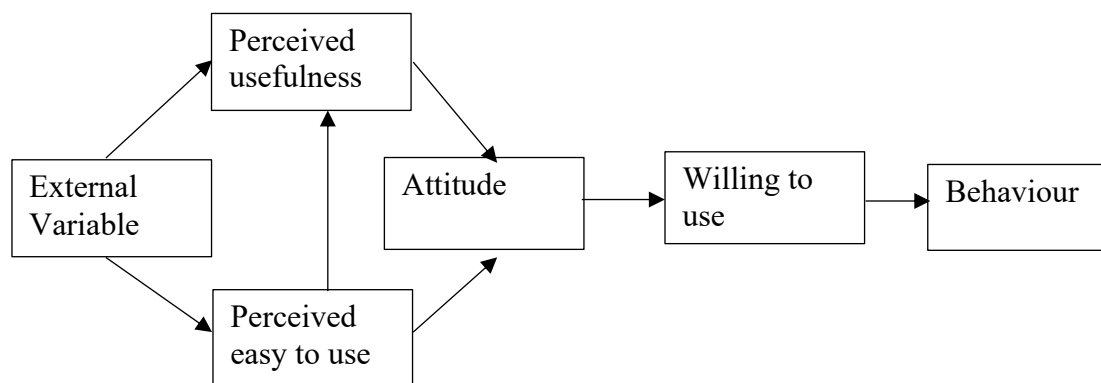


Figure 2.1:
Technology Acceptance Model, TAM

The technology acceptance model is widely used for different research objects.

2.2.2 Expectation-Confirmation model of IS continuance

With a thorough study of the issue of ongoing use, many academics have studied the issue of the ongoing use of information systems through the acquisition of new theories, the breach of relevant theoretical frameworks such as the technology acceptance model, and the widespread use of the IS Continuance Expectation-Confirmation Model (ECM-ISC).

First suggested Expectation Confirmation Theory (ECT) by Churchill and Surprenant to establish a theoretical structure for fulfillment, mainly to explain consumers' repeated purchase behaviour. Anderson and Sullivan (1993) believe that users will have an expected value for the product before they purchase. Once used, users have formed new perceptions of the product, the satisfaction will then be determined on the basis of the actual experience and the expected value to determine whether to buy again. Bhattacharjee (2001) sets out the expectation confirmation hypothesis in the investigation of the continuous use of information systems and believes that consumers have distinct expectations of products before and after purchase and that these two phases will have an impact on satisfaction and will further influence the willingness of customers to continue to use them. As a result, the perceived usefulness of the technology acceptance model is implemented and the expectation confirmation theory is modified to make it suitable for data systems research, forming the IS Continuance Expectation Confirmation Model as shown in Figure 2.2.

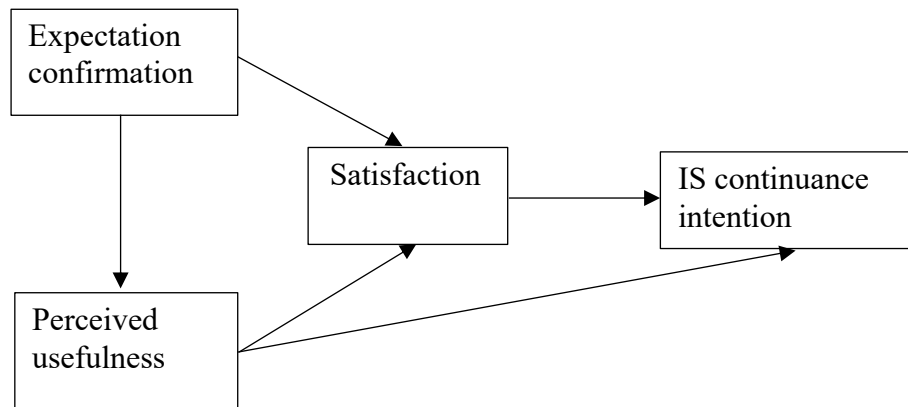


Figure 2.2:

Expectation confirmation model of IS continuance

Fan Wei (2013) studied the willingness of WeChat users to continue to use, using the variables in Expectation confirmation model, adding the perceived entertainment variables, because the researcher believes that WeChat is not a mission-oriented application, but an entertainment and social mobile applications. Users can generate a strong perception of entertainment, and perceived entertainment will affect user's willingness to use. It is therefore assumed in the study that the degree of confirmation of expectations is positively correlated with perceived entertainment, and perceived entertainment will also have an impact on user satisfaction and willingness to continue to be used. The model is discovered to be more able to interpret the readiness of customers to continue using WeChat after adding perceived entertainment. Yang Mei Rong (2015) combines the characteristics of mobile take-out application with the extended expectation confirmation model, incorporates perceived performance and contributing factors into the model, and studies the impact of each dimension on the user's willingness to continue to use. The findings indicate that perceived quality, perceived cost benefit, and subjective standard are not relevant to the readiness of

customers to continue to use them. Perceived utility, habit, and conversion have a significant positive impact on users' readiness to continue to use it.

2.2.3 Social cognition and other related theories

Bandura (1980) suggested social cognitive theory based on behavioral science in the early 1980s, pointing out that behaviour, external environment and person motivation are mutually important and ternary relationships, thus constructing of the "three-way interaction" behavioural decision model. Person cognitive relates primarily to cognitive capacity, capacity to self-regulate, etc., allowing individuals to regulate and control the cellular membranes and their own behaviour. Causal relationships exist between the cognitive activities and behaviour of individuals. Activities of intrinsic thought and external environmental factors determine the behaviour of people. The following primary theories are also engaged in the individual perception of the customer, i.e. the inner thinking activity, due to the particularity of the study item in this article.

The theory of commitment confidence is used to evaluate modifications in long-term interactions between customers. Moorman and Zaltman (1993) think customer engagement is users' willingness to preserve a precious platform connection. User trust means that user's willingness to rely on a confident exchange partner. In constructing and consolidating relationships, commitment and trust are significant considerations. In this theory, many academics have acknowledged the willingness of the user to continue using factors such as emotional engagement and user trust.

The reciprocal mechanism refers to the behaviour of the beneficiary to give back to the beneficiary. Perceived incentives are the beneficiary behaviours felt by the counterparts of the transaction. Among the two parties to the transaction, the seller mainly applies incentives such as red envelopes, discounts and promotion exchanges. The purchaser who has perceived the behaviour of the seller will provide the seller with positive feedback, such as continued use and continuous purchase.

James pointed out that in the daily life of people, habits are an significant variable. Xiao Huaiyun splits the behaviour of constant use into conscious behaviour and incapacitated habit behaviour by analyzing usage behaviour. Conscious behaviour refers to the willing behavior of the user after thinking, while unconscious behaviour refers to the behavioral willingness of the user to produce unconsciously during use.

Based on the information system expectations confirmation model and the social cognition theory, this research includes variables such as perceived usefulness, satisfaction, user confidence, user engagement, perceived incentives, practices and the internal environment for studying the readiness of shared bicycle users to continue to use.

CHAPTER THREE

RESEARCH FRAMEWORK

3.1 Introduction

In this chapter, the research model of this study is built through the induction and overview of prior studies. At the same moment, the variables engaged in the model are described by reading and collecting associated literature, and later research is conducted in combination with practical issues.

Behavioral Intentions is a statement that links the psychological willingness and future behaviour of consumers. The willingness to continue to be used arises from an increase in the intentions of behaviour. The distinction between these two notions is expressed in the term "continuation," which emphasizes continuity and uninterruptedness. The expectation confirmation model for the continued use of information systems has been commonly used in the research of customers' willingness to continue to use it. As a original model, many scientists have confirmed that it is very high in reliability, validity and efficiency. The role of cognitive variables in behavioral change from a fresh view is explained by social cognitive theory. This study first utilizes interviews and surveys to comprehend their opinions on shared bicycles through face-to-face communication with shared bicycle operators and users in order to further deepen the multiple factors influencing the willingness of shared bicycle users to continue using

and building and improving the research model. And the actual experience in using shared bikes.

3.2 Research Hypotheses

3.2.1 Hypothesis based on the expectation confirmation model

The expectation confirmation refers to the degree to which the psychological expectation is confirmed before and after the user uses the shared bicycle system. Perceived usefulness means that after using the shared bicycle, the user feels the convenience and usefulness of the sharing bicycle. Bhattacharjee proposed that since the user is uncertain about the expected value when using the information system for the first time, the perception of perceived usefulness is low, but when the user realizes that the cognitive is low, they will confirm according to expectations. Experience is adjusted so that user expectations are influenced by perceived usefulness.

