

**HOW PUDU ROBOTICS PENETRATE HOSPITALITY IN
THAILAND**



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HOW PUDU ROBOTICS PENETRATE HOSPITALITY IN THAILAND

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ABSTRACT

Nowadays, service robots become a major role to help businesses increase productivity, reduce costs, less contact, and deliver customer new experience. Pudu Robotics is one of service robot provider from China who strongly focuses on market expanding into hospitality in Thailand. Many hotels have adopted robots to clean the rooms and helping room service operations. Not only hotel staffs need to adept to work with innovation, but also hotel guests are excited to take services from these things. While service robots seems suitable for hotel to use, hoteliers are still unfamiliar with technology operation and unsure whether product can be the right answer to purchase among less tourisms affected by Covid-19 pandemic. The study identifies the main challenges, key factors, and purchase intentions of hotels. The result will help Pudu Robotics or similar robotic firms to understand hotels' needs as well as how to implement marketing strategy to penetrate hospitality market in Thailand

KEY WORDS: Service robots / Hospitality / Diffusion of innovation / Marketing mix
/ Purchase intention

43 pages

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CHAPTER I

INTRODUCTION

1.1 Introduction

Pudu Robotics, starting from a startup company founded by Felix Zhang in 2016. The headquartered in Shenzhen, China. The company focuses on researching, creating outstanding design, developing robotic phototype, producing a commercial service robot, and distributing to sixty countries across the world. Company's visions aim to build robots to boost human productivity and well-being in daily life. Pudu Robotic produces robot based on artificial intelligence technology created for human urges in routine jobs. With this reason, at present robotics technology is becoming widely used in service sectors, such as, restaurants, hospital, industrial, and hospitality industry. It supports businesses to improve their work efficiency and productivity, increases customer satisfaction, and helps to reduce labor costs in long-term investment (Ieva, et al., 2021). Apart from this, the innovation also created new experience by interacting with human-touch and work collaborate with operational staffs in various activities. The company provides five service robot models with difference appearance called PuduBot, BellaBot, KettyBot, HolaBot, and FlashBot with different core functions and various its features. For example, multi-tables serving with one touch, cruise serving mode, birthday service mode, escort mode, ability to show advertising photo or video on large eighteen-point five inches display screen, smart touch interaction customer interaction, and artificial intelligence local voice interaction. From mentioned special features, the robot provides new service experience, uniqueness, attractiveness, and benefits to both restaurant business as well as end-user who dines in the place. It changes the new way of servicing and how people work. In Thailand, Pudu Robotics has started selling to restaurants segment as a primary customer since 2019. The business has been growing and keep increasing number of potential customers in every year. With this business opportunity and company commitment "Spirit of Invention" developing the efficiency of human

production and living, the company addresses to expand market to hospitality industry in Thailand as a majority plan for 2022.

Using service robot is becoming a trend in hospitality today. Many hotels have adopted robot to clean the rooms and helping room service operations. Not only hotel staffs need to adept to work with robots, but also hotel guests are excited to take services from these things. They think technology are here to assure utmost safety, hygiene, and comfort among Covid-19 pandemic situation (Economicstimes, 2020). Robotics technology can provide useful features and used in hotels, for example, delivery food to the guest's room, cleaning the floors, standby at front desk, and help the guest to self-check in. The robots can replace human for doing simple tasks and has potential to serve full-service automation to hotel operation. Due to Covid-19, robots also support contactless serving that is the highest priority hotels' safety concern by minimizing human touch when provide the service (DYLAN, 2020).

While the innovation seems suitable for hotel to use, hotel's management and staffs are still unfamiliar with robotic operation and unsure whether product can be the right answer to purchase among less tourisms affected by Covid-19, especially in Thailand. In this study, the main challenges, key factors, and purchase intentions of hotels are identified. The result will help Pudu Robotics or similar robotic firms to understand hotels' needs as well as how to implement marketing strategy to penetrate hospitality market in Thailand. The research questions are

1. How hotels adapt service robot in the early stages?
2. In term of marketing, how can Pudu Robotics penetrate the hospitality industry?

The research structures into five chapters. Beginning with research introduction, company overview and the important of commercial service robot for hospitality. Second chapter is explaining core theories and related concept to be used to analyze how hotel adept robotic technology. The study uses key elements of diffusion innovation together with marketing mix (4P) as core theories to describe research output. The third chapter explains methodological steps, research data collection, interviewees, research interview questions and reason why the method match and effective. Chapter four is describing research output by clarify content

each of theories and finding found during researching. Lastly, fifth chapter concludes the result and providing suggestion or recommendation for the future studying.



CHAPTER II

LITERATURE REVIEW

2.1 Service Robot in Hospitality

Commercial service robots represent a new way of workers interaction and provide novel service experience for hotelier to server the guests. In fact, a service robot was defined as “that performs useful tasks for humans or equipment excluding industrial automation applications” by The International Organization for Standardization (International Federation of Robotics, 2021). The service robots required a degree of performance and ability based on tasks and sensing, without human interference. Another definition is service robots need to have a smart system and programmable tools that be able to think and benefit to humans’ life (Ana, et al., 2020). The major robotics functions will be communicated, deliver service, and interact service users.

In term of user’s expectation and acceptance was defined as three core dimensions which are functional, social-emotional dimensions, and relational dimension. First, functional dimensions are related to the degree of user’s intention for using a new technology that based on their understanding, assessment of utility, how easy to use it. Second is social-emotional dimension. User will accept the robots depends on their interlinked with their technology perception, social interactivity that user concerns about friendly design, not imitate the human performance. And social presence, user identifies how well robot works based on how robot takes care tasks with smooth situation. Third is relational dimension that robots must provide trust and build personal connection between robot itself and human (Valentina, et al., 2021).

Artificial intelligence and robotic are important to hospitality today because the technology can improve business operations, for instance, implementing self-service kiosks or self-check-in and check-out without front hotel staffs, increase, competitive advantage, also managing guests and employees (João, et al., 2020).

Service robots expects to perform in various of works, delivery service, cleaning, and taking charge of security matters (Ieva, et al., 2021).

2.2 Innovation and Diffusion of Innovation

The definition of innovation is defined as a new idea or new things for an individual adept to use (Karol, 2013).

The innovation is a newness that is the first time of discovery, developing, or experience that a person found it. Because innovation is a new methods or production, there are five type steps to implement it to the market are launching a new product, new market that never reach an innovative product before, creating by a new raw material, create a new business structure or reducing monopolist of competitor in the market (Kotsemir & Abroskin, 2013). In order to launch an innovation, it needs to focus on how well user can perceive the important of a new thing. Attributes of innovations and rate of adoption will help to clarify the user's adoption, their experience, and perception that they have for innovation launching.

