



FEASIBLE UBIQUITOUS INNOVATIVE SERVICE FOR TAIWAN RESORT INDUSTRY



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ABSTRACT

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The Resort Industry is one of the six emerging industries in Taiwan. With changing technology and the rapid development of Information Communication Technology (ICT), how efficiently to combine technology with Resort Industry and how to satisfy customers' needs of innovative services in an intimate and caring way have become important lessons for the operator. This research is based on eight dimensions and thirty-nine innovative services. According to the result of Delphi method, for the industry, the "Shopping" Dimension is the most feasible innovative service followed by "Leisure" and "Transportation" Dimension. On the other hand, for the Ubiquitous entrepreneur, the most feasible innovation service is "Entertainment" Dimension, secondly are "Shopping" and "Dining" Dimension. Through the corporation of the Ubiquitous Technology (UT) and the industry, the advantages are effectiveness and efficiency, e.g. reducing costs, and increasing operation effectiveness, etc. It has become an important issue in the world of innovative services. Therefore, when technology immerses into the resort industry, it can simplify the complicated working process, optimize the service quality, and increase service efficiency. With above advantages, it provides customize services which bringing the caring and intimate feeling to the customers.

1. INTRODUCTION

With the rapid popularization of technology and rising of information communication technology (ICT) and Ubiquitous Technology (UT) application is also emphasizing the characteristics of the ubiquitous network. Convergence and portable mobile device could facilitate immediate access to the latest information needed regardless where the people are (Bas-ar *et al.*, 2009). UT advantage is based from "user's" point of view. Its feature provides advantages such as "anytime, anywhere access", "continuous line", "immediate response" and "diversification portable service" (Bas-ar *et al.*,

2009). Thus, it will have become a trend when technology fits into the daily life, then promotes a high quality, convenient and well-being of life.

Although UT has been widely used in many industries such as transportation, medication, information and communication etc. the resort industry is still in its enlightenment period. Regarding the diversified services in the resort industry, it provides transportation, accommodation, amusement, entertainment, dining, shopping, meeting and comprehensive services. Creating a technical environment in the park through UT could simplify complex business internally and externally in a short period of time but accurately. Moreover, when consumers wear RFID bracelets, they will be able to unimpeded access the entire park. That provides caring service that will efficiently enhance the service quality and promote customer consumption convenience.

Thus, when the resort industry is connected to the UT, it could effectively create value-added service to the industry and improve service performance. This study will be based on connecting the UT innovative service to the resort industry. It not only provides easy, safe, and comfortable amusement place and consumption will, but also will develop a blue ocean market for resort industry.

2. LITERATURE REVIEW

2.1. *The resort industry*

As the society and economy development and substantially increase of national income in Taiwan, the leisure awareness is enabled. It becomes an essential part of life. Another factor is the two-days-off per week policy announced in 2001. The increasing demand for entertainment has a more diverse development to provide a nice and comfortable leisure space. Thus, the resort industry belongs to a comprehensive business. It covers tourism resources, amusement, dining, and the hotel industry and so on which provides visitor various functions such as accommodation, dining, leisure, playing, conference and entertainment. Those are to facilitate people a pleasant, relaxed sense of satisfaction during their leisure time.

The resort industry provides variety of service functions, and also connecting to the UT due to innovative services demand. These innovation and new services are improving the service qualities that make the customers feel more caring and touching. In view of this, given the industry a number of vacation services, and innovative services in response to the demand, and then through the ubiquitous of technology into the industry, the creation of new thinking and new services to facilitate service quality, so that customers can feel more careful considerate moving services.

2.2. *Ubiquitous*

The word "Ubiquitous" is derived from Latin. It means "God is everywhere". This is by the concept of Dr. Mark Weiser the "Ubiquitous Computer", which was proposed in 1988 and published in "The Computer for the 21st Century" in 1991. It emphasized on the computing should not be seen more in any form to a particular device. However, the UT should more be based on the "user's" point of view. The features include "anytime, anywhere access", "continuous line", "immediate response" and "diversity of portable services" (Bas-ar *et al.*, 2009). Ubiquitous concept in the 21st century has been regarded as a model of new information technologies. To achieve the ideal environment for ubiquitous and through the ICT development, the advanced countries have already begun to proceed building an UT environment together (Dalkey, 1969). Among those, Japan, South Korea and Singapore have a more completed system in tourism field based on Information Technology (IT) applications.

