科技部補助專題研究計畫成果報告
期末報告

應用多階段服務品質機能與萃思創新方法論建構性別友善停車服務創新

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中 文 摘 要 ： 近年來女性經濟自主能力提高，加上女性駕駛人的比例逐年增加，依文獻研究指出女性比起男性更容易受到環境的影響，且在空間感與方向感的敏感度遠不及男性，由於諸多條件皆不利於女性駕駛，過去也鮮少有針對兩性差異議題進行設計的科技輔助停車服務，本研究以Chai 's以問題為導向之服務設計模組四步驟，應用多階段服務品質機能與萃思創新方法論解析兩性對於停車需求特性，研究結果顯示，在問題定義階段，從文獻上共蒐集到八個顧客重視的需求。在方案解決階段，三個被顧客所重視的參數分別為「提供客戶需要資訊」、「等待時間」與「回應性」。在方案評估階段，產出四個性別友善的停車輔助系統概念，包括停車管理系統、影像辨識系統、票券系統與App停車輔助系統，提供後續服務提供者可採取之行動策略、指標訂定，建構性別友善停車服務創新以改善停車場服務品質及優化顧客體驗，兼達提升兩性平等效益及產業附加價值之雙贏目標。

中文關鍵詞 ： 性別、服務設計、萃思創新方法論(TRIZ)、服務品質機能(QFD)、停車

英 文 摘 要 ： With the improving education level and economic self-consciousness, female drivers are more common nowadays. According to the literature studies, compared with male drivers, female drivers are more susceptible to the environment and unfavorable in the sensitivity of the sense of space and direction. Due to there is few literature focusing on parking service design which addresses gender differences, this study expects to explore the parking demand, innovative service model from gender characteristics perspective. The study aims to improve parking service quality and optimize customer experience by integrating TRIZ, service QFD and service blueprinting as the service design methods. The three structural phases taken from Chai 's problem-oriented model include the problem definition phase, the problem resolution phase and the solution evaluation phase. Eight items of customer requirement for parking are collected from literature in the problem definition phase. Three TRIZ based service parameters with higher scores are chosen in the problem resolution phase. They are "Initiative to provide customers with the necessary information ", "Waiting time ", and "Responsiveness ". In the solution evaluation phase, this study develops four gender-neutral support modules including parking management system, image recognition system, ticket system and App parking support system. It contributes to extend the range of multiple service design approach for future applications and explore the gender difference of innovation service adoption.

英文關鍵詞 ： Gender, Service Design, TRIZ, QFD, Parking

Feature the gender- neutral parking service innovation

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Abstract:

With the improving education level and economic self-consciousness, female drivers are more common nowadays. According to the literature studies, compared with male drivers, female drivers are more susceptible to the environment and unfavorable in the sensitivity of the sense of space and direction. Due to there is few literature focusing on parking service design which addresses gender differences, this study expects to explore the parking demand, innovative service model from gender characteristics perspective. The study aims to improve parking service quality and optimize customer experience by integrating TRIZ, service QFD and service blueprinting as the service design methods. The three structural phases taken from Chai's problem-oriented model include the problem definition phase, the problem resolution phase and the solution evaluation phase. Eight items of customer requirement for parking are collected from literature in the problem definition phase. Three TRIZ based service parameters with higher scores are chosen in the problem resolution phase. They are "Initiative to provide customers with the necessary information", "Waiting time", and "Responsiveness". In the solution evaluation phase, this study develops four gender-neutral support modules including parking management system, image recognition system, ticket system and App parking support system. It contributes to extend the range of multiple service design approach for future applications and explore the gender difference of innovation service adoption.

Keywords: Gender, Service Design, TRIZ, QFD, Parking

1. Introduction

Numerous psychological studies prove the existence of sex differences in certain cognitive abilities (Halpern 2000). This differences is commonly thought to be a biologically based, evolved adaptation in order to handle communication and relationships (Brizendine 2006; Guggenheim and Taubman, 2014). Some literature reported that the awareness of the female will be easily affected by the situation so they can hardly ignore the interferences. Therefore, compare to male, female is easily be affected by the environment and their sense of space and direction are poorer than male. As a result, there are many conditions go against female to drive (Grön et al., 2000;

Goede, 2009). According to a probably even more widespread stereotype, women's parking skills are not as good as men's. To date, however, the validity of this stereotype has never been examined with scientic methods, and the cognitive mechanisms involved in parking have never been investigated (Claudia, et al., 2009). Due to there is few literature focusing on parking service design which addresses gender differences, this study expects to explore the parking demand, innovative service model from gender characteristics perspective. The study aims to improve parking service quality and optimize customer experience by integrating Theory of Inventive Problem Solving (TRIZ), service Quality Function Deployment (QFD) and service blueprinting as the service design methods for the case.