2.3 Attributes of Innovations and Their Rate of Adoption

The theory related to the speed of the individual in society can adopt an innovation and help us to predict its adoption explained by five attributes: the following elements that each of the elements are interrelated with the other four aspects but different concepts. All these elements are crucially important perceptions by individual behavior, the ease of new product or service introduced to a person or how fast a person can adopt it in test markets and trial period.

Relative advantage is a degree of an individual perceived innovation is better than existing ideas. Economic **profitability and successful technology** support product's price down that leads to diffusion of innovation increase, reducing cost and high profitable ideas. The **individual's motivation** also impacts the rate of adoption that a person perceives as an innovation required for gaining social status (Rogers, 2003). Not only motivation, but also **functional utility, function, durability** that drive a person to accept and purchase a new thing.

Proposition 1. Positive and negative relative advantage for hotel using a service robot in economic profitability and socially relevant contribution of innovation adoption.

Compatibility is a degree of an individual's perceived innovation that is consistent or **related to experience in the past, existing value, and response to needs of the adopter**. To help innovation speed its adoption rate, an individual's old ideas need to link with the new idea smoothly because they will use the past-experience to consider how useful a new product can perform. Needs of innovation is the key to successful adoption, even though a person does not recognize their needs until they are aware of its new benefit or better reflection change.

Proposition 2. Related past-experience and needs for hotel using a service robot relevant contribution of innovation adoption.

Complexity is a degree of an individual's perception of how **difficult** it is to use and understand a new idea. Innovative products may provide a variety of uses such as easy, normal, or most difficult to users that can **negatively impact negatively** related to rate of adoption.

Proposition 3. Relatively difficult to understand and use a service robot relevant contribution of innovation adoption.

Trialability is a degree of an individual's perception of experimentation of a new idea or product. The earlier demonstration or trialability of a new product helps an individual to be confident and raise the rate of adoption.

Proposition 4. Service robot experimentation relevant contribution of innovation adoption.

Observability is a degree of an individual's vision to a new idea or how a person views and communicates a new innovation to others, even if some new product is difficult to explain including hardware consists of components or tools and software consists of body of information for the tools.

Proposition 5. Visibility and other relevant contributions of innovation adoption.

2.4 Marketing Mix (4Ps)

Philip Kotler described the meaning of marketing as an understanding of satisfying customer needs. There are many functions of marketing, first is identifying customer needs and demand and creating products with greater value and second, promoting the product effectively with the right distributions and advertising channels with the right message in order to help to sell it easily. The marketing mix or 4Ps is defined as a set of marketing tools (Principles of marketing book-Philip Kotler) that each component works together to influence the marketplace. The model includes product (or Service), Place, Price, and Promotion that the marketer needs to mix all components and apply together to achieve their marketing ultimate goals and positive results.

Product is described in tangible or intangible product and service that give benefit and meet customer needs and wants. Moreover, the product covers the organization's idea, salesperson, place, or mixes of offering for sales to the specific market. There are three levels of product planning. First, the core product is what the product is and how the product can solve the customer's problem or key point consumer may buy it. Second is actual products that explain products in terms of quality, features, brand name, and packaging. Third, a product must build augmented products by offering additional benefits to make the product differentiated from competitors, for example, free delivery or installation service. These three levels of product will enhance the best customer's satisfaction.

In this research, to purchase individual products, consumers will consider many factors that fulfil their perceptions, such as, **product attributes** that are quality level, how product can perform or ability level and consistency, durability, precision, reliability, ease of operation, and maintenance or repairs. Together with **product features**, a firm can offer a product with a variety of features and add value beyond competitors. Adding outstanding product design is one of marketing techniques that increase brand reputation and image.

In addition, branding is related to consumer intention to buy because branding can raise product value. Actually, branding is the most important in product strategy for a firm and branding supports the firm to build customer loyalty in the long term. The brand describes the overall product dimension by passing a name, sign, logo

or symbol and can describe a set of benefits to buyers. Consumers perceive brand personality and a deep meaning of the product before they decide to buy.

Proposition 6. Service robots offer and satisfy a want or need for a hotel.

Price is the amount that seller and buyer bargain with each other for a product, customer exchange money to have benefits or using a product and service. There are external factors that have an impact on setting price points, for example, demand of the market, competitor's price and offers, and other current environments. Competition -based pricing will affect consumer judgment of a firm's product's value of a firm compared to competitors. In this study focused on price will help service robots to plan pricing strategy matching with customer's purchase intention.

Proposition 7. Quality and price relate to the position of service robots.

Place is the way a firm brings product and service to potential customers, how customers perceive the quality and value of the overall offering. A firm needs to increase attention by managing distribution channels to customers at the right time, right channels, and right place. Service robots create product awareness products by building a showroom as same as other technology products. In this case, the effective place is needed to identify.

Proposition 8. Physical showrooms enhance service robots-hotel relationships and increase hotel satisfaction.

Promotion, the last component of marketing tools is a communication form that a firm can communicate and reach to a specific target market or between a firm and customer. Promotion is all the relevant materials, activities, media, and personal selling that a firm uses in order to persuade the potential customer to purchase a product or service quickly. Direct marketing is one of the place strategies that use a salesperson to approach and confront customers face to face. The advantage of this effective technique is that a person can build long-term relationships and fulfil satisfaction for each customer directly, such as, sending birthday cards to customers or answering questions about products to potential customers.

Proposition 9.1. Personal selling persuades and builds long-term personal relationships with key decision makers in hotels.

Proposition 9.2. Sales promotion captures hotel customer's consideration

2.5 Purchase Intention

Purchase intention explains trends of consumers deciding a product or service. To analyze hotels' desire to buy service robots, the components are important and can be used to be a key predictor of their purchasing in the future.

The components covering, Environmental Knowledge describes how much an individual person knows about a product that represents personal perspective to current situations about tourism and hospitality. Perceived Price is about how much price that consumer understands, having a meaning, and they will compare product price according to their mind. Not only price, but consumers also consider how the benefits of a product and service are called Perceived Value. Consumers will perceive

Product Appearance, what product can perform such as color, design, functions, ease of using or carrying. **Attitude** is one of important competencies that explains positive relationships with behavior. Attitudes are learned and developed over a period and can change and be influenced by satisfying motivation. Even though current attitudes impact a person's purchase intention, his or her attitude can change anytime when they learn a new idea or objective they are confronting. A positive attitude leads toward behavior. **Subjective Norm** means motivation or based on an individual's perception having to product and service. Consumers will use their subjective norm to consider buying a product. It can refer to an individual person or organization's belief that motivates them to comply with their thinking. **Perceived Behavioral Control** is a person's perception of their action to perform a given behavior. It describes individual intentions and actual current behavior.