Since the user is not sure whether he or she can meet the demand for short-distance travel before using the shared bicycle for the first time, it is less aware of the convenience and other requirements, but the user will confirm the actual expectation according to the convenience of using the bicycle. The experience is constantly adjusted. It is expected that the more consistent the user's psychological expectations are, the more useful the perception is. Therefore, the following assumptions are made:

H1: The user's expectation of sharing the bicycle positively affects the user's perceived usefulness.

Satisfaction is a judgment of whether a user's service for sharing a bicycle meets his or her own needs. If the shared bicycle is used to meet the psychological expectation, it means that the user is satisfied with the shared bicycle, and when the psychological satisfaction is not reached, the satisfaction is low. Therefore proposed:

H2: The user's expectation of sharing the bicycle positively affects user satisfaction.

Karahanna et al. pointed out that the most important factor influencing customer satisfaction was perceived usefulness. The experience gained by users when using information systems can improve their work efficiency and bring convenience and benefits to themselves, so they are satisfied. After using the shared bicycle, the user feeling about the convenience and usefulness of sharing bicycle system for short distance travel is higher, and the user experience is better, and the satisfaction is higher. Based on this, the hypothesis is proposed:

H3: User's perceived usefulness of shared bicycles positively affects user satisfaction.

In the study of mediating effects, Wen Zhonglin pointed out that if the independent variable through the mediator variable affects the dependent variable, then the total effect of the independent variable on the dependent variable is equal to the direct effect plus the mediating effect. The independent variables are considered useful in this model, the mediator variable is satisfaction, and the dependent variable is the user's willingness to continue using it. The complete impact of perceived utility on the willingness to use is therefore equivalent to the immediate impact of perceived usefulness plus the mediating impact of fulfillment. Sharing bicycles as an emerging thing, the willingness of users to continue to use bicycles can bring benefits to shared operators, so the perceived usefulness and satisfaction of the user are important

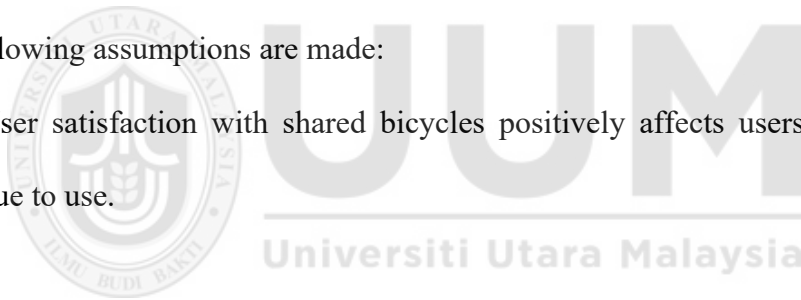
conditions for their continued use of shared bicycles. On this basis, the following assumptions are made:

H4a: The perceived usefulness of the user to the shared bicycle positively affects the user's willingness to continue using.

H4b: The perceived usefulness of the user to the shared bicycle positively affects the user's willingness to continue to use through satisfaction.

The expectation confirmation model demonstrates that the user's readiness to continue using the information system depends mainly on the level of satisfaction with the prior use of the system. The better the travel experience, the greater the satisfaction, and the greater the desire to use the shared bicycle after using a shared bicycle. Based on this, the following assumptions are made:

H5: User satisfaction with shared bicycles positively affects users' willingness to continue to use.



3.2.2 Hypothesis based on social cognition theory

Social cognition theory mainly refers to the influence of individual cognition and external environment on behavior. Individual cognition includes user commitment and habits. The external environment refers mainly to the natural environment and the social environment, including weather, seasons and social norms.

User commitments relate to users' willingness to preserve a precious connection with the system platform for shared bicycles. The commitment of users is an important factor for the long-term development of shared bicycle operators. The greater the

commitment of users to the shared bicycle platform, the greater the possibility of maintaining long-term stable relationship with the platform, the stronger the willingness of users continue to use shared bicycles will be. Therefore, user commitment is used as a factor to explain the willingness of shared bicycle users to continue to use, and the following assumptions are made accordingly:

H6: The user's commitment to sharing bicycles platform is positively affecting the user's willingness to continue using.

Habit is the unconscious and unconscious behaviour that users gradually learn in a specific environment. When users travel daily, the greater the influence of habits, the greater the possibility of ignoring objective factors, so the willingness to continue to use bicycles is stronger. Therefore, the habit is listed as the influencing factor of the willingness of the shared bicycle users to continue to use, and the following assumptions are made:

H7: The user's habit of sharing bicycles positively affects the user's willingness to continue using.

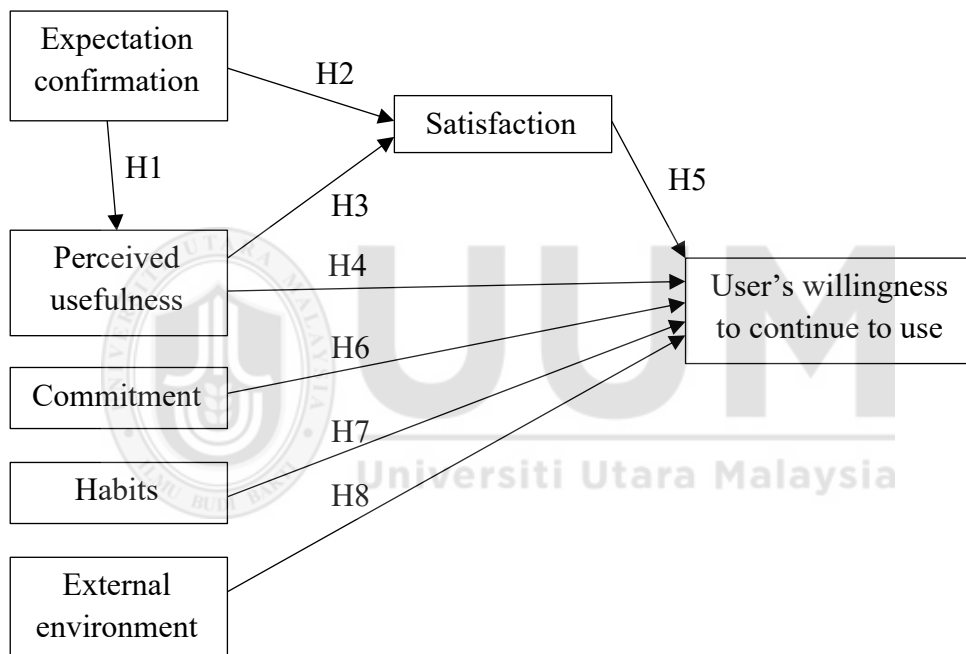
The external environment means that users using shared bicycles will change according to changes in the natural environment and social environment. From previous study, it can be seen that changes in weather, seasons and social environment will influence the willingness of the user to continue using it. Therefore, this study assumes that:

H8: The external environment in which the user uses the shared bicycle positively affects the user's willingness to continue using.

3.3 Research Framework

Based on the hypothetical link above, this article proposes the following theoretical concept model for the readiness of the consumers to continue using the bicycle sharing system. As shown in Figure 3.1:

Figure 3.1:
Research Framework



CHAPTER FOUR

RESEARCH METHODOLOGY

4.1 Introduction

This chapter is about methodology used in this study. Legitimate research techniques are basic to the effective finishing of research ventures. In this part, the techniques, instruments and factors utilized are resolved. Furthermore, this section additionally talks about the plan of surveys, test determination, information accumulation systems, and information investigation strategies. This examination utilized a quantitative methodology dependent on surveys to accomplish its objectives. It starts with an exploration system and fitting suppositions to study plan and a helpful method to accomplish inquire about objectives. This part at that point centers around the pertinent testing systems and chooses the proper strategy and information gathering method.

4.2 Research Design

The use of computational, factual and scientific tools to determine outcomes is included in quantitative research. In its motive, It is decisive in trying to assess the problem and to see how predominant it is by looking for projectable results for a larger population (Patton, 1990).

Qualitative research is often progressively explorative, a type of research that relies on gathering verbal, social or observational information that can be deciphered

emotionally. It has a broad range of possibilities and is usually used to explore the reasons for future problems. Subjective study usually provides pieces of information about some components of a display problem. It is either frequently preceded or aimed after quantitative research, depending on the objectives of the examination (Dey, 2003).

This study uses quantitative research rather than qualitative research and generally hopes to gauge the degree and search for measurable results that are dispassionately deciphered (Patton, 1990). Gathering numerical information from students in Universiti Utara Malaysia (UUM) and dissect the information by utilizing statistic method SPSS and Smart Pls. This study considers each subscriber's reaction as an individual information source.