Due to the ubiquitous characteristics, the resort industry is able to use the radial divergence that uses visitors as the center. It enables each visitor to access all the travel information without any concern of time or space. The visitors will receive the customization, accurate and updated, active and caring service that they deserve.

2.3. The UT application in tourism

With the rapid popularization of technology and rising of the ICT, the UT application is also emphasizing on the characteristics of the ubiquitous network. Convergence and portable mobile devices could facilitate immediate access to the latest information needed regardless where the people are (Bas-ar *et al.*, 2009). "Tourism in the application of information technology is no longer confined to the air travel industry, hotel positioning system, the Internet travel information search system, etc. It should have another value-added innovative service that provides tourists more convenience, higher quality, and more user friendly applications" (Department of Industrial Technology, 2007). On the other hand, RFID applications in tourism, for example are human tracking and control, assets and valuables tracking, contactless payment systems, and RFID-based information (Institute for Information Industry, 2007).

Although the ubiquitous of technology has been widely used in food, medicine, living, transportation, education and entertainment, it is still in embryonic stage compared with the tourism and leisure field. However, firms have continuously connected UT to the resort industry. Firms are mastering their efforts to develop new thoughts and new service that provide the most customer oriented intimate service in order to facilitate new demands and new business opportunities. The Resort industry provides diversified services such as transportation, accommodation, amusement, entertainment, dining, shopping and meeting. Connecting the UT to the environment can connect daily life with technology that will shorten the process in the park and improve the service quality which will then enable a more intimate service and high quality of well-being life. Use Kenting YOHO Beach Resort as an example, the ubiquitous environment that was created through radio frequency identification system (RFID) and wireless sensor network (WSN), which combine the technology and the dedicated service to monitor the whole park. It has also developed the convenient service through "the card". Its features include door card, electronic wallet, accommodation recognition system, membership pass, immediate positioning and tracking, and health care which enables tourists to experience the value-added mobile services all in one. Moreover, the Bunun Leisure Farming, Flying Cow Ranch, and RSL Cold & Hot Springs Resort Suao have all been connected with the UT. The current application status is in Table 1.

Table-1. Current status of UT application in resort industry

	Application	Present Benefit	Future
Kenting YOHO Beach Resort	Visitors have all the access in the park when wearing RFID bracelet with ZigBee positioning, and access to health care through RFID bracelet. For example: fitness monitor, blood pressure and glucose measure. However back-end, management allows updating the access control system, cash flow systems and customer information at any time.	Saving on front operation system, projective initial saving on labor is 15% and reduces the error rate. In addition to enhance consumption will, convenience and improve service quality, also pay attention to customers' needs to achieve intimate customized services.	Supply variety for different languages and Worldwide communication system.
Bunun Leisure Farming	Electronic ticket, electronic wallet and access control, etc. Customer, membership, tickets, programs and HR management.	In addition to effectively improve operational performance and standard service of farm, it also promotes the traditional culture of the Bunun tribe.	Implement store value card for cross-store shopping cycle.

Flying Cow Ranch	Keep track of and analyze the consumer's consumes preference through RFID data saving function. E.g. dining, membership management, and points exchange, etc.	Saving from front operation system in the park, reduce the error rate, and always pay attention to the needs of customers to achieve intimate customized services.	Combine navigation systems and the card integrated systems into the RFID.
RSL Cold & Hot Springs Resort Suao	RFID bracelet has a built- in room card, needless to bring any extra room key. When wearing the bracelet, it can comfortable to access in the resort.	Effectively improve the service quality and enhance consumption convenience. It can also have saving from the front operation system, and reduce the error rate by human, and always pay attention to customer needs to achieve intimate customized services.	Build the customer database, analyze the consume activity and preference.