2.6 Case Study

In this study, there are two case studies who adopted service robots. The first case is Hotel Icon in Hong Kong were implemented service delivery robots and cleaning robots created by Konica Minolta. A friendly delivery robot carries towels and small nibbles to the guest's rooms. The hotel positions robots as the next generation of hoteliers who can service the guests on the poolside and the bar. Another robot is cleaning. It can vacuum in corridor or large space such as the grand ballroom easily all day long and be a part of housekeeping team (Kotsemir & Abroskin, 2013). The hotel

engages with their guests with technological service and be a success case for next hotels who prefer to adept robotics service soon.

Another case study is Henn-na Hotel in Japan were operated since 2015. The hotel was called as the first hotel who completely adopt robotics serving to use in the hotel, non-human serving, the guest has to check-in and check-out with machine throughout their journey, for instance, there is receptionist robots with female android to serve the guests, carrying luggage, robotics arms in concierge service, cleaning, and personal helper inside the room. To using robot replaces human, hotel manager must understand evaluating and how to work with robotics system and consider about hotel positioning before adapting it is very important. As the hotel is the first robotic servicing, they concern about their customer's feedback and take opportunity to get big data and analyze it to improve artificial intelligence to enhance a better connecting with guests (João, et al., 2020).

2.7 Research Framework

In conclusion, the robotics technology is new for the hotel industry in Thailand, therefore, hotels need to adapt innovation to engage their guests that change travel behavior.

For the model below, this research starts to identify the barrier that hotels will have for purchasing service robots by using the components from diffusion of Innovation theory as **variables**. The theory is used to analyze hotel users and barriers or key factors that hotels will consider purchasing service robots. Together with identifying how marketing can approach the robotics product, the study also uses other **variables**, marketing mix(4Ps) concepts to be covered in finding marketing strategy of service robots approaching for robotics company in the beginning.

According to above variable factors, **Dependent variables** of the research will address the content of purchase intentions of the hotels and related to the outcomes will explain the hotelier's willingness and understanding about robotics technology application and consider purchasing a service robot.

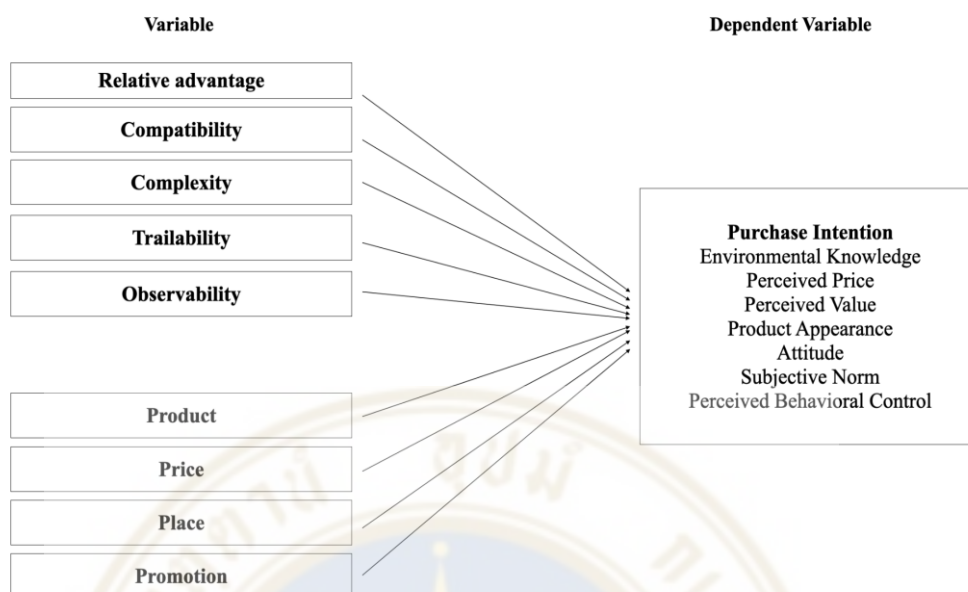


Figure 2.1 Penetration service robots' model

The next chapter will describe research methodology, qualitative research concept, data collection, how to select sampling, interviewees and key criteria, and interview questions. The methodology will be matched and related to literature review and core theories to be used to make research reliable and effective.

CHAPTER III

METHODOLOGY

This study aims to qualitative research to identify how hotel adept innovation and which marketing strategy that Pudu Robotic company can use to approach hospitality industry. The research implements by using diffusion on innovation theory and marketing mix as tools. The qualitative data are mostly non-numerical and explain in the set of data, representing feelings, emotions, or subjective perceptions to address the ‘How’ hotel thinking about adapting service robots in the property and describes ‘Why’ they decide to purchase it. The research uses intensive or in-depth interviews as a technique.

Regarding to **qualitative research**, the research describe that is based on experiences or knowledge of people (Usa, 2009). Also, the qualitative research helps to gain a clearer understanding of people’s thinking. Its output provides the reason and detail view of the topic, and to study individuals in their customary setting (Usa, 2009).

Case study is a part of this research. Case studies is complement to be used in the field of qualitative methodology. The finding of case study explores background, facts, differences or similarities comparison, and relation with this research output. It helps the research to be more reliable and gain more understanding. Therefore, a case study is a part of this qualitative research (A. Biba, 2013).

3.1 Sample and Interviews

This research was designed to be conducted with hotelier in Thailand. Along with convenient sampling, purposive sampling is preferred in this qualitative research by using simply criterial, firstly sampling who be an interviewees give full answer for all interview questions in detail. Secondly, sampling is willing the convenience time to interview and suitable communicating channels during Covid-19

pandemic situation (John, n.d.). The sampling represents hospitality referred to the Thailand largest number of hotel room in Southern part at 29% and Bangkok at 20% as table below.

Table 3.1 Number of hotel room by Region in Thailand

Number of Room by Region	
Southern	29%
Bangkok	20%
Western	7%
Northeastern	11%
Northern	14%
Eastern	15%
Central	4%
Total	100%

Source: <https://www.krungsri.com/en/research/industry/industryoutlook/Services/Hotels/IO/io-hotel-21>

According to methodology, the research interviews with hotel managers who work in difference hotel chains representing hotel operations and relevance with robotics service in different perspectives from different departments to provide the diverse results that will benefit the robotics firm's greater understanding of the market. To screen the interviewees, the researcher selects interviewees by at least 10 years hotel working experience and management level of position.

Table 3.2 Details about Interviewees

No.	Interviewee Position	Hotel	Duration of Working Year	Chain
1	General Manager	Oriental Residence	18	Onxy
2	Director of Food and Beverage	The Landmark Bangkok	17	Landmark
3	Former Purchasing Manager	Novotel Bangkok Platinum Pratunam	13	Accor

The interviews questions are conducted **semi-structured** because the studying has a particular topic about robotic servicing for hotel's staff, but questions are open-ended and not be asked in the similar way to each interviewee. The primary goal of an in-depth interview is to hear what manager's thought and the way of thinking are important about topics in their own words. The reason that makes methodology support analytical framework is interview technique allowing the researcher can observe the face expressions, emotion, and other reactions or feedback to the questions. This enables the researcher to draw conclusions clearer and realistic. During the interview, managers are also able share other related information from their own perspectives and experience, it is possible to add as additional data during the researching period. The conversational interview is more to remain as open and adaptable as possible to the interviewee's nature and priorities; during the interview the interviewer 'goes with the flow' (Sociology, n.d.). For research questions, the researcher can prepare question ahead of time and support interviewees the freedom to express their opinion. Therefore, semi-structure interviews can provide reliable, comparable qualitative data. The interview questions adapted from diffusion of innovation and marketing mix 4Ps to structure as question detail as shown in Table 3.3 below.