The design of the questionnaire consists of three components. The first part is aimed at knowing respondents' population data, including gender, age, background and level of revenue, etc. The second section is exclusion criteria questions that mainly investigate the use of shared bicycle system. The third parts investigating the factors influencing the user's willingness to continue to use the shared bicycle system, from the perceived usefulness, expectation confirmation, satisfaction, commitment, habits and external environments and users' willingness to continue to use shared bicycle system. The questions under each indicator will help respondents better understand and answer the questions. The questionnaire is measured using Liker's five-level scale ranging beginning with strongly disagree 1 to strongly agreed 5 to investigate the users' willingness to continue to use shared bicycle system.

Level of variable	Description
1.00	Strongly Disagree
2.00	Disagree
3.00	Neutral
4.00	Agree
5.00	Strongly Agree

Table 4.1:
Rating scale and measurement

The measurement questions for specific variables and the corresponding references are shown below:

Table 4.2:
Multiple Item Measures for Each Construct of the Study

Indicators content		Source of indicators
<i>Perceived usefulness</i>		
1	Using bicycle sharing system can make my travel more convenient.	Bhattacharjee (2001)
2	Using bicycle sharing system can improve my travel experience.	
3	Use bicycle sharing system can help me achieve physical exercise purpose.	
4	The mobile application of bicycle sharing system is easy to understand.	
5	Overall, the emergence of bicycle sharing system is very useful for my short distance travel.	
<i>Expectancy confirmation</i>		
1	Bicycle sharing system enriched my demand for short-distance travel	Bhattacharjee (2001)
2	Bicycle sharing system inspired my riding bike feelings.	

Table 4.2: (Continued)

Indicators content		Source of indicators
3	Bicycle sharing system really plays a role in physical fitness.	
4	The shared bicycle system application, easy to operate, good experience.	
5	Overall, using the bike sharing system, I met my original expectations.	
<i>Satisfaction</i>		
1	I am very satisfied with the use of shared bicycles system.	Bhattacharjee (2001)
2	Using shared bicycles makes me feel very safe.	
3	Using shared bicycles makes me feel very happy.	
<i>Commitment</i>		
1	Shared bicycle platform has good development prospects, I hope to use for a long time.	Yan Xingquan (2008)
2	It is economically cost-effective to use shared bicycles system or participate in shared cycling platforms, and I expect to be able to use them for a long time.	
3	My relationship with the shared cycling platform is mutually beneficial and I expect to be able to use it for a long time.	
<i>Habits</i>		
1	For me, using a shared bike system is a natural thing.	Limayem Hirt Cheung (2007)
2	When I travel short distances, I will unconsciously think of using shared bicycles system.	
3	I am accustomed to using shared bicycles when the travel distance is between walking and taxiing.	
<i>External environment</i>		
1	Regardless of the weather, I will choose to use shared bicycles.	Zhang Zanzan (2018)
2	Regardless of the season, I will choose to use shared bicycles.	

Table 4.2: (Continued)

Indicators content		Source of indicators
3	Regardless of the traffic congestion, I will choose to use shared bicycles.	
<i>Willingness to continue to use</i>		
1	I am willing to recommend sharing bikes system to friends and family.	Bhattacharjee Jones (2001)
2	I will also use shared bicycles afterwards.	
3	I will often use shared bicycles afterwards.	

4.3 Sampling

4.3.1 Population

This study focuses on the factors that influence the user's willingness to continue using a shared bicycle system. With the emerging of sharing economy and the improvement of mobile payment technology, shared bicycles system increases the way for users' short distance travel. For many people, shared bicycles system is new technology and a new tool. The survey should select those groups who are more likely to contact new technologies. Therefore, the respondents should have a better understanding of the usage of shared bicycle system. University students have higher academic qualifications and more capable of accepting new technologies. In this research, the target respondents of the study is the students studying in Universiti Utara Malaysia.

4.3.2 Sample size

The sample size measuring the amount of individual samples measured or observed in a survey or experiment (Zhan, 2019). In addition, if large samples are compared with small samples, larger samples provide more reliable results than smaller samples (Krejcie & Morgan, 1970). However, the population target of the study was defined as UUM students. The sample size was taken from the target population of respondents, an estimate of the number of respondents selected from universities, and a questionnaire was randomly distributed among students. The study population included 20,800 students at UUM, and then used a sample size of 128.

4.4 Data Collection Method

The motivation behind the system approach is to grow better measurements. In quantitative research, it is ideal to advance populace target tests (Creswell 2012). The biggest number of members in the examination test will give clear data about the investigation populace. For the most part, there is an information gathering process, which is the fundamental information framework. The information procurement strategy is a significant piece of this examination, and the primary information is utilized as the information obtaining technique. Sakaran(2013) called attention to that the primary information, for example, phone interviews, center gathering interviews, up close and personal meetings, and poll overviews can be finished. For this research, the main data collected by electronic distribution. The questionnaire send in the form of a link to We chat, Whatsapp, Facebook and Instagram.

After the finish of the revision of the survey, the issuance and recuperation of the questionnaire will be authoritatively begun. The survey was dispersed utilizing an e-

questionnaire online through Google Docs. An aggregate of 135 questionnaires were gathered, and after the invalid questionnaires were expelled, 128 questionnaires were acquired.

4.5 Statistical Methods

Subsequent to getting the information by issuing the survey, this examination utilized SPSS20.0 and Smart PLS 3.0 as the measurable programming to investigate the information gathered by the questionnaires in details and confirming the accuracy of the model speculation. The relationship between expectation confirmation, perceived usefulness, satisfaction, commitment, habits, external environment and willingness to continue to use shared bicycles system is also studied. The questionnaire right off the bat depicted the expressive insights, investigated the gender, age, education level, income level of the gathered surveys, and measurements on the utilization of shared bicycle system, including the kinds of shared bicycle system utilized, and so on. Furthermore, besides each question of the questionnaire estimation markers was dissected for dependability and legitimacy running the PLS-SEM technique, and the connection between the factors was investigated once more. The last step is to test the hypotheses figured for the research. The particular investigation strategies for this survey are as per the following:

4.5.1 Statistical analysis -Demographic

Statistic measurable investigation is a regularly utilized systematic technique over the SPSS. It depicts the structure of the review test and the general example. In particular,

this investigation alludes to gathering and arranging the polls of the willingness to continue to use shared bicycle system, including the age of the respondent, education and sample distribution status and percentage.

4.5.2 Descriptive statistics

The collected data were analyzed descriptively through six variables such as maximum and minimum, variance, median, and average to indicate the level of correlation between variables.

4.5.3 Data analysis

The method of information assessment begins from the PLS-SEM model of smart partial minimum structural equation. Data analysis involves Cronbach Alpha and reliability of compounds, CFA is used for validity of convergence and extraction of average differences (AVE) for discriminatory analysis. The final stage was to operate the program PLS-SEM to test the study's hypotheses. Because this research seeks to explore the causal relationship and mediation between prospective factors, the primary assessment technique (Hair, Ringle & Sarstedt, 2011) is the smart partial least square structural equation model (PLS-SEM).

Reliability of a survey (or scale) measurement and is a measure of stability. There are three types of general reliability indicators: stability indicators, equivalence indicators, and internal consistency indicators. Cronbach's alpha will, for the most part, increase as the connections between test objects increase and along these lines is known as the

internal consistency gage for the reliability of test scores (Cronbach, 1951). Since the connections between test objects are enhanced when all things measure a similar development, Cronbach's alpha is widely accepted to demonstrate by implication how many things the solitary uni-dimensional idle construct estimates. Because this examination tries to investigate the causal relationship and intercession between forthcoming elements, the essential strategy of appraisal (Hair, Ringle & Sarstedt, 2011) is brilliant incomplete least squares-auxiliary condition model (PLS-SEM).

Cronbach's alpha coefficient measurement used in this study is based on

Table 4.3:
Cronbach's Alpha Coefficient Evaluation Standard

Cronbach's alpha	Internal consistency
$0.9 \leq \alpha$	Excellent
$0.8 \leq \alpha < 0.9$	Good
$0.7 \leq \alpha < 0.8$	Acceptable
$0.6 \leq \alpha < 0.7$	Questionable
$0.5 \leq \alpha < 0.6$	Poor
$\alpha < 0.5$	Unacceptable

Validity is how much the deliberate normal for the article is reflected by the distinction between the watched qualities, that is, the level of relationship between the deliberate outcome and the outside standard. Legitimacy investigation by and large incorporates develop, basis, and substance legitimacy. This examination chiefly uses factor investigation techniques for legitimacy investigation.

CHAPTER FIVE

DATA ANALYSIS

5.1 Introduction

This chapter uses statistical analysis software SPSS20.0 and Smart PIs3.0 to empirically analysis the sample data, and the analysis results are used to verify the hypotheses raised in this study.

5.2 Response Rate

In this research, a total 135 questionnaires were collected in the main campus of UUM which located in the Sintok, Kedah Darulaman, Malaysia. Of the 135 questionnaires, 7 were invalid questionnaires. These 7 questionnaires were excluded because have not used shared bikes system and all options choose the same answer. A total 128 valid questionnaires were obtained with a valid response rate of 95%.