Source: RFID Industry Database (2009, 2010) (Taylor & Judd, 1989)

In the four cases above, despite the Kenting YOHO Beach Resort that uses both RFID and the WSN, the main application technology is still RFID. On the other hand, the resort industry uses a bracelet to connect with the UT. Its applications include access control, housing management, consumption management, physical care monitoring and management, dining services, tour confirmation and instant recognition services, etc. When the user is wearing the passive tagged RFID bracelet, one can easily and freely have all access in the park and consume. In addition, it can accurately analyze the consumption preferences of the user in a very short time through information integration on information platform. That will make the services in the park more efficient and improve service procedures.

3. RESEARCH METHOD

3.1 Research structure

This research is according to literature review and experts' interviews, concludes eight dimensions and thirty-nine UT innovative services proposal. Through "Delphi Method", survey on both business concept (Industrial entrepreneur) and ubiquitous service information concept (Ubiquitous counseling industry), is given below in Figure 1.

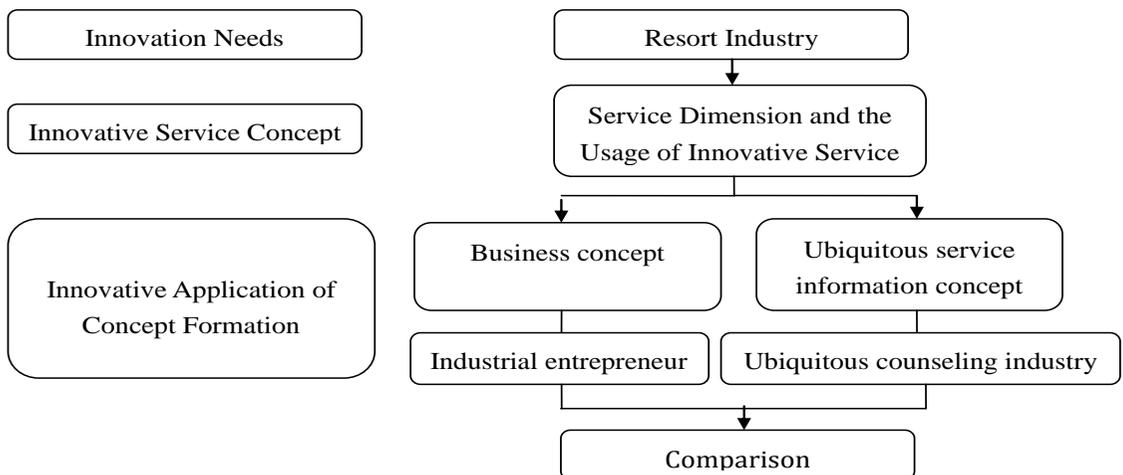


Figure-1. Research Structure

3.2. Research population and data analysis

This survey took place on June 4, 2010 and September 24, 2010. Survey on the resort industry and the Ubiquitous counseling industry which have interested in implementation services, proceeding experts' interviews and fourteen Delphi questionnaires were sent out. Delphi in the selection of experts, as the most important step, but the number of experts, at least ten people or more, they make errors to a minimum, and the group is also higher credibility (Wu, 2008; Yang, 2009). Using the Point scales of 1 to 10, one point is very unimportant, three points is unimportant, five points is ordinary, seven points is important and nine points is very important. Base on previous result of the Delphi method, it always gather statistics of average and standard deviation that this research will utilize with Microsoft Excel to analyze the statistic result of Delphi Method.

4. RESEARCH RESULT

The principal of this research is to investigate the feasibility and importance of immersing Ubiquitous Technology into the resort industry. It comes with eight categories in Transportation, Accommodation, Leisure, Entertainment, Dining, Shopping, Meeting and Complex, and thirty-nine indexes in total.

Through the result, it can conclude that (Table 2), for industries, "Shopping" (7.8) is the most significant dimension. The followings in descending orders are Leisure (7.7), Transportation (7.6), Meeting (7.5), Accommodation (7.4), Complex (7.3), Dining (7.2) and Entertainment (7.1); for Ubiquitous counseling industry, the importance of each dimension in descending orders are Entertainment (7.8), Shopping (7.7), Dining (7.4), Accommodation (7.2), Leisure (7.1), Transportation (6.6), Meeting (6.6) and Complex (6.6).