Table 3.3 Example interview questions

No.	Model component	Sample Interview Questions
1	Relative advantage	What advantages and disadvantages do you perceive in using a service robot as a part of your job?
2	Compatibility	How is a service robot compatible with your daily tasks?
3	Complexity	What are the challenges if you have/may have a service robot usage experience?
4	Trialability	4.1) How did you know and learn to use a service robot? 4.2) What are your concerns about using a service robot?

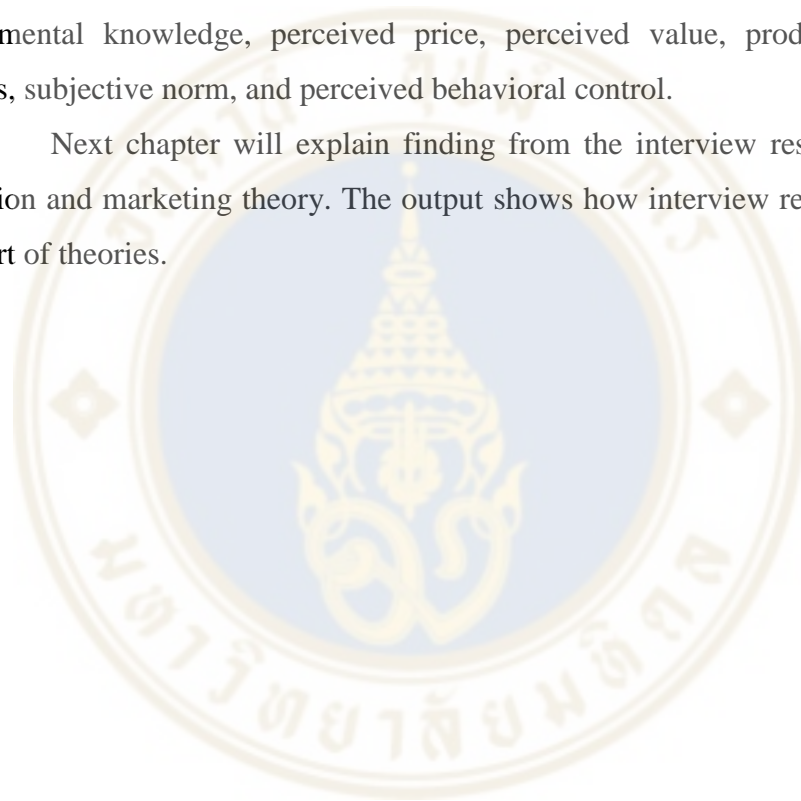
Table 3.3 Example interview questions (cont.)

No.	Model component	Sample Interview Questions
5	Observability	In your opinion, why do some hotel adopt a service robot, but why don't some hotels adopt a service robot?
6	Product	<p>6.1) Do you think that a good robot brand has many product varieties in each product category or scenario to suit the use of a hotel?</p> <p>6.2) What kind of unique features do you think the robot should provide?</p> <p>6.3) What do you think well-known robotics brands encourage you to consider buying?</p>
7	Price	<p>7.1) Do you think robots have competitive prices compared to their competitors?</p> <p>7.2) What do you think the price is appropriate for the benefits and quality the hotel received?</p>
8	Place	<p>8.1) Do you think the store location and store design are the purchasing keys to the hotel? Please explain the reason</p> <p>8.2) How do you feel about the atmosphere of the robot store? Does it impact your purchasing decision?</p>
9	Promotion	<p>9.1) How do you think the free trial is good for hotels? And when will hotels see the efficiency of the robot?</p> <p>9.2) What are your concerns about sales promotion? Please give an example</p> <p>9.3) In your opinion, salesperson from robotic company who are helpful in choosing the right product for a hotel, answering hotel's questions, responding to hotel requests, are the keys that make you purchase a product?</p>

3.2 Analysis

The recorded data collection by online meeting via Zoom and voice-based communications according to Covid-19 restriction. The interviews lasted between 40 and 50 minutes. Referring to the nationality of some interviewees are Thai, the recorded data were transcribed first in Thai and translated into English. The data were organized into an analytical framework by classification detail based on theoretical attributes to code. This analytical framework shows relations between diffusion of innovation components, marketing mix that related to purchase intention including environmental knowledge, perceived price, perceived value, product appearance, attitudes, subjective norm, and perceived behavioral control.

Next chapter will explain finding from the interview research related to innovation and marketing theory. The output shows how interview result reference to each part of theories.



CHAPTER IV

FINDINGS DISCUSSION

In this chapter, the research discusses findings about innovation adoption that will be explained according to Roger's five perceived attribute of innovation including relative advantage, compatibility, complexity, trialability, and observability. The result is related to each attribute are discussed linked to purchase intentions as following topics.

How hotel adapt service robot in the early stages?

4.1 Relative Advantage

The relative advantage represents benefit that hotel will get in when agree service robot is better alternative servicing than existing traditional or human service. The greater degree that manager perceived the robot's relative advantage, the more rapid its rate the adoption to purchase intension will be.

Hotels has positive **attitude** and perceive that service robots will be benefit to the property more than human works according to using as routine jobs. Service robots can be used to work in public area that helps employee to do all day duty or non-human tasks. Hotel foresee the opportunity robots can perform and plan clearly how they can operate it. While the idea adapting robotics servicing seems such as a good idea, hotels also address the innovation can early use in three or four-stars hotels who position themselves as smart hotels or serve young generation or business traveler guests. The reason is human touch or servicing by hotel's staff are really needs regarding to guests' expectation, especially, resort properties and five-stars or beyond luxury stars hotels. Another, Thailand image is outstanding in service-mind destination. Therefore, outbounds travelers anticipate it.

The robot can perfectly be suitable to have a robot replace people, reduce costs, reduce payroll, more efficiency, no need to lunch break the robot can just work non-stop. That might be something right could see the robot in five stars hotel, hygiene robot whatever they do, work with UV light, save for environment. They can move it in the public area to make sure the area is hygienic and clean. I see this is a great advantage.

General Manager, Oriental Residence

Referring to Covid19 pandemic, hotels have **environmental knowledge**, truly understand the situation, hygiene, and protection standard. They concern about and how to provide contactless servicing to the guests as much as they can. From this point, hotels agree that service robots can support their operations and make guests decide to stay at the properties. This output is related to relative advantage that service robots is a new opportunity for hotel to increase revenue post Covid19 and help to reduce the labor costs in long term.