Table 5.1:
Response Rate of the Questionnaire

	Frequency	Percentage
Returned questionnaires	135	
Returned and usable questionnaires	128	
Returned and excluded questionnaires	7	
Valid response rate		95%

5.3 Basic Information Statistics

5.3.1 Statistical analysis of users' basic information

There are several questions on demographic characteristics of respondents are being asked in this study such as gender, age, education level and monthly income level. The detail of demographic information reflects in Table 5.2.

Table 5.2:
Statistical Table of Basic Information of Samples

Demographics	Categories	Frequency (N=128)	Percentage (%)
Gender	Male	60	46.90%
	Female	68	53.10%
Age	Under 17 years old	1	0.80%
	17-28 years old	67	52.30%
	28-38 years old	54	42.10%
	38-48 years old	6	4.60%
	Above 48 years old	0	0
Education level	Bachelor	70	54.60%
	Mater	49	38.20%
	PhD	9	7.00%
Monthly income	Less than MYR1,000	16	12.50%
	MYR 1000-3000	53	41.40%
	MYR 3001-5000	34	26.60%
	MYR5001-7000	17	13.30%
	MYR 7001-10000	3	2.34%
	Above MYR 10000	5	4%

The total valid questionnaires gathered in the survey is 128. From the total respondents available for data analysis, 60 (47%) of them are male and 68 (53%) are female. About the age of respondents, the result shown that respondents of the age 17-28 years old are the uppermost respondents with 67 (52.3%) respondents; trailed by the age of 28-38 years old with 54 (42.1%) respondents; the age less than 17 years old with 1 (0.8%) respondents; and the age ab38-48 years old with 6 (4.6%) respondents.

For the education background, the most academic qualification is bachelor degree holder with 70 (54.6%); follow by master holder with 49 (38.2%); and the last was PhD degree holder with 9 (7.0%). With respect to the monthly income level of the respondents, 53 (41.4%) of the respondents have monthly income between MYR 1000-3000; 34 (26.6%) of the respondents have the income level between MYR 3001-5000; 17 (13.3%) of the respondents have monthly income between MYR 5001-7000; 16 (12.5%) of the respondents have monthly income less than MYR 1000; 3 (2.34%) of the respondents have the income level between MYR 7001-10000; 5 (4%) of the respondents have the income level above MYR 10000.

5.3.2 Statistical analysis of shared bicycle system usage

For the use of the shared bicycle system type, the most selected is Obike with 84.4% of the respondents. The second most type is Public bike with 32.8% of the respondents. There are 6.3% respondents select Link bike as they used before. There 15.6% of the respondents choose other type of shared bicycle system.

In term of the duration of using shared bicycle system, 12 (9.4%) of the respondent using the shared bicycle system less than 1 month; 50 (39.1%) of the respondents using the shared bicycle system between 1 to 6 month; 38 (29.1%) of the respondents used the shared bicycle system from 7 to 12 month. There are 28 (21.9%) of the respondents use the shared bicycle system more than 1 year.

For the frequency of using shared bicycle system, 61 (47.7%) of the respondent using the shared bicycle system 2-4 times per week; 36 (28.1%) of the respondent using the

shared bicycle system 4-8 times per week. At the same time, there are 11 (8.6%) of the respondents using shared bicycle system more than 7 times per week. The details are as follows:

Characteristic variable	Type	Frequency	Percentage
Type of shared bicycle system	O-bike	108	84.40%
	Public bike	42	32.80%
	Link bike	8	6.30%
	Other	20	15.60%
Duration of using shared bicycle system	Less than 1 month	12	9.40%
	1-6 month	50	39.10%
	7-12 month	38	29.70%
	More than 1 year	28	21.90%
Frequency of using shared bicycle system	1-3 per week	61	47.70%
	4-6 per week	36	28.10%
	More than 7 per week	11	8.60%

Table 5.3:
Shared bicycle system Usage Analysis

5.4 Descriptive Statistics

A descriptive analysis was conducted to describe the overall situation of perceived usefulness, perceived ease of use, compatibility, attitude towards digital wallet use and intention to use digital wallets. Table 5.4 shows the mean, standard deviation, maximum and minimum values of the constructs.

Table 5.4:
Descriptive Statistics

	N	Minimum	Maximum	Mean	Standard deviation	Median
EC	128	1	5	3.773	0.739	3.8
PU	128	1	5	3.698	0.759	3.8
S	128	1	5	3.729	0.782	4
C	128	1	5	3.703	0.818	4
H	128	1	5	3.662	0.869	4
EE	128	1	5	3.508	0.95	3.667
WC	128	1	5	3.664	0.942	3.667

The nature of the factors can be described by means and standard deviation. The mean represents the consistency of the answers for the studied variable, while the standard deviation is calculated to evaluate the variable's magnitude of variation. Table 5.4 shows that the lowest value of the constructs is 1.000 and the highest value is 5.000. In addition, the data shows that the expectation confirmation has the maximum mean value which is 3.773 with the standard deviation 0.739. The lowest mean value is the external environment which is 3.508 with the standard deviation 0.95. Overall, the descriptive statistic shows the respondents tend to exhibit moderate higher levels of expectation with shared bicycle system. The overall mean value range between 3.508 and 3.773, shows that all respondents agree with the construct of expectation confirmation, perceived usefulness, satisfaction, commitment, habits and external environment towards the willingness to continue to use the shared bicycle systems.

5.5 Data Analysis

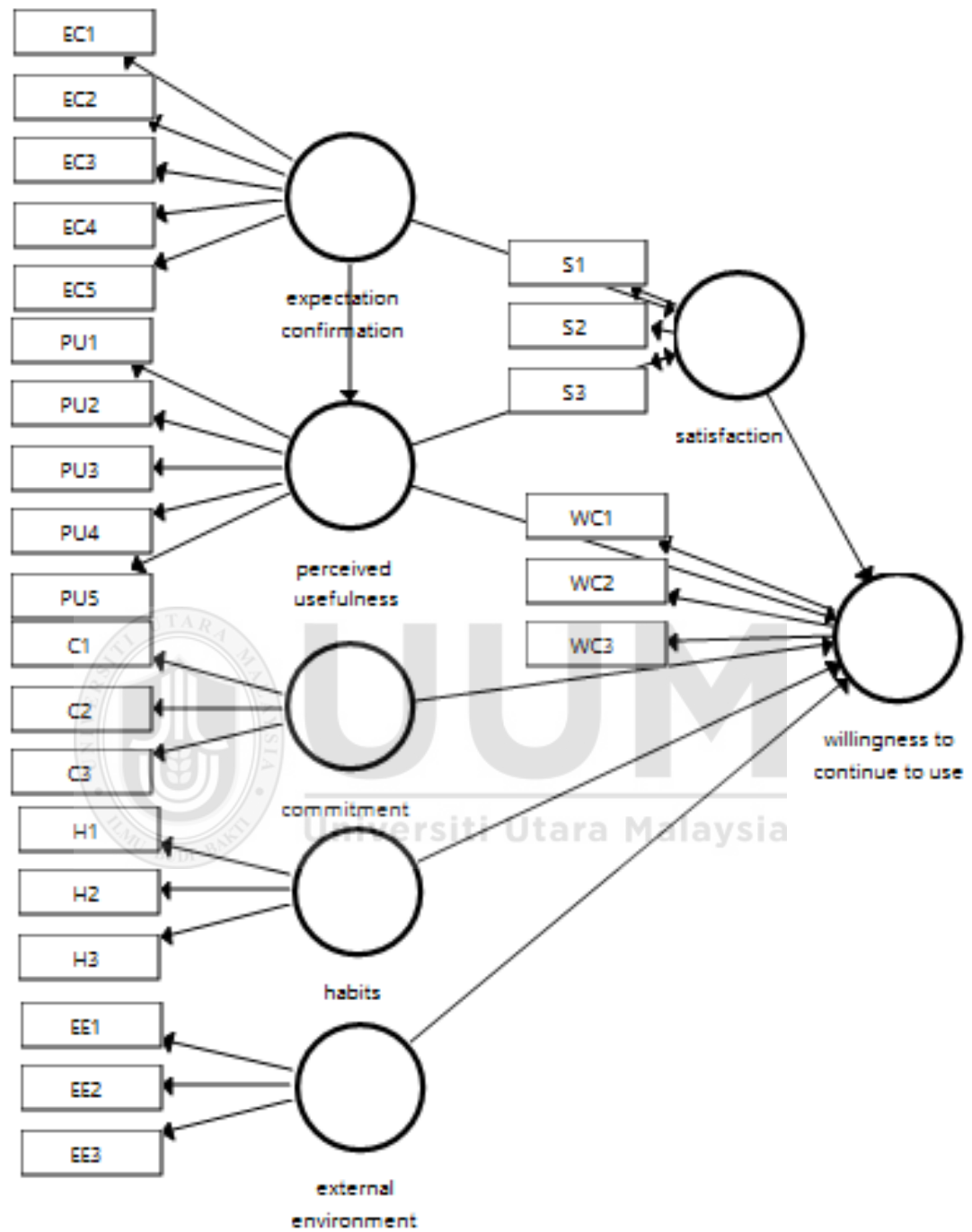
Since the structure has been determined and the appropriate items have been adapted and modified from the instruments used, SPSS is utilized for fundamental examination, particularly for the investigation tests. Furthermore, factors used to ascertain factors