The remainder of this paper is organized as follows. Section 2 presents the research method and defines the structure of the service design stages. In Section 3, the methodology and the research framework are described. As described in Section 4, the service design requirements and service resolution are analyzed based on service QFD and TRIZ. Four new intelligent parking modules are provided and illustrated by the service blueprint of the expectation model. Conclusions are drawn in Section 5.

2. Literature Review

Limited literature about sex differences in parking will be introduced first. Many innovative and qualitative methodologies are being used in service design, and the focus has shifted from tangible products to intangible services. For example, TRIZ can be applied to effective service design. QFD can be applied to the service innovation field to generate the service design needs and to process the service requirements based on customer needs. A service blueprint is the main tool to transfer the abstract, front-stage and back-stage of a service system to a clearly depicted process.

2.1. Sex differences in parking

Claudia, et al., (2009) investigated performance of beginners (9 women, 8 men) and more experienced drivers (21 women, 27 men) at different parking manoeuvres as shown in Figure 1. Furthermore, subjects conducted the mental rotation test and self-assessed their parking skills. It show that men park more accurately and especially faster than women. Performance is related to mental rotation skills and self-assessment in beginners, but only to self-assessment in more experienced drivers.

According to the test result, women's parking duration was longer compared to those of men in all types of manoeuvres.
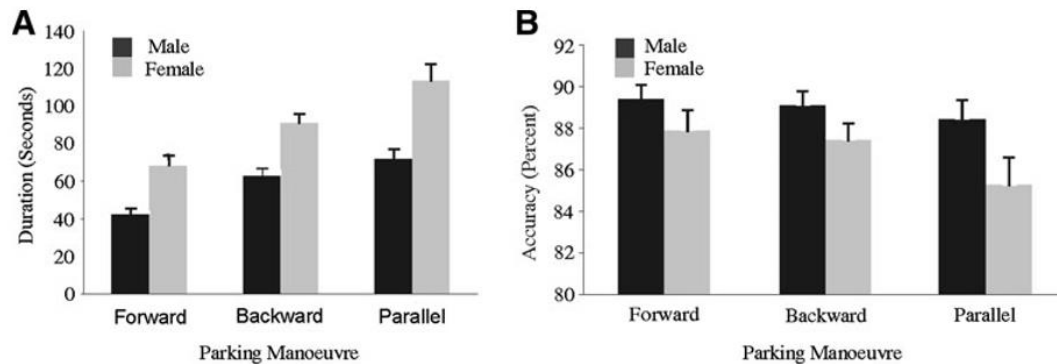

Fogure 1. Parking duration (A) and accuracy (B) for men (black N = 35) and women (grey N = 30) for forward bay, backward bay and reverse parallel parking.

Claudia, et al., (2009) suggested that sex differences in spatial cognition persist in real-life situations, but that socio-psychological factors modulate the biological causes of sex differences.

The National Car Parks (NCP) parking report, conducted by NCP, a parking operator in the UK, surveyed and ranked 2,500 drivers on aspects of parking like locating a spot, timing and positioning within a space. They found that despite low confidence levels — only one-fifth of women surveyed felt they were better at parking than men — women outperformed males on most counts. The report was carried out amongst 2,500 drivers by NCP, reveals that out of a maximum total score of 20, women have an average parking coefficient of 13.4, while the average male score was just 12.3 as shown in Table 1.

Table 1. The 'NCP parking coefficient', how the sexes faired:

Activity	Men	Women
Appropriate space finding speed	64%	92%
Good or very good 'pre-parking pose'	53%	77%
Reverse into space	28%	39%
Forward into space	72%	61%
Speed of manoeuvre	16secs	21secs
Reposition shuffle	29%	56%
Central finish	25%	53%
To co-efficient(Max 20)	12.3	13.4

3

While women take longer to park, according to the report — an average of 21 seconds, compared to 16 seconds for men. 53 percent of women were judged to have parked centrally within a space, compared to just a quarter of men. This is largely due to what researchers called the female shuffle." They found that 56 percent of women will reposition a car if they aren't aligned to go in, while just 29 percent of men bother to do so, the press release claimed. The survey also examined "pre-parking pose" and found that women are more likely to adapt driving instructors' preferred method of entry - reversing into a spot - then men: according to the NCP press release, 39 percent of women back into spaces, compared to just 28 percent of men.

2.2. TRIZ-based Service Design

TRIZ was proposed by the Russian researcher, Altshuller (1984), who found that very creative patents solve "creative" problems, which usually have the features of paradoxical and conflicting demands (Hua et al., 2006). TRIZ is a unique way of systematic thinking with a useful knowledge-base as its foundation. Therefore, TRIZ is helpful for generating breakthrough ideas and delivering solutions (Sheu and Hou, 2013). TRIZ is also a design method that is much less experience-dependent than many existing service design methods which rely too heavily on specific, previous experience, and thus limit potential innovation (Chai et al., 2005; Dew, 2006; Chang & Lu, 2009). By using TRIZ, service designers can always rely on the TRIZ knowledge base, rather than on previous experience.