Table-2. Ubiquitous of innovative service

Innovative Service		Industrial entrepreneur			Ubiquitous counseling industry		
		G.A.	Average	Order	G.A.	Average	Order
Transportation	1. The fastest lane of the most reasonable path planning.	7.6	7.8	2	6.6	6.6	2
	2. Provide fast sensor to facilitate passing of the parking vehicles.		7.8	2		6.6	2
	3. Guide service to dedicated parking spaces.		7.3	4		6.0	4
	4. Unusual car moving sensor in the parking lot with instant alert.		6.8	5		5.8	5
	5. Instant display of the status in the parking lot about parking space availability.		8.0	1		7.8	1
Accommodation	1. Reserve check-in time.	7.2	7.8	3	7.4	8.4	1
	2. Provide fast check-in and check-out to revisions and members.		8.2	1		7.8	3
	3. Floors access control through e-card.		7.0	4		6.4	4
	4. Rooms on each floor are equipped with kiosk machine query service.		6.4	6		6.4	4
	5. Equipped kiosk machine in lobby.		8.1	2		8.4	1
	6. In room anti-theft management of important items.		6.9	5		6.0	6
Leisure	1. Provide fixed-point interactive navigation services through sensor.	7.7	7.8	2	7.1	6.8	3
	2. Provide multilingual mobile navigation and information services.		7.9	1		7.8	1
	3. Provide electronic admission tickets in relevant amusement park.		7.4	4		6.0	4
	4. Children safety care sensor in amusement park.		7.7	3		7.8	1

Entertainment	1. Hot spring area provides physiological monitor information, recommends the most suitable bathing time for visitors.	7.1	6.8	2	7.8	7.4	2
	2. Hot spring area provides electronic sensor locker.		7.6	1		8.6	1
	3. Fitness center provides personal training history inquiry service.		6.6	3		7.4	2

Innovative Service		Industrial entrepreneur			Ubiquitous counseling industry		
		G.A.	Average	Order	G.A.	Average	Order
Dining	1. Provide customers the products and promotion information in restaurant electronically and graphically.	7.2	7.5	2	7.4	7.8	1
	2. Instant display the dynamic waiting information inside the restaurant electronically and graphically.		7.1	4		7.2	4
	3. Quick restaurant reservation and booking confirmation.		7.3	3		7.6	3
	4. Build Dining and tourist service management system.		6.2	5		6.4	5
	5. Food safety control resumes.		8.0	1		7.8	1
Shopping	1. Provide the concession stand its own brand and merchandise information.	7.8	7.2	4	7.7	6.8	4
	2. Marketing cross-sector coalitions.		7.8	3		8.2	1
	3. Explore and analyze visitors' preference.		8.1	2		7.8	3
	4. Goods and inventory management.		8.2	1		8.0	2
Meeting	1. Pre-conference information check.	7.5	8.0	1	6.6	7.2	2
	2. Participants can log in quickly for registration.		7.9	2		8.0	1
	3. Conference-stage screening guide.		6.8	6		5.8	5
	4. Participants attendance status control.		7.4	3		5.4	6
	5. Efficient and immediate reception service.		7.3	4		6.6	3
	6. Electronic questionnaire survey record.		7.2	5		6.6	3
Complex	1. Provide fast electronic consumption and spending records.	7.3	8.3	1	6.6	8.4	1
	2. Instant displays of the regional carrying capacity.		7.7	3		7.8	2
	3. Fixed point sensor provides photographic services.		6.1	6		6.6	3
	4. Tourist emergency tracking and positioning services.		7.1	4		6.2	5
	5. Tourist's tribe exploration records.		7.0	5		4.4	6
	6. Instant displays of facility carrying capacities.		7.8	2		6.4	4

G.A. = General Average

4.1. The transportation dimension

Refer to innovative service in the transportation dimension, in both industry and ubiquitous counseling industry opinions, the feasible services are as follow. First, immediately feedback of available parking spaces in the parking; secondly, arrange the fastest and shortest route for the driver and the last is providing the electric driving pass for passing through the toll station smoothly with failed (Figure 2).