that characterize the user's apparent degree of the subject. What's more, the mean of each term speaking to the structure was determined utilizing SPSS programming. The PLS-SEM path modeling technique method is the main analysis technique method used in this study. This study chose to use PLS-SEM modeling methods because it was quoted by some scientists in cognitive science, advertising and studies in leadership (Hair, Sarstedt, Ringle, & Mena, 2012). First, if multivariate normality and interval estimates are produced, this method is most suitable. The data cannot be conducted in the scale when scientists concentrate on predicting dependent variables. Second, it is possible to use the PLS-SEM parameter to predict the greater strength and orientation of the connection between factors and coefficient of correlation. It also prevents biases in parameter estimation prevalent in regression assessment (Calantone, Graham, & Mintu-Wimsatt, 1998). Third, PLS-SEM offers a strong framework for predicting models with latent variables and simultaneous equation schemes for measuring errors and has minimal sample size demands and typically achieves elevated statistical power rates (Reinartz, Haenlein, & Henseler), 2009).

5.5.1 Research model

The model used in this study includes 25 reflective measurement items for 6 variables. Expectation confirmation, perceived usefulness, commitment, habits and external environment as independent variables, satisfaction as an intermediate variable of confirmation of expectations and perceived usefulness, willingness to continue to be used as a dependent variable.

Figure 5.1:
The Research Model



5.5.2 Assessment of Measurement Model

From previous study, this research evaluating the measurement model' quality from three aspects which are (i) internal consistency reliability, (ii) convergent validity, and (iii) discriminant validity for the reflective and formative construct.

Figure 5.2 depicts The impact of the estimation model on the overall research model on the unwavering quality and legitimacy of the buildings, though the aftereffects of intelligent estimation models are displayed in Figure 5.2.



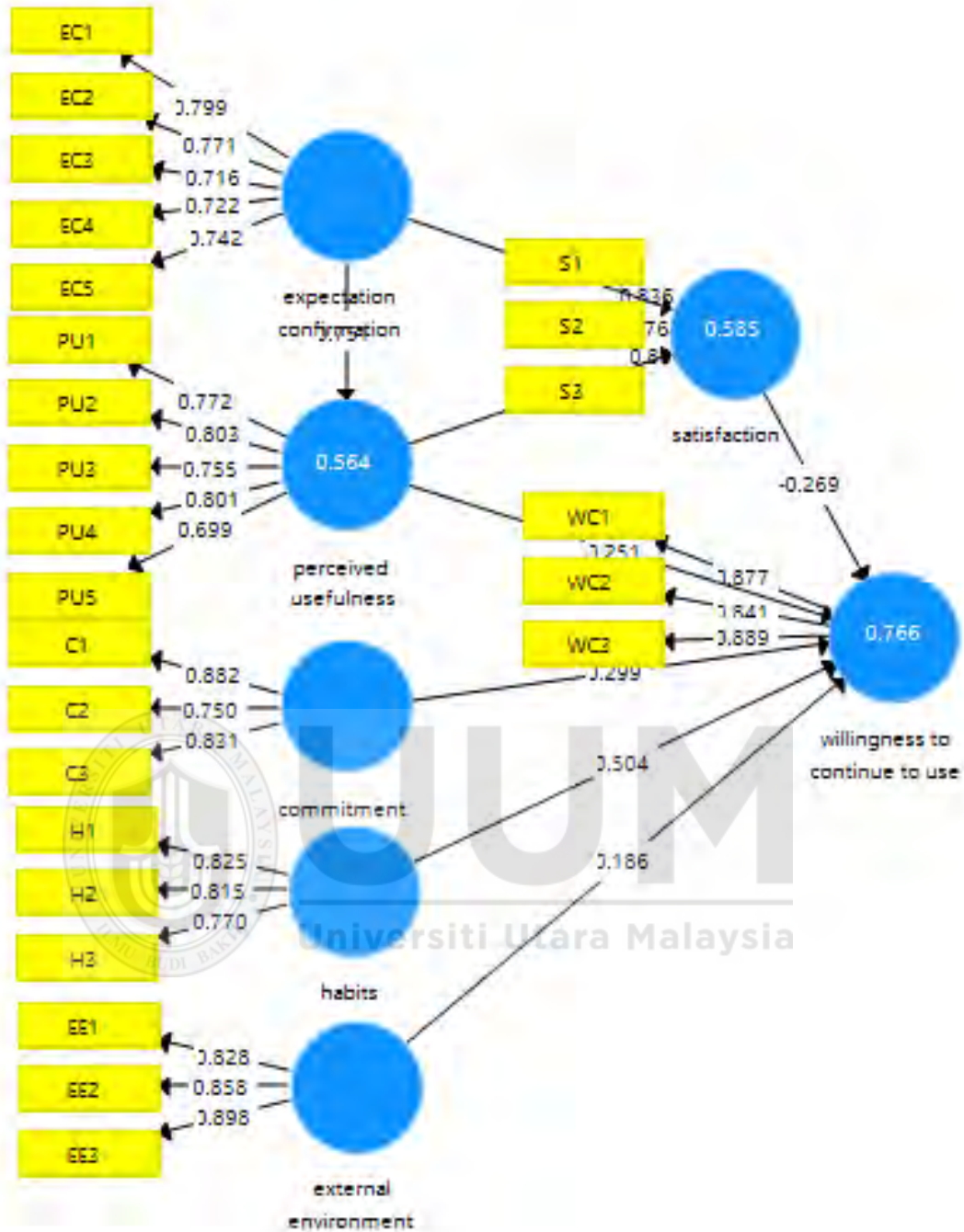


Figure 5.2:
The Measurement Model

Smart PLS presents a way to demonstrate estimates in the Modelling Window as well as content-based reports. There are two kinds of numbers in the PLS-SEM chart: the numbers in the circle and the numbers on the bolt. The first one show the what extent

of the inert variable can be clarified by others factors. The second one is known as path coefficient measure the extent of one variable impact on another variable.

5.5.2.1 Internal Consistency Reliability

Table 5.5
Result of reflective measurement model

Construct	Items	Std, Loading	Cronbach's Alpha	CR	AVE
Commitment	C1	0.882	0.758	0.862	0.676
	C2	0.75			
	C3	0.831			
Expectation confirmation	EC1	0.799	0.806	0.865	0.563
	EC2	0.773			
	EC3	0.718			
	EC4	0.734			
	EC5	0.723			
External environment	EE1	0.828	0.832	0.897	0.743
	EE2	0.858			
	EE3	0.898			
Habits	H1	0.825	0.73	0.845	0.646
	H2	0.815			
	H3	0.77			
Perceived usefulness	PU1	0.774	0.825	0.877	0.588
	PU2	0.807			
	PU3	0.75			
	PU4	0.806			
	PU5	0.691			
Satisfaction	S1	0.836	0.724	0.844	0.644
	S2	0.764			
	S3	0.806			
Willingness to continue to use	WC1	0.877	0.838	0.902	0.755
	WC2	0.841			
	WC3	0.889			

Std= Standardized; CR= Composite Reliability; AVE= Average Variance Extracted

Internal consistency of reliability indicates how much a comparable thought is evaluated on a particular (sub) scale (Bijttebier et al., 2000). Cronbach's alpha coefficient and composite faithful quality coefficient are the most commonly used estimators of the internal consistency reliability of the instrument in definitive research (Bacon, Sauer, and Young, 1995). In this examination, composite relentless quality coefficient was selected locate the internal consistency constancy of measures adjusted.