Altshuller (2000) analyzed and summarized 39 frequently-encountered engineering parameters of technical contradiction that can be used to define problems. These parameters can create a 39X39 contradiction matrix as shown in Table 2. Altshuller also summarized 40 principles of invention from these patents, corresponding to the contradiction matrix. When using the contradiction matrix, the rows of the matrix show the improving parameters, and the columns show the worsening parameters (Lee et al., 2015).

Table 2: Partial TRIZ Contradiction Matrix

Worsening parameter / Improving parameter	1.Weight of moving object	2. Weight of stationary object	3.Length of moving object	4. Length of stationary object	.. .	39.Product ivity

1.Weight of moving object	N/A	N/A	15,8,29,34	N/A	..	35,3,24,37
2. Weight of stationary object	N/A	N/A	N/A	10,1,29,35	..	1,28,15,35
3.Length of moving object	8,15,29,34	N/A	N/A	N/A	..	14,4,28,29
4. Length of stationary object	N/A	35,28,40,29	N/A	N/A	..	30,14,7,26
⋮	⋮	⋮	⋮	⋮	⋮	⋮
39.Productivity	35,26,24,37	28,27,15,3	18,4,28,38	30,7,14,26	..	N/A

Furthermore, Chang & Lu (2009) have converted from engineering parameters of TRIZ to service parameters and which is tested by Cochran's test for consistency. 21 out of 39 TRIZ engineering parameters are extracted to service parameters to apply to new service designs shown in Table 3.

Table 3: Comparison Table of the Original TRIZ Engineering Parameters and the Service Parameters

Original TRIZ engineering parameters	Service parameters
No.9 Speed	Responsiveness
No.10 Force	Force of supply
No.11 Stress or pressure	Variety of needs
No.12 Shape	Appearance and scene
No.13 Stability of the object's composition	Stability of service function
No.14 Strength	Professional ability of communication
No.15 Duration of action by a moving object	Duration
No.17 Temperature	Atmosphere
No.18 Illumination intensity	Cleanliness of environment
No.19 Use of energy by moving object	Labor-intensive degree
No.21 Power	Efforts
No.23 Loss of substance	Perish ability
No.25 Loss of Time	Loss of time
No.27 Reliability	Reliability
No.28 Measurement accuracy	Communication accuracy
No.29 Manufacturing precision	Precision of service delivery
No.30 External harm affects the object	Degree of interaction and customization
No.32 Ease of manufacture	Accessibility of service
No.34 Ease of repair	Service ability
No.35 Adaptability or versatility	Elasticity
No.39 Productivity	Service performance

2.3. Service QFD

QFD has been used as a tool for listening to the voice of the customer (Voc) and extending quality into the design of products, processes, and production systems. Therefore, the quality of all of the aspects of an organization is guaranteed to be

customer driven. The most complete adaptation of QFD to services, called comprehensive service QFD (Mazur,1993), is patterned after Akao's (1990) comprehensive QFD described earlier. The approach is to substitute and transform the quality-parts-process-production links to the traditional QFD with quality-function-process-task links for a service. For improvement of the design of the service process, Mazur (1997) proposed an approach of function deployment matrixes, from organization goals to targeted customer needs and then to service functions. Gonzalez et al. (2004) proposed a QFD approach, including a planning matrix, a critical matrix and an action plans matrix to extend the customer requirements to service elements and key process operations. Service QFD is also applied in several service industries.

3. Research Architecture

Lee et al., (2015) developed and demonstrated a structural and empirical service design using a combined TRIZ, service QFD and service blueprint approach for shopping mall's parking service. The integrated methodology has major benefits for both knowledge-oriented and experience-oriented service design approaches. Chai's (2005) problem-oriented model provides systematic stages for the completion of the design of new services. New services must not merely be novel, but must also meet the needs of the enterprise and its domain, so as to increase competitiveness. The three structural phases taken from Chai's problem-oriented model include the problem definition phase, the problem resolution phase and the solution evaluation phase. This study focuses on addressing gender differences in featuring parking service design and adopts empirical investigation in defining customer requirements.

3.1. Problem Definition

Identifying the root cause of problems is a very time-consuming task. However, analyzing the problems with a specific formulator is a good way to simplify the problem and define the opportunities for innovation clearly. In this study, the empirical investigation of parking items are taken as the customer requirement and used to build row data in the QFD matrix. QFD has been used as a tool for listening to the voice of the customer (Voc) and extending quality into the design of products, processes, and production systems. This approach is specifically enhanced at maximizing customer satisfaction by generating information about customer needs, and translating this information into actions and designs. In this phase, the service parameters related to parking also derived as the service design requirement and are put into the column data of the QFD matrix. Service QFD analysis is then carried out to find out the exact service design requirement that is a good fit for the customer requirement.