In addition, **product appearance** is one of important factors that bring hotels to consider purchasing service robots. Because of understanding what guests want, thus, some robotics features have more benefit than the previous services of hotels used.

It might be difficult if it's in the provinces. But if it's Bangkok, it will have a percentage that can happen easily. Why do you say that because foreign customers who come to Thailand? Part of his expectation is service.... Need to reduce some feelings of service, such as remembering the history of the guests at the table. Robot can just give a general service but doesn't require manual labor. This is the best benefit.

*Former Purchasing Manager of Novotel Bangkok Platinum Pratunam,
Senior Purchasing Manager of InterContinental Koh Samui Resort*

The finding is also related to **subjective norm**. Managers concerns about customer satisfaction as the most important, such as what guests want during stay, how to treat guests to have the best experience moment at hotel.

To summarize, hotel wants to know that a new idea of using service robots is advantageous and be able to replace the human servicing. The innovation theory also generalized that there is a **positive relationship** between relative advantage of an innovation adoption.

4.2 Compatibility

The second of attribute of an innovation is compatibility referring to how easy that hotel can use service robot. The finding shows that hotels use experience in the past to consider purchasing service robots. They compare the linkage between what they have done and what robots will be done in the future. Hotel's management thinks about how robots work and can help team to achieve the jobs effectively with shorter time to get better result. Not only **product appearance** is explained, but also **subjective norm**, thinking about staff's daily workflow. Collaborate working between hotel's staff and service robots are critical to the hotel managers' considering. Hotel can plan to work and tasks for service robots and assist employees work smoothly and faster.

For me, the key factor is how compatible with the current I'm up and my team, for example, we're looking for UV light for setup the room when housekeeping is going in. Now we dig to something that robot can do. Housekeeping will be in the room for five mins to be move to one-bedroom suits, bathroom. After 5 mins you must be moved. I would like to have a robot that I can put in the room and robot can roam in the room in 15 mins after I can open the room, and everything is perfect. I will but it immediately. That will be perfect, it makes the life of my staffs much easier. So, for me, key factor is how compatible with my operation, achieve my team to support their operation.

General Manager, Oriental Residence

The result strongly shows **perceived behavioral control** of hotels to really consider purchasing robots if they prove and believe its performance from multi-function in wide range scenarios in various areas in hotel. The purchase intentions are

valuable from manager's perception, the strongest positive views about robotics service, the high ability of manager to buy it. Even they never use it before, they understand how robot may work and fulfill they needs at their places.

Some sections are appropriate in terms of hotel operators, suitable for routine tasks that do not require human intervention. The robot stands in the lobby and spray disinfection on time or some robots that take guests to check-in to their rooms, able to talk to the elevator or delivering food or cloth to each floor, for example, a job that helps Bellboy lift a bag that can carry 20-40 kg of cargo, bringing guests to the room.

Director of Food and Beverage, The Landmark Bangkok

In the conclusion, the finding supported innovation adoption that hotel perceived as consistent with the product values and past experiences are needs of potential adopters.

4.3 Complexity

Another attribute, complexity is explained about how hotel understand difficulty to use service robots. Because robotics technology are new things for hotelier to learn and accept. Manager needs time to investigate suitability for long-term hotel business. The investment budget is the first difficulty for purchase consideration, it related to **perceived price**. During innovation adopting, the managers concern about how much costs that hotel must invest to use it and return on investment rate (ROI) are needs to forecast carefully in term of reducing operational and labor costs.

The second challenge is new robotic model releasing. Hotels normally perceive technology product, especially service robots release very two years. Therefore, they aware the bought model may become underdeveloped in one day. To make decision to buy, management use their personal knowledge and technology trends to consider, it represents **environmental knowledge** in innovation theory.

That must be found when invest to buy these things. The advantage is saving in the long term, but for the short term, one purchase the cost is quite high. Another issue is technology. I think it's like a tablet, like an iPhone phone two-three years. New technology comes in and depreciation. May be higher than general products, that's a challenge.

Director of Food and Beverage, The Landmark Bangkok

The hotel owner is a part of buying decision maker. They may be a reason to purchase robotics service, however, the guests are the top reason to buy the robots. Some properties, for example, at resorts the guests prefer to be serviced by human, not machine. They like to talk and need human to provide service, and interactive directly with resort local staffs. So, they really expect extraordinary experience during stay in the hotel. From the study, even hotel owner wants to buy robot very much while the guests do not like it, the hotel will not consider using service robots certainly, the point is related to **subjective norm** that concerns about what service of hotel may have and long-term image will be look like. This point strongly impacts to guests' perception.

For resort, the difficulty is if we are guests. Do we expect service from the robots in the resort? Because even if the owner wants it.... who came to help in the dining room? As I said, does he want service from someone? This is a very challenging one.

*Former Purchasing Manager of Novotel Bangkok Platinum Pratunam,
Senior Purchasing Manager of InterContinental Koh Samui Resort*

From innovation theory described complexity is negatively related to adoption of innovation. Even though financial matters and product character might be a problem for hotel to use, its show potential performance to return in long-term. Correspondingly, service robot was more likely to be adopted.

4.4 Trialability

Trialability refers to the degree to which an innovation may be experimented before adopting. From hotel managers' view, robotic service is today trend. The finding shows that almost hoteliers are interested in adapting robotic technology in hotel, but they have no idea what robot can really work. Thus, service robot demonstration is a must. They have never seen how the robots move or deploy before in real hotel environment. Hotels request to have more understanding when robots start working in hotel's lobby or public area. The output is related to **product appearance** that it is most important to hotel manager. If the result of demonstration is positive, hotel will continue to discuss detail about price. On the other hand, negative result of demonstration is not satisfied, hotel manager will stop certainly to proceed next step of negotiation with top management or owner.

I have never tried it. Because in Thailand it is not really widespread. I think people in this field are interested but have to review first and try to get demon. If it's ok, we will talk about the price. But if you try to take the demon and it doesn't work, it will not be passed on in terms of price.

*Former Purchasing Manager of Novotel Bangkok Platinum Pratunam,
Senior Purchasing Manager of InterContinental Koh Samui Resort*

Perceiving price and purchase decision are strongly related to this topic. Apart of this, using service robotics bring human development issue to human resource (HR) manager to consider about employees' career path. By adapting robots may changes how people works because it replaces some routine tasks. Manager needs to plan strategically about job description and development plan for each position since hotel does not have layoff policy. Thus, robot does not replace human in this industry but help to support working productivity.

I concern about people, what will people do when using robots? career succession plan to develop the people we have. If we bring a robot, probably didn't take our staff out. But may have to change his duty. I believe in technology, think that it can replace people for sure.