Two fundamental reasons supported the utilization of composite dependability coefficient. Right off the bat, composite unwavering quality coefficient gives an extensively less uneven measure of constancy than Cronbach's alpha coefficient in light of the fact that the later acknowledge all things contribute also to its create without pondering the genuine responsibility of individual loadings. (Barclay, Higgins, and Thompson, 1995) Likewise, The composite enduring quality thinks about that pointers have different loadings and can be deciphered correspondingly as Cronbach's α (that is, paying little heed to which explicit reliability coefficient is used, an inside consistency trustworthiness regard above 0.70 is seen as satisfactory for an adequate model, while a motivator underneath 0.60 shows a nonattendance of steadfast quality). Cronbach's alpha may over or under-gauge the scale unwavering quality. In any case, the understanding of inward consistency unwavering quality utilizing composite dependability coefficient depended on the standard guideline given by Bagozzi and Yi (1988) just as Hair et al (2011), who propose that the composite unwavering quality coefficient ought to be in any event 0.70 or more. As appeared in Table 5.5, the composite dependability coefficient of each dormant develops went from 0.828 to 0.858, with each surpassing the base satisfactory degree of 0.70, proposing sufficient

inside consistency unwavering quality of the measures utilized in the investigation (Yi, 1988).

5.5.2.2 Convergent Validity

Convergent validity alludes to the degree to which things really speak to the proposed dormant build and without a doubt correspond with different proportions of the equivalent inactive develop (Hair et al., 2011). Merged legitimacy was evaluated by analyzing the AVE of each idle develop, as recommended by Fornell and Larcker (1981). To accomplish sufficient focalized legitimacy, Jaw (1998) suggests that the AVE of each inert develop ought to be 0.50 or more. Following Jaw (1998), the AVE esteems in Table 5.5 showed high loadings (>0.50) on their separate develops, demonstrating satisfactory focalized legitimacy.

5.5.2.3 Discriminant Validity

Discriminant validity alludes to the degree to which a specific inactive develop is not quite the same as other dormant builds (Duarte and Raposo, 2010). In the present investigation, discriminant legitimacy was learned utilizing AVE, as proposed by Fornell and Larcker (1981). This was accomplished by looking at the relationships among the idle builds with square underlying foundations of AVE (Fornell and Larcker, 1981). Furthermore, discriminant legitimacy was resolved after Jaw's (1998) rule by contrasting the pointer loadings and other intelligent markers in the cross loadings table. To begin with, Fornell and Larcker (1981) suggest using AVE with a score of 0.50 or more as a normal guideline for evaluating discriminant validity.

Fornell and Larcker (1981) further suggest that the square base of the AVE should be more prominent than the interactions between idle develops in order to achieve adequate discriminating validity. As shown in Table 5.5, the estimations of the AVE extend somewhere in the range of 0.500 and 0.549, proposing worthy qualities.

In Table 5.6, the connections among the idle develops were contrasted and the square base of the normal differences removed (values in striking face). Table 5.6 likewise demonstrates that the square base of the normal differences removed were all more prominent than the connections among inactive builds, proposing satisfactory discriminant legitimacy (Fornell and Larcker, 1981).

Table 5.6:
Latent Variable Correlations and Square Roots of AVE

	C	EC	EE	H	PU	S	WC
C	0.822						
EC	0.594	0.751					
EE	0.619	0.541	0.862				
H	0.579	0.713	0.524	0.804			
PU	0.788	0.746	0.575	0.731	0.767		
S	0.576	0.720	0.663	0.699	0.714	0.803	
WC	0.749	0.670	0.601	0.769	0.771	0.558	0.869

Discriminating validity can be determined by contrasting pointer loadings and cross-loadings (Jawline, 1998). In order to achieve sufficient discriminatory legitimacy, Jaw (1998) recommends that all marker loadings should be higher than cross-loadings. Table 5.7 contrasts with pointer loads and other smart markers. All marker loadings were more prominent than cross loadings, proposing satisfactory discriminatory legitimacy for further examination.

Table 5.7:
Cross Loading

	C	EC	EE	H	PU	S	WC
C1	0.882	0.55	0.639	0.47	0.655	0.517	0.648
C2	0.750	0.513	0.407	0.494	0.604	0.385	0.624
C3	0.831	0.412	0.47	0.461	0.69	0.518	0.568
EC1	0.476	0.799	0.527	0.521	0.56	0.579	0.458
EC2	0.415	0.771	0.334	0.604	0.619	0.574	0.576
EC3	0.383	0.716	0.315	0.492	0.477	0.48	0.411
EC4	0.342	0.722	0.266	0.562	0.527	0.579	0.476
EC5	0.646	0.742	0.614	0.483	0.623	0.47	0.599
EE1	0.412	0.456	0.828	0.394	0.387	0.59	0.326
EE2	0.501	0.467	0.858	0.54	0.516	0.656	0.55
EE3	0.638	0.497	0.898	0.41	0.547	0.495	0.603
H1	0.484	0.601	0.406	0.825	0.669	0.511	0.715
H2	0.49	0.566	0.442	0.815	0.564	0.564	0.6
H3	0.415	0.545	0.423	0.770	0.5	0.638	0.511
PU1	0.612	0.53	0.419	0.483	0.772	0.539	0.534
PU2	0.68	0.609	0.49	0.628	0.803	0.542	0.719
PU3	0.652	0.549	0.38	0.459	0.755	0.444	0.549
PU4	0.512	0.601	0.388	0.736	0.801	0.62	0.667
PU5	0.585	0.584	0.536	0.445	0.699	0.583	0.449
S1	0.439	0.621	0.524	0.544	0.596	0.836	0.438
S2	0.474	0.553	0.539	0.495	0.501	0.764	0.375
S3	0.476	0.554	0.537	0.636	0.613	0.806	0.52

Table 5.7: (Continued)

WC1	0.6	0.555	0.504	0.693	0.675	0.475	0.877
WC2	0.689	0.554	0.455	0.619	0.633	0.417	0.841
WC3	0.665	0.649	0.606	0.691	0.696	0.56	0.889

C=Commitment, EC=Expectation confirmation, EE=External

environment, H=Habits

PU=Perceived usefulness, S=Satisfaction, WC= Willingness

to continue to use



5.5.3 Assessment of Significance of the Structural Model

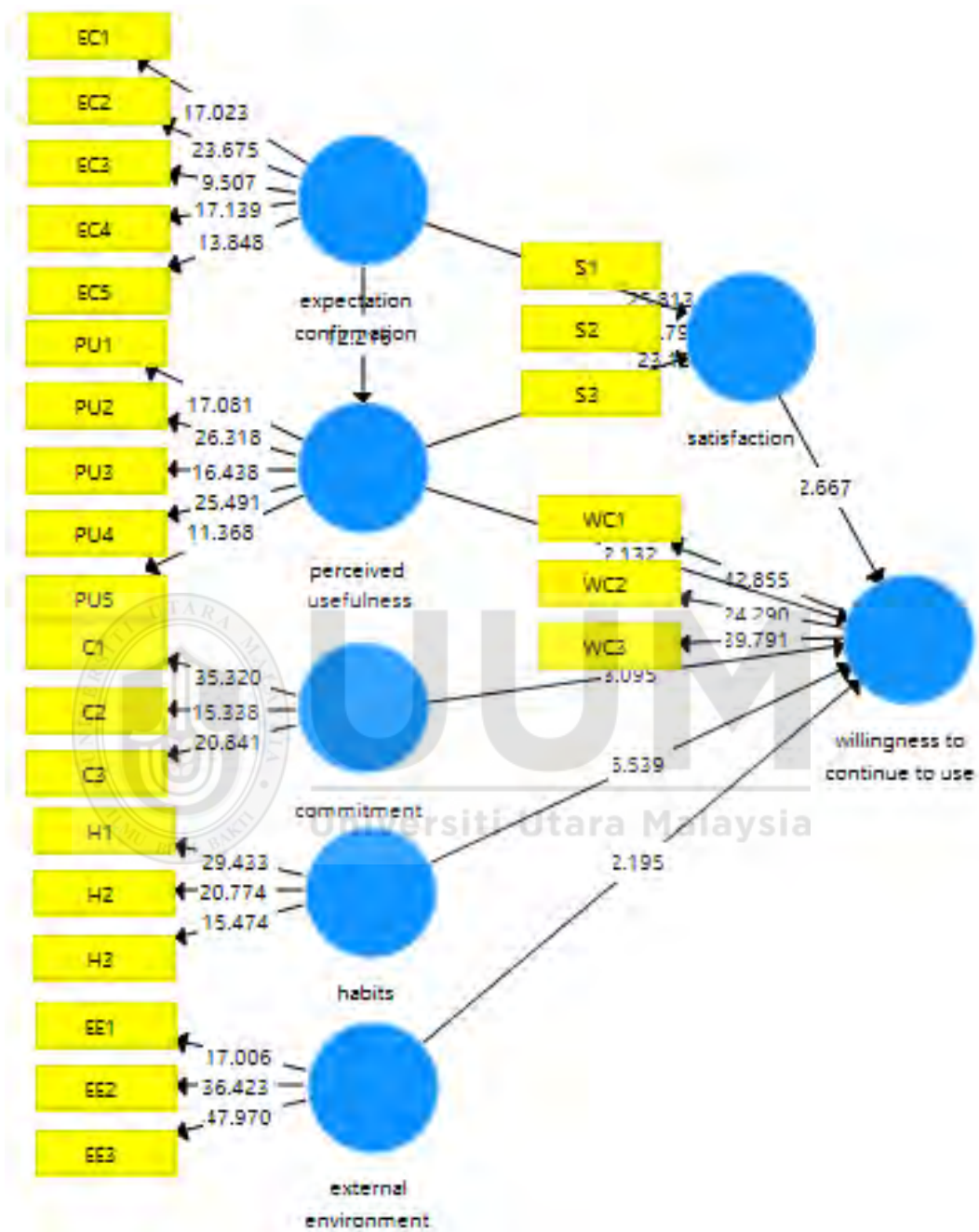


Figure 5.3:
The Structural Model

This study also applied the standard bootstrapping procedure with 5000 bootstrap samples and 128 cases to assess the significance of the coefficients of the path (Hair

et al., 2011, 2012 ; Henseler et al., 2009). Therefore, Figure 5.3 and Table 5.8 demonstrate the projections for the complete structural model, which contains the variable of the mediator.