3.2. Problem Resolution

This study then identifies the conflicting parameters and a contradiction matrix is mapped to obtain the TRIZ principles for problem resolution. These principles provide an understanding of the directions of systematic resolutions and indicate the new service functions or elements required in the new service model.

3.3. Solution Evaluation

This stage uses service QFD to define the architecture, the detail, and the mode of operation of the new canteen service. Three service parameters with higher scores are chosen to develop the new service process. Expectation Model is drawn by using the service blueprint approach.

4. Gender-Neutral Parking Service Innovation

This study developed and demonstrated a structural and empirical service design using a combined TRIZ, service QFD and service blueprint approach based on Chai's problem-oriented model include the problem definition phase, the problem resolution phase and the solution evaluation phase.

4.1. Problem Definition: Customer Requirement Analysis

In this phase, eight items of customer requirement for parking are collected from literature. They are appropriate space finding speed, good or very good 'pre-parking pose', reverse into space, forward into space, speed of manoeuvre, reposition shuffle, central finish. These items of customer requirement for parking are used as the "whats" (customer requirements) of the deployment matrix.

4.2. Problem Resolution: QFD of Customer Requirement - Service Design Requirement

Chang and Lu (2009) transformed the original TRIZ engineering parameters into service parameters. Lee et al., (2015) then summarized that the relevant 9 service parameters for parking service are as shown in Table 4.

Table 4: TRIZ-based service parameter

TRIZ Engineering parameter	Service parameter	Service parameter for parking lot specific
9/Speed	Responsiveness	Efficiency of parking service
12/Shape	Exterior	Parking equipment and appearance, such as

		parking information display and Fence machine
25/Loss of time	Waiting time	Waiting time for receiving services in finding parking space, parking, payment, finding car.
27/Reliability	Reliability	Reliability of parking service
28/Measurement accuracy	Communication	Ability to listen to customers' voices
34/Ease of repair	Service ability	Ability to respond to customers' requests and demands
35/Adaptability	Service flexibility	Personalized services
38/Extent of automation	Initiative to provide customers with the necessary information	Automation service, such as Exit guide, parking-car location prompt
39/Productivity	Service performance	Service performance in parking lot, such as car-finding efficiency and convenient payment

In this phase, the QFD is analyzed between the "whats" (customer requirements) and the "hows" (service design requirement) of the two axes of the deployment matrix (as shown in Table 5). Customer requirements are chosen from the NCP Parking report. Female relative performance are considered as the importance of customer requirements. In the building relationship matrix step, the strength of the relationships between each customer requirement and service design requirement is determined by experts. Experts assign each cell a value from 1 (weak correlation), 5 (Moderate relationship) and 9 (strong correlation).

Table 5: Parking service QFD

Female relative performance	Customer requirements	Responsiveness	Exterior	Waiting time	Reliability	Communication	Service ability	Service flexibility	Initiative to provide customers with the necessary information	Service performance
0.92	Appropriate space finding speed	■	■	■	■	●	■	●	■	■
0.77	Good or very good 'pre-parking pose'	●	●	■	▲	■	▲	●	●	●
0.39	Reverse into space	●	●	▲	▲	●	▲	▲	■	●
0.61	Forward into space	●	●	▲	▲	●	▲	▲	■	●
1	Speed of manoeuvre	■	▲	■	●	■	▲	■	■	■
0.56	Reposition shuffle	■	●	▲	●	▲	▲	■	▲	●
0.53	Central finish	▲	●	●	■	●	●	●	■	●
	Sum Product	26.74	16.14	32.54	23.46	21.18	25.46	21.26	34.62	20.14
	Rank	3	9	2	5	7	4	6	1	8

Seven service parameters with top 3 scores are chosen. They are "Initiative to provide customers with the necessary information (no.38),"" Waiting time (no.25),"" Responsiveness (no.9)". After these key service requirement attributes are analyzed, this study takes them as parameters for improvement as the service resolutions to develop the service functions.

4.3. Solution Evaluation: Service Blueprint of the Expectation Model

In this Section, this study describes a service blueprint of the expectation model.

According to the Table 6, three service parameters with higher scores are chosen. They are "Initiative to provide customers with the necessary information", "Waiting time", and "Responsiveness". According to these three service parameters, we develop the gender-neutral support modules including parking management system, image recognition system, ticket system and App parking support system.   From the new service blueprint (as shown in Figure 1), this study can see the complete service process after the design of the new service. The depiction of the new support modules is described as follows.

Table 6: Gender-neutral service functions of parking service