Director of Food and Beverage, The Landmark Bangkok

In summing up, managers request to have a chance to personally try-out the innovation in each property and have hands-on experience. Therefore, experimental capability is very important in accelerating the adoption of service robots.

4.5 Observability

The last basic attribute of innovation is observability. It explained how hotel the visible results of an innovation are observed or communicated by other hotels or their competitors. Hoteliers has intended **environment knowledge** or related context such as guest behavior change, travel trends, and internal technology system such as property management system (PMS). Also, they observe other similar business who already adopted technology and big data management running the operation. Hotels perceive that being a leader in the industry needs to improve efficiency of PMS by integrate system with useful data and interface additional service software, for example, service robot history or performance report to reduce time and find a better solution when they have a problem with the guest. The result represents that hotel has positive **attitude** about robotic service and they keep observing how guests' behavior change these days and in near future.

Hotel people can learn Nowadays, big corporations invest in expensive systems because they start to learn that this kind of investment brings good benefits. It should be about the feature and the functionality that it can interface with the hotel system.

*Former Purchasing Manager of Novotel Bangkok Platinum Pratunam,
Senior Purchasing Manager of InterContinental Koh Samui Resort*

Furthermore, hoteliers are confident that service robots will become a future trend with no doubt. But early adopter for this innovation will be budget hotels or smart hotels who are ready to welcome service robots to be part of providing a service.

If it's a hotel like this that is Budget or Technology, that's the answer.

Director of Food and Beverage, The Landmark Bangkok

It is clear from the analysis that observability of hotels' monitoring and getting environment insight can speed up the rate of service robot adoption.

Apart from this, marketing approach will be described in next topics. The explanation will be discussed about four perspectives based on marketing mix (4P) included product, price, place, and promotion. The finding was analyzed according to research question, interview result address, and highlight the important factors impact to robotics company should approach.

In term of marketing, how can a service robots penetrate the hospitality industry?

4.6 Product

From the study shows that hotels do not have robotic brands in mind currently and they concern about **core product**, what robot can give hotel an opportunity to reduce operation costs, increase guest's satisfaction, and make hotel has differentiate image and smart technology positioning. To use the service robot, manager also thought how data can be generated during use. Hotel expect robotics company needs to communicate with hotel and identify robotic service solution before purchase approach or considering.

I don't know much about robots especially the brand What brands are there? I don't know, but I do know that robotics in the food and beverage industry have come into use. Before the trial, developer we must talk to the user about what our

needs want to use, not that the developer sits and thinks about developing robots to sell hotels without knowing what the hotel needs are.

Director of Food and Beverage, The Landmark Bangkok

Next hotels also consider **actual product** in detail about attribute, robotic features, for instance, how many deliver mode, how much time spraying for disinfection, what level of intelligent trays can be adjusted, and how much time robot can deliver food in one time. In term of **augmented product**, hotel also think about after sales service, warranty, and prompt maintenance service that robotic company must provide. The manager pictures what will happen after they bought in term of hardware and software.

In addition, hotel mentions the reason brings them to consider service robot is **branding** of the product. If they know or recognize then brand name before, it will be much more advantage. Product's brand name is another one important for hotel to buy, it will represent or be a part of the hotel property's character, vision, and communicate brand equity to their guests in long-term. Another finding is country of origin of product is non-impact to hotel perception, especially, Pudu Robotics is Chinese brand from China and no effect for hotel to decide to purchase.

Brands coming from China have no effect for me. Now, new, and good technology is coming from China.

Director of Food and Beverage, The Landmark Bangkok

Also, hotel's **positioning** is also concerned. It is related to perceived value both in product and service. If hotel represents technology or trendy concept, they will be in early stage and become a leader who use robots.

Branding overall is important. If you have ABC robot that is very famous in robotics, but I have no clues about it. It means anything for me. At least, people recognize the brands. Or another brand picks it up, may be someone is developing it like Toshiba or Hitachi or Sony to picking it up and produce some under their brand. Of course, it will become to well-known branding.

General Manager, Oriental Residence

4.7 Price

The research output shows that **price to quality** is related to price point of service robots. Generally, hotels consider buying a product according to hotel positioning and image, for example, luxury hotels prefer to select high-end brand, premium quality, long lasting, outstanding design, and product needs to be a famous brand. Using the quality product represents hotel standard. **Affordability**, on the other hand, smart hotels will select the mid-range price point and product itself express technology concept.

Branding is important because product level has different price range. If the product goes anywhere in any hotel, the positioning of the hotel is important. If you go to Mandarin oriental, they will use the same top-class function. But enough There are Brand A, Brand B, Brand C. When talking about luxury hotels, they use premium brands. best on the market but if you are a technology hotel, you can use mid-range brands depending on the level of the hotel.

Director of Food and Beverage, The Landmark Bangkok

Not only this reason when hotel purchase a robot, but also **perceived value** in term of how robot can help them to perform a job, related to **price to benefit** consideration. Product features are also considered, service robots should have wide range of feature, for instance, variety mode of delivery, voice interaction, notification when delivery arrival. These are the points that make hotel decide to buy even though price is high, manager will take a proposal in consideration.

4.8 Place

Location, where hotel can meet product is critical. The showroom or store is not important to be a place to provide information, product specification, and demonstration. The finding shows that hotel manager think it is not necessarily visiting robotics showroom. They expect highly seeing robot performance at the property. The location of showroom is not important, but demonstration is a must

because it gives hotel to touch, try to use, experience, and feel about product. From the study, hotels have positive **attitude** about technology and views that demonstration will bring them to understand clearly and **trust** after they decide to buy because demonstration needs to place in the real environment, there are difference floors, ceiling, and surfaces.

I don't think visit showroom Sales who come to present me is important, including reference or company or hotel. If Franchise is used, it will make it look credible. If big brands use it, for example, if a hotel is international brands such as Hilton InterCon Mandarin oriental, Sheraton, Marriott I believe other hotels will use it

Director of Food and Beverage, The Landmark Bangkok

The result about place is related to perceived behavioral control that Pudu Robotics needs to understand how demonstration can be approached to get the best result. It will rise sales opportunity.

4.9 Promotion

After demonstration, hotel concern about **promotion** that company approach. Since robot selling price is high and currently hotel is in recovery period from post Covid19 pandemic, rental package is a need for manager because they concern about return on investment. **Free trial** is one important of strategy that a robotic firm propose to hotels. Hotels need time to ensure that robot work well in the property and collaborate with staffs. To be appropriate trial duration is three to six months without any charge. Using robots is not about running or moving but hotel think about how useful data can be generate, such as, customer behavior, staff's working performance, delivering report, or cost reduction.

Important Trial is about 3 months to learn and understand the product because it is a new technology. We've seen them in restaurants. but have never tried to see it in a hotel. Which I think is a win-win situation because the company or

developer needs the data generated by the actual usage. That really works to do research or further development, now the user needs to spend time with it, 1-2 weeks is not enough, I think 3 to 6 months onwards.