Table 5.8:
Result of Structural Model

	Result	β	Mean	Standard Deviation	T Statistics	P Values
H1	EC -> PU	0.751	0.747	0.064	11.741	0.000
H2	EC -> S	0.423	0.409	0.112	3.782	0.000
H3	PU -> S	0.398	0.409	0.112	3.545	0.000
H4	PU -> WC	0.257	0.257	0.108	2.376	0.018
H5	S -> WC	0.269	0.270	0.114	2.373	0.018
H6	C -> WC	0.297	0.292	0.088	3.381	0.001
H7	H -> WC	0.500	0.506	0.073	6.900	0.000
H8	EE -> WC	0.187	0.183	0.091	2.063	0.040

Endogenous latent variable satisfaction toward willingness to continue to use shared bicycle system: $R^2 = 0.589$ and willingness to continue to use shared bicycle system $R^2 = 0.767$ from figure 5.2. Falk and Miller (1992) proposed that the minimum level for R^2 to be accepted is equal to or greater than 0.10. According to Wegner (2011), R^2 values for the assessment of endogenous latent variables are as follows:

- When R^2 lies closer to 0 (or 0%), it considered as weak level.
- When R^2 lies closer with center 50 (50%), it considered as moderate level.
- When R^2 lies closer to 1 (or 100%), it considered as strong level.

The tested model shows R^2 value is 0.589, which can be explained that the expectation confirmation and perceived usefulness able to be explained 58.9% of the variability in the users' satisfaction after using shared bicycle system. R^2 value is 0.767 which can be interpreted that the independent variables affect 76.7% of the variability in the willingness to continue to use shared bicycle systems.

Hypothesis 1 anticipated that the expectation of the user to share the bicycle would have a positive impact on the perceived utility of the user. Result in Table 5.8 shown that there is a significant positive relationship between users' expectation and perceived usefulness ($\beta=0.423$, $t=11.741$, $p=0.000$). This result supporting the statement of Hypothesis 1.

Hypothesis 2 predicted that user's expectation of sharing the bicycle positively affects user satisfaction. Result in Table 5.8 reveals a significant positive relationship between users' expectation and perceived usefulness ($\beta=0.751$, $t=3.545$, $p=0.000$). This result supporting previous statement in Hypothesis 2.

Hypothesis 3 predicted that user's perceived usefulness of shared bicycles positively affects user satisfaction. Result in Table 5.8 reveals a significant positive relationship between users' perceived usefulness and users' satisfaction ($\beta=0.398$, $t=3.781$, $p=0.000$), supporting Hypothesis 3.

Hypothesis 4 predicted that the perceived use of shared bicycles by the user has a positive effect on the user's willingness to continue to use them. Result in Table 5.8 reveals a significant positive relationship between users' perceived usefulness and users' willingness to continue to use shared bicycle system ($\beta=0.257$, $t=2.376$, $p=0.018$), supporting Hypothesis 4.

Hypothesis 5 anticipated that the satisfaction of customers with shared bicycles would have a positive effect on the readiness of users to continue using them. Result in Table 5.8 shows a important beneficial connection between the satisfaction of customers and the readiness of users to continue using the shared bicycle system ($\beta=0.269$, $t=2.373$, $p=0.018$), supporting Hypothesis 5.

Hypothesis 6 predicted that the user's commitment to sharing bicycles platform is positively affecting the user's willingness to continue using. Result in Table 5.8 shows a significant positive relationship between user commitment and user willingness to continue using a shared bicycle system. ($\beta=0.297$, $t=3.381$, $p=0.001$). This result supporting Hypothesis 6.

Hypothesis 7 predicted that the user's habit of sharing bicycles had a positive effect on the user's willingness to continue using bicycles. Result in Table 5.8 shows a significant positive relationship between the user's habits of usefulness and the user's willingness to continue using a shared bicycle system. ($\beta=0.500$, $t=6.900$, $p=0.000$), supporting Hypothesis 7.

Hypothesis 8 predicted that the external environment in which the user uses the shared bicycle positively affects the user's willingness to continue using. A significant positive relationship can be seen in Table 5.8 between external environment and users' willingness to continue to use shared bicycle system ($\beta=0.187$, $t=2.063$, $p=0.040$), supporting Hypothesis 8.

5.6 Summary

This chapter discusses the data analysis process from data collection until analysis of the findings. SPSS and PLS SEM used for analysing the findings of the study. SPSS used for the data screening and cleaning as well as demographic analysis. PLS SEM used for the measurement model assessment and structure model assessment. Through the empirical research on sample data, it can be seen that the users' willingness to continue to use the shared bicycle most affected by the habits. The user feels the usefulness and convenience of the shared bicycle to the user during the use of the shared bicycle, the user will tend to continue to use. As the seasons and weather change, the willingness of users to continue to use shared bicycles will also change. For example, in the rainy, more users tend to choose other modes of transportation such as cars or buses, thus affecting the frequency of users' use of shared bicycles. Commitment and satisfaction of users have a significant impact on the user's willingness to continue to use, so companies should abide by the user's commitment, improve user satisfaction, and make users expect to maintain long-term relationships with the company.

Table 5.9:

Summary of Hypotheses Findings

	Statement	Finding
H1	The user's expectation of sharing the bicycle positively affects the user's perceived usefulness.	Supported
H2	The user's expectation of sharing the bicycle positively affects user satisfaction.	Supported
H3	User's perceived usefulness of shared bicycles positively affects user satisfaction.	Supported
H4	The perceived usefulness of the user to the shared bicycle positively affects the user's willingness to continue using.	Supported
H5	User satisfaction with shared bicycles positively affects users' willingness to continue to use.	Supported
H6	The user's commitment to sharing bicycles platform is positively affecting the user's willingness to continue using.	Supported
H7	The user's habit of sharing bicycles positively affects the user's willingness to continue using.	Supported
H8	The external environment in which the user uses the shared bicycle positively affects the user's willingness to continue using.	Supported

CHAPTER SIX

CONCLUSION AND RECOMMENDATION

6.1 Introduction

According to the conclusions drawn from the above chapters, combined with the status of the shared bicycle industry, this chapter proposes countermeasures and suggestions for the future development trend of shared bicycles from five aspects: habit, perceived usefulness, external environment, user commitment and satisfaction. The discussions will also be presented in the line to the order of the research objectives in chapter one.

6.2 Summary of the study

The main aim of this study is to consider the influential factors in the willingness of users to continue using a shared bicycle system. On the basis of the confirmation model of the expectations of the information system and the theory of social cognition, combined with TAM, a model will be developed that affects the willingness of users to continue to use the shared bicycle system.

6.3 Discussion

Empirical evidence from this study shows a significant positive relationship between users' habits usefulness and users' willingness to continue to use shared bicycle system

($\beta=0.500$, $t=6.900$, $p=0.000$), supporting Hypothesis 7. Shared bicycle is currently in the critical period of the development, cultivating users' riding habits is crucial to promoting the sustainable development of enterprises. It is recommended that shared bicycle companies cultivate user habits. For example, improve the exposure of bicycles. Cycling habits are the unconscious use of shared bicycles when users travel. To make the cycling conduct of the user more consistent, the difficulty of acquiring the car must be taken into consideration. If a shared bicycle cannot be found readily by the customer, the habit loop will be terminated. Sharing bicycle businesses can therefore choose to focus on highly likely travel destinations such as bus stations, subways, colleges, and residential quarters. The phenomenon

To make the cycling conduct of the user more consistent, the difficulty of acquiring the car must be taken into consideration. If a shared bicycle can not be found readily by the customer, the habit loop will be terminated. Therefore, sharing bicycle businesses can therefore choose to focus on highly likely travel destinations such as bus stations, subways, colleges, and residential quarters. The more mutual exposure of the bike, the user will use the shared bicycle unconsciously, cultivating user practices.