4.2. The accommodation dimension

Refer to innovative service in accommodation dimension, in industries' opinion, the most important and feasible service is to provide fast check-in process for members and visitors who are not the first time to stay at this hotel. Industries also suggested that placing the Kiosk Machine in the lobby and every floor for providing the information of guide service, dining, leisure, etc. On the other hand, in the opinion of the ubiquitous counseling industry, the feasible services are reserving check-in time, placing the Kiosk Machine in the lobby and every floor for providing the information of guide service, dining, leisure, etc, and the last is providing fast check-in process for members and visitors who are not the first time to stay at this hotel (Figure 3).

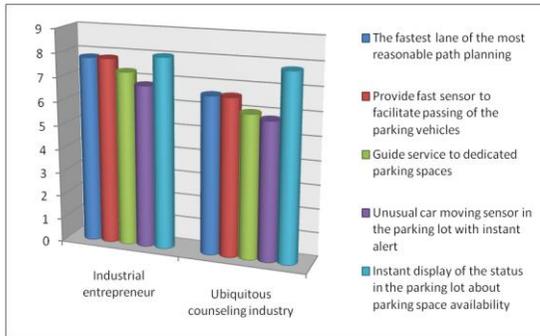


Figure-2. Transportation Dimension

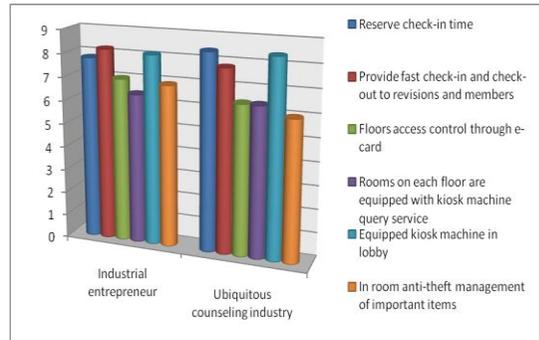


Figure-3. Accommodation Dimension

4.3. The Leisure Dimension

Refer to the innovative service in the leisure dimension; the industry considered that the feasible and important services are providing the electronic entrance pass for all related leisure and amuse areas and providing the sensing interactive navigation services at some particular spots in the park. For the ubiquitous counseling industry, they thought the most important service in leisure dimension is providing multiple-languages mobile navigation and information services; and also the detection of children's safety in the recreation area (Figure 4).

4.4. The entertainment dimension

Both parties have common opinions. They listed three most feasible and important services in this dimension. First is to setting the electronic lockers in the hot spring area. Second, showing a chart of physiological monitoring information to suggest tourists what's the best time for their body to take the hot spring. Thirdly, provide the customer to be able to check self-exercise record in the gym (Figure 5).

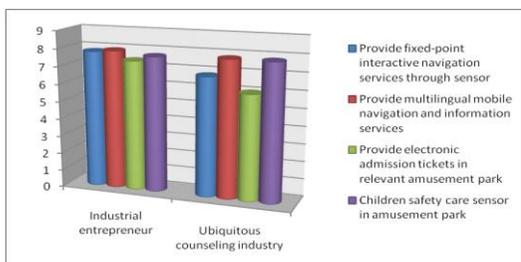


Figure-4. Leisure Dimension

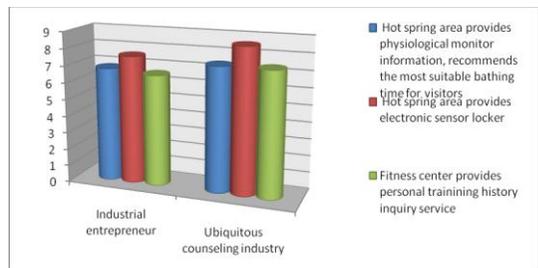


Figure-5. Entertainment Dimension

4.5. The dining dimension

Refer to innovative service in the dining dimension, they considered the feasible and significant services are, firstly, preparing resume control of food safety; secondly, using electronic and graphical to provide customers information of current products and promotions within the restaurant. On the other hand, they also think to quickly confirm the reservation and booking off;

showing the current waiting list in the restaurant by electronic and graphical way are feasible services (Figure 6).

4.6. The shopping dimension

Refer to innovative service in the shopping dimension, in industry's opinion, the inventory control is the most important part, and the followings are analysis of customer's preferred shopping items and the strategic alliance from different marketing sectors (using one general card only). On the other aspect, for the ubiquitous counseling industry, the most important service is to bring strategic alliance from different marketing sectors (using one general card only), and the followings are inventory control and analysis of customer's preferred shopping items (Figure 7).