Director of Food and Beverage, The Landmark Bangkok

Not only offline marketing can be approached, but also **online marketing** laydown as strategy. Hotel prefer to receive e-brochures, product introduction videos, or watch testimonial videos by online platform because of convenience and speediness. The most factor that make hotel to purchase the service robot is salesperson or personal selling technique. Manager strongly expect to have salesperson to fully take care since open opportunity to sales in the beginning until closed the deal. They will decide to buy according to salesperson who is helpful in choosing the right products, answering questions, responding to hotel complaints, and follow up after sales service.

I want the salesperson to come to my property with the machine and show me how it works in my property, my corridor has carpet. Maybe I buy it, it works perfectly in showroom on trial and I back to the hotel, work on a carpet and it get stuck. I would see the operation in my place, not somewhere else.

General Manager, Oriental Residence

In the conclusion, the finding of marketing mix shows what hotel concerns seriously in each aspect, product, price, place, and promotion. **Product and promotion** are most important to hotel in early stage to purchase service robots. Next chapter will be recommendation for next study and conclusion for the research to summarize the key finding into cores theories, diffusion of innovation and marketing mix.

CHAPTER V

RECOMMENDATIONS AND CONCLUSIONS

5.1 Recommendation

5.1.1 All of interviewees has positive attitude to provide the interview and has strong interest in using service in real life. However, there are many factors for hotel to consider and re-consider purchasing. One of critical factor is long-term investment that hotel concern how hotel get benefit from service robot in term of human resource development and customer's top of mind.

5.1.2 End-user or guests are the main key that hotel concern the most because character of guests, ages, expectation, room rate are related to service hotel provide. In this research shows that only smart hotel or four stars hotel has potential to buy robots according to mentioned factor previously. In case guests' behavior change, it might be a reason to convince five stars or luxury hotels to purchase a service robot in the future.

5.1.3 According to this research is about qualitative research to analyze the reason behind hotel's purchase intention. Recommence for next studying, quantitative is another research methodology to collect rate of innovation diffusion, service robot price point, adaptation rate, and expectation. Recommend collecting data from sample in difference position and difference level to see the result significantly.

5.1.4 Recommend next research to study about hotels or related service businesses' barriers including how workers collaborate with service robot and problem from using it. It will be useful for robotic firm to keep this feedback and prepare solution for it.

5.2 Conclusion

Service robot is a new trends of service sector, especially, hospitality which can use robot to improve their business operation efficiency, increase productivity, reduce labor costs, and increase customer experience or satisfaction. Pudu Robotics, an innovative company aims to expand market to hospitality in Thailand. Among high competition and innovation adapting, the company confronts with variety of challenges. The research conducts in-depth interview with managers in difference departments in hotels. After analysis according to diffusion of innovation and marketing mix.

The result represents **attitude** that hotel perceived robotic benefit relate to their works on routine jobs easier. However, collaboration between hotel's staff and service robots are challenge to the managers purchase consideration, linked to **compatibility** of innovation adapting. Not only difficulty of using, but also huge budget that hotel invest. They concern the return on investment in long-term, related to **complexity**. Even though, hotel interest to use service robot but they are not familiar on how to use, **trialability** is a must. Trial period will help hotel to understand robotic operation and increase their purchase intention. **Observability**, intense knowledge about guest behavior, traveling trends, and data analysis. Also, they observe other similar business who already adopted technology and big data management running the operation. **These positive factors support them to make decision to buy service robots**. Moreover, marketing mix also important factor of purchase intention. The most important reason for hotel is **core product** in term of wide range of benefit, product appearance, features, and design of robot's body. These impact to perceived value and purchasing decision. **Price** is generally concerns and research shows it also related to brand image and quality of robotic product, hardware and software. Hotels expect to receive useful product information, document, customer reference or testimonial video to ensure that product is acceptable from similar businesses. Accessibility to sales and marketing material is place that hotel needs. And free trial and rental package has strong impact hotel to consider the product. In conclusion, hospitality in Thailand has strong positive for adapting service robot and smart technology to serve end-user. Diffusion of innovation represent ability and readiness of hotels and marketing mix draw the direction for Pudu Robotic to use as guidance to penetrate the market.

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Appendix A

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	□	□	□
	Subjective Norm	◇	◇	□
	Attitude	□	□	□
	Product Appearance	□	◇	◇
	Perceived Value	□	◇	□
	Perceived Price	◇	◇	◇
	Environmental Knowledge	◇	□	□
Data Type	Interviewed	Interviewed	Interviewed	
Interviewees	General Manager, Oriental Residence	Director of Food and Beverage, The Landmark Bangkok	Former Purchasing Manager of Novotel Bangkok Platinum Pratunam, Senior Purchasing Manager of InterContinental Koh Samui Resort	
Supporting Coded Date	The robot can perfectly be suitable to have a robot replace people, reduce costs, reduce payroll, more efficiency, no need to lunch break the robot can just work non-stop. That might be something right could see the robot in five stars hotel, hygiene robot whatever they do, work with UV light, save for environment. They can move it in the public area to make sure the area is hygienic and clean. I see this is a great advantage.	I believe that since the emergence of Covid19, many things have changed. People may not want to have interactions between people and hotel staffs. Some functions would be appropriate.	It might be difficult if it's in the provinces. But if it's Bangkok, it will have a percentage that can happen easily. Why do you say that because foreign customers who come to Thailand. Part of his expectation is service....Need to reduce some feelings of service, such as remembering the history of the guests at the table. Robot can just give a general service, but doesn't require manual labor. This is the best benefit.	
Core Elements	Relative advantage			
No.	1.			