Result in Table 5.8 reveals a significant positive relationship between users' perceived usefulness and users' willingness to continue to use shared bicycle system. The perceived usefulness of the user to the shared bicycle will directly affect the subsequent willingness to use. Companies should improve the perceived usefulness of users. Firstly, the APP system should be optimized. The company should do a nice job of user needs analysis in the process of subsequent system optimization, coupled with user feedback, design a lovely, easy, clear and functional APP interface that is easy

for users to operate rapidly. Secondly, improve the experience of user travel. Companies can create smart platforms, mine user information, evaluate user preferences correctly, deploy cars for particular circumstances, push custom services, satisfy user needs, and improve user travel experience.

Result in Table 5.8 reveals a significant positive relationship between external environment and users' willingness to continue to use shared bicycle system. The external environment has an important impact on users' continuous use of Shared bikes system. The external environment mainly includes nature environment and social environment. Different natural and social environments will affect the frequency of users' cycling. In order to increase customer' willingness to continue to use shared bikes, companies could: First, increase publicity efforts. Using multimedia mode to hold environmental protection, fitness, public welfare as the theme of promotional activities, so that more users understand the sharing bicycle system. Second, different types and layouts of bicycles should be adopted for different regions and different climatic conditions. In bad weather, companies should pay attention to the maintenance of vehicles. And also companies could equip emergency equipment such as raincoats and umbrella brackets for the purpose of improve the frequency of users using the shared bicycle system.

From the result, the relationship between users' commitment and users' willingness to continue to use shared bicycle system is positive significantly. User commitment is the key to the development of shared bicycle companies. There is a two-way relationship between the enterprise and the user's commitment. The company's commitment to the user includes vehicle safety, deposit security, and accurate vehicle location

information. The user's commitment to the company is the desire to establish long-term mutually beneficial relationships with them. Therefore, companies should create more comfortable and better models, and enhance the speed and quality of product upgrades. Secondly, companies can consider working with insurance companies to establish a car insurance mechanism to ensure the safety of vehicles and users. Finally, companies can provide accurate vehicle location information through GPS navigation, so that users can keep abreast of the bicycle location.

Result in Table 5.8 reveals a significant positive relationship between users' satisfaction and users' willingness to continue to use shared bicycle system supporting Hypothesis 5. When enterprises provide services to users, they can start to improve user satisfaction from the following aspects and truly solve the "last mile" problem. First, provide a full range of services. Enterprises continue to realize innovation through technology and improve the vehicle's use frequency and extend the life of the vehicle. Second, strengthen bicycle supervision. In view of the current phenomenon of shared bicycles being chaotic and damaged. Companies should take the responsible to obligated to improve the management of bicycle parking area.

6.4 Implication of the study

6.4.1 Theoretical Implication

The theoretical implication of this research is that the time shared bicycles system emerging as a representative of sharing economy still very short. Previous studies are more concerned about the business model, problem countermeasures and user

experience of sharing bicycles while studies on the willingness of users to keep on using shared bicycles system are moderately deficient. By incorporating the technology acceptance model, expectation confirmation theory of ongoing use of information systems and social cognitive theory, this study performs empirical research on the readiness to continue using shared bicycle system to enrich the theoretical study on the readiness to continue to use.

6.4.2 Practical Implication

The success of the time-sharing leasing model concerns not only the first use by users, but also whether users will continue to choose after the first use. For now, the issues of decreasing amount of users and market shrinking is facing by shared bike business. It is necessary to explore how to keep existing users for the development of bicycles in practical. By constructing a factor model that influences the willingness of shared bicycle users to continue to use, This paper provides guidance for the operators of shared bicycles and their promoters in the specific marketing promotion process.

6.5 Limitations and suggestions

This paper analysis the factors that influence the willingness of users to continue using shared bicycles, but there are still some limitations in the study process that need to be explored in depth.

In order to make the research more objective and guiding, it is necessary to expand the sample capacity. Through the collection of questionnaire survey, 128 valid sample

data gathered, the sample size was small. The questionnaire is distributed mainly through online method, there is sampling error. In addition, in term of age, the sample data in this study is mainly concentrated in people who were born between 1980 to 2000.

Issues investigated in this study is the users' willingness of continue to use shared bicycle. The final scale designed based on the mature classic scales combined with characteristics of sharing bicycle and its industry. But the validity about part of the scale is low. In future research, as the sample expands and a deeper understanding of the current state of the shared bicycle industry, it is hoped that a more mature scale that is suitable for sharing bicycles or even extrapolating to other shared products or services can be explored.



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APPENDIX



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Influential Factors of Continuing usage of Bicycle Sharing System among UUM Students

Dear Respectable Sir, Madam,

You are cordially invited to participate in my research project as part of the requirement of MSc. International Accounting. This research project is focuses on the factors influencing UUM students' willingness to continue to use shared bicycle system. The shared bicycle system refers to the bicycle sharing platform such as Obike, Public bile and Link bike which can enable users take use of the bicycles by ordering with mobile terminal. The survey is only used for academic purposes. Please answer all items.

Information obtained from this survey WILL BE TREATED STRICTLY CONFIDENTIAL and will be used solely for academic purposes. Kindly note that completing the survey takes no longer than 15 minutes. Your voluntariness, sincerity, and truthfulness in answering the survey completely are fully appreciated.

Yours Sincerely

Wang Chen
MSc (International Accounting)
Othman Yeop Graduate School (OYA)
Universiti Utara Malaysia (UUM)
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Phone No: 010-9689820

Section A:

Please tick (/) against the appropriate response or answer the questions with the appropriate answers.

1. Gender: Male Female
2. Age: Under 20 years old 20-29 years old 30-39 years old 40-49 years old Above 50 years old
3. Educational level: Bachelor Master PhD Other, please state _____
4. Career: Student Staff Other, please state _____
5. Monthly income: Less than MYR 1,000 MYR 1,000-2,999 MYR 3,000-4,999 MYR 5,000-8,000 Above MYR 8,000

Section B: Basic information of using bicycle sharing system

The following section lists some questions about the usage of shared bicycle system. Please tick the appropriate answers.

1. Have you used bicycle sharing system before?
 Yes No
2. The shared bicycle system you use often is: (multiple choice)
 O-bike Link Bikes Public Bike share Other _____
3. How long you have been using bicycle sharing system?
 less than 1 month 1-6 month 7-12 month 1 year or more Never
4. The frequency of your shared bike is: (single choice)
 2-4 times a week 6-8 times a week 8 times a week Use every day Never

Section C:

The following section lists some questions about your opinion regarding the use of blockchain technology. Please state the importance level for each of the following statement, and 1-5 represent the importance level from low to high. Please objectively evaluate the following statements.

1= strongly disagree; 2= disagree; 3=neither disagree nor agree 4= agree; 5= strongly agree

	1	2	3	4	5
1. Using bicycle sharing system can make my travel more convenient.					
2. Using bicycle sharing system can improve my travel experience.					
3. Use bicycle sharing system can help me achieve physical exercise purpose.					
4. The mobile application of bicycle sharing system is easy to understand.					
5. Overall, the emergence of bicycle sharing system is very useful for my short distance travel.					
6. Bicycle sharing system enriched my demand for short-distance travel					
7. Bicycle sharing system inspired my riding bike feelings.					
8. Bicycle sharing system really plays a role in physical fitness.					

9. The shared bicycle system application, easy to operate, good experience.					
10. Overall, using bicycle sharing system, I met my original expectations.					
11. I am very satisfied with the use of shared bicycles system.					
12. Using shared bike system makes me feel very happy					
13. Using shared bicycles makes me feel very happy.					
14. Shared bicycle platform has good development prospects, I hope to use for a long time.					
15. It is economically cost-effective to use shared bicycles system or participate in shared cycling platforms, and I expect to be able to use them for a long time.					
16. My relationship with the shared cycling platform is mutually beneficial and I expect to be able to use it for a long time.					
17. For me, using a shared bike system is a natural thing.					
18. When I travel short distances, I will unconsciously think of using shared bicycles system.					
19. I am accustomed to using shared bicycles when the travel distance is between walking and taxiing.					

20. Regardless of the weather, I will choose to use shared bicycles.					
21. Regardless of the season, I will choose to use shared bicycles.					
22. Regardless of the traffic congestion, I will choose to use shared bicycles.					
23. I am willing to recommend sharing bikes system to friends and family.					
24. I will also use shared bicycles afterwards.					
25. I will often use shared bicycles afterwards.					



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