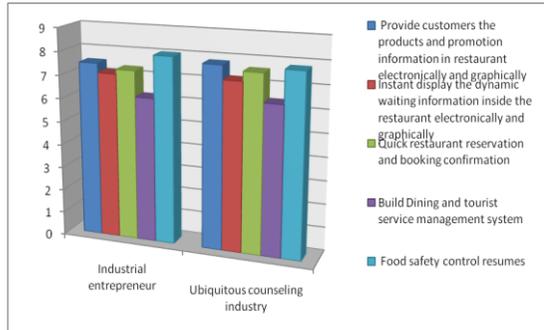


Figure-6. Dining Dimension

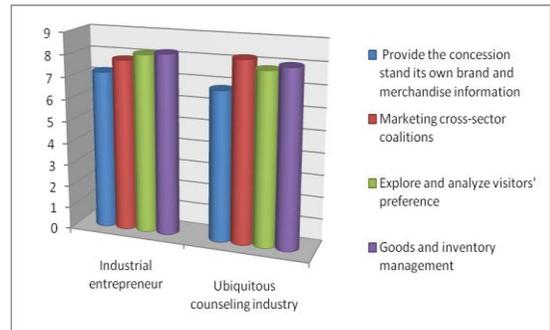


Figure-7. Shopping Dimension

4.7. The meeting dimension

Refer to innovative service in the Meeting dimension, for the industry, the most feasible and important services are the information query before the meeting, participants' quick check-in procedure, and the attendance control of participants. On the other hand, for the ubiquitous counseling industry, the most important and feasible service is participants' quick check-in procedure. And secondly are information query before the meeting, effective reception service and recording the questionnaires by computer (Figure 8).

4.8. The complex dimension

Refer to innovative service in Complex dimension, both parties share common opinion in this dimension below. The first one is fast electronic record of credit card spending reminder (leisure, entertainment, dining and shopping). Second, real-time display of the carrying capacity in each region, and the last is on the real-time display of carrying capacity of each equipment (transportation, accommodation, leisure, entertainment, dining, shopping and meeting) (Figure 9).

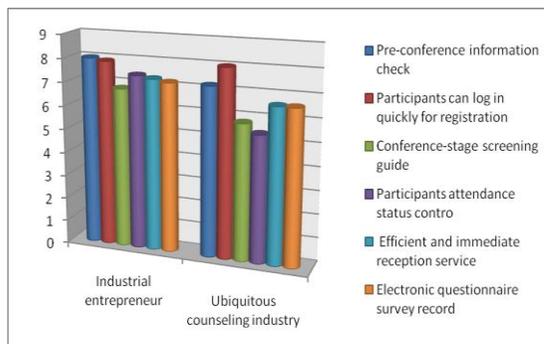


Figure-8. Meeting Dimension

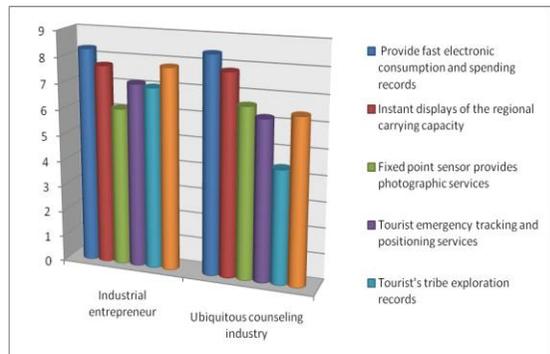


Figure-9. Complex Dimension

5. CONCLUSION

This research investigated the optimization of innovative services in the resort industry, and then provides the industry a reference during decision-making. The results show the importance of the UT in the industry and encourage its importance of the innovative service based on customer-oriented principle, using the customer's point of view. For further research suggestion, to take direct observation for customer's needs of UT and compare the gap with this results. It is also important when developing a new service product through new thoughts and new services to improve service quality in order to for customers to immerse in the leisure experience and relax. In other words, when science and technology fit into the industry, it can simplify a lot of complicated processes, accelerate the service quality, improve service function, and then provide customized intimate services.

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