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	□	□
	Subjective Norm	□	☹
	Attitude	□	☹
	Product Appearance	□	□
	Perceived Value	☹	☹
	Perceived Price	☹	☹
	Environmental Knowledge	☹	☹
Data Type	Interviewed	Interviewed	
Interviewees	General Manager, Oriental Residence	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	For me, the key factor is how compatible with the current I'm up and my team, for example, we're looking for UV light for setup the room when housekeeping is going in. Now we dig to something that robot can do. Housekeeping will be in the room for five mins to be move to one bedroom suits, bathroom. After 5 mins you have to be moved. I would like to have a robot that I can put in the room and robot can roam in the room in 15 mins after I can open the room and everything is perfect. I will but it immediately. That will be perfect, it make the life of my staffs much easier. So for me, key factor is how compatible with my operation, achieve my team to support their operation.	Some sections are appropriate in terms of hotel operators, suitable for routine tasks that do not require human intervention. The robot stand in the lobby and spray disinfectant on time or some robots that take guests to check-in to their rooms, able to talk to the elevator or delivering food or cloth to each floor, for example, a job that helps Bellboy lift a bag that can carry 20-40 kg of cargo, bringing guests to the room.	
Core Elements	Compatibility		
No.	2.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	☺	☺
	Subjective Norm	☺	☺
	Attitude	☺	☺
	Product Appearance	☺	☺
	Perceived Value	☺	☺
	Perceived Price	☺	☺
	Environmental Knowledge	☺	☺
Data Type	Interviewed	Interviewed	
Interviewees	Former Purchasing Manager of Novotel Bangkok Platinum Pratunam, Senior Purchasing Manager of InterContinental Koh Samui Resort	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	For resort, the difficulty is if we are guests. Do we expect service from the robots in the resort? Because even if the owner wants it....who came to help in the dining room. As I said, does he want service from someone? This is a very challenging one..	That must be found when invest to buy these things. The advantage is saving in the long term, but for the short term, one purchase the cost is quite high. Another issue is technology. I think it's like a tablet, like an iPhone phone. 2-3 years. New technology comes in and depreciation. May be higher than general products, that's a challenge.	
Core Elements	Complexity		
No.	3.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	☺	☐
	Subjective Norm	☐	☺
	Attitude	☐	☺
	Product Appearance	☺	☐
	Perceived Value	☺	☺
	Perceived Price	☺	☐
	Environmental Knowledge	☺	☐
Data Type	Interviewed	Interviewed	
Interviewees	Director of Food and Beverage, The Landmark Bangkok	Former Purchasing Manager of Novotel Bangkok Platinum Pratunam, Senior Purchasing Manager of InterContinental Koh Samui Resort	
Supporting Coded Date	I concern about people, what will people do when using robots? career succession plan to develop the people we have. If we bring a robot, probably didn't take our staff out. But may have to change his duty. I believe in technology, think that it can replace people for sure.	I have never tried it. Because in Thailand it is not really widespread. I think people in this field are interested. But have to review first and try to get demon. If it's ok, we will talk about the price. But if you try to take the demon and it doesn't work, it will not be passed on in terms of price.	
Core Elements	Trailability		
No.	4.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	☺	☺
	Subjective Norm	☺	☐
	Attitude	☺	☐
	Product Appearance	☐	☺
	Perceived Value	☺	☺
	Perceived Price	☺	☺
	Environmental Knowledge	☐	☐
Data Type	Interviewed	Interviewed	
Interviewees	Former Purchasing Manager of Novotel Bangkok Platinum Pratunam, Senior Purchasing Manager of InterContinental Koh Samui Resort	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	Hotel people can learn Nowadays, big corporations invest in expensive systems because they start to learn that this kind of investment brings good benefits. It should be about the feature and the functionality that it can interface with the hotel system.	If it's a hotel like this that is Budget or Technology, that's the answer.	
Core Elements	Observability		
No.	5.		

S u p p o r t i v e E v i d e n c e f o r	Percei ved Behavi oral Contro l	☺	☺
	Subjec tive Norm	☺	☺
	Attitude	☹	☹
	Product Appearance	☺	☺
	Perceived Value	☹	☹
	Perceived Price	☺	☺
	Environmen tal Knowledge	☹	☺
Data Type	Interviewed	Interviewed	
Interviewees	General Manager, Oriental Residence	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	Branding, overall is important. If you have ABC robot that is very famous in robotics but I have no clues about it. It means anything for me. At least, people recognize the brands. Or other brand pick it up, may be someone is developing it like Toshiba or Hitachi or Sony to picking it up and produce some under their brand. Of course, it will become to well-known branding.	I don't know much about robots especially the brand What brands are there? I don't know, but I do know that robotics in the food and beverage industry have come into use. Before the trial, developer we have to talk to the user about what our needs actually want to use, not that the developer sits and thinks about developing robots to sell hotels without knowing what the Hotel Needs are. Brands coming from China have no effect for me. Now, new and good technology is coming from China.	
Core Elements	Product		
No.	6.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	☺	☺
	Subjective Norm	☺	☐
	Attitude	☐	☐
	Product Appearance	☺	☺
	Perceived Value	☐	☐
	Perceived Price	☺	☺
	Environmental Knowledge	☐	☺
Data Type	Interviewed	Interviewed	
Interviewees	Director of Food and Beverage, The Landmark Bangkok	General Manager, Oriental Residence	
Supporting Coded Date	Branding is important because product level has different price range. If the product goes anywhere in any hotel, the positioning of the hotel is important. If you go to Mandarin oriental, they will use the same top class function. But enough There are Brand A, Brand B, Brand C. When talking about luxury hotels, they use premium brands. best on the market But if you are a technology hotel, you can use mid-range brands depending on the level of the hotel.	It's not a price but its operation. If the robot can help my team 3-5 people to work easier, to make the job safer. That I will but it..	
Core Elements	Price		
No.	7.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	☺	☐
	Subjective Norm	☺	☐
	Attitude	☺	☐
	Product Appearance	☐	☺
	Perceived Value	☺	☐
	Perceived Price	☺	☺
	Environmental Knowledge	☺	☐
Data Type	Interviewed	Interviewed	
Interviewees	General Manager, Oriental Residence	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	The important thing is how product works or operation works in my hotel rather than the showroom.	I don't think visit showroom Sales who come to present me is important, including reference or company or hotel. If Franchise is used, it will make it look credible. If big brands use it, for example, if a hotel is international brands such as Hilton InterCon Mandarin oriental, Sheraton, Marriott I believe other hotels will use it	
Core Elements	Place		
No.	8.		

S u p p o r t i v e E v i d e n c e f o r	Perceived Behavioral Control	□	□
	Subjective Norm	♀	□
	Attitude	□	□
	Product Appearance	□	□
	Perceived Value	□	♀
	Perceived Price	♀	♀
	Environmental Knowledge	♀	♀
Data Type	Interviewed	Interviewed	
Interviewees	General Manager, Oriental Residence	Director of Food and Beverage, The Landmark Bangkok	
Supporting Coded Date	I want the salesperson to come to my property with the machine and show me how it works in my property, my corridor has carpet. Maybe I buy it, it work perfectly in showroom on trial and I back to the hotel, work on a carpet and it get stuck. I would see the operation in my place, not somewhere else.	Important Trial is about 3 months to learn and understand the product because it is a new technology. We've seen them in restaurants, but have never tried to see it in a hotel. Which I think is a win-win situation because the company or developer needs the data generated by the actual usage. That really works In order to do research or further development, now the user needs to spend time with it, 1-2 weeks is not enough, I think 3 to 6 months onwards. About application that need to be updated and warranty, maintenance program or maintenance fee and another thing that I want to consider from out of sale is rental. Is there a rental because as a hotel? For example, we have to buy one for 6 hundred thousand. Buy it. Another 2 years. The new one comes out. Ours are out of date. There is no guarantee that they work well.	
Core Elements	Promotion		
No.	9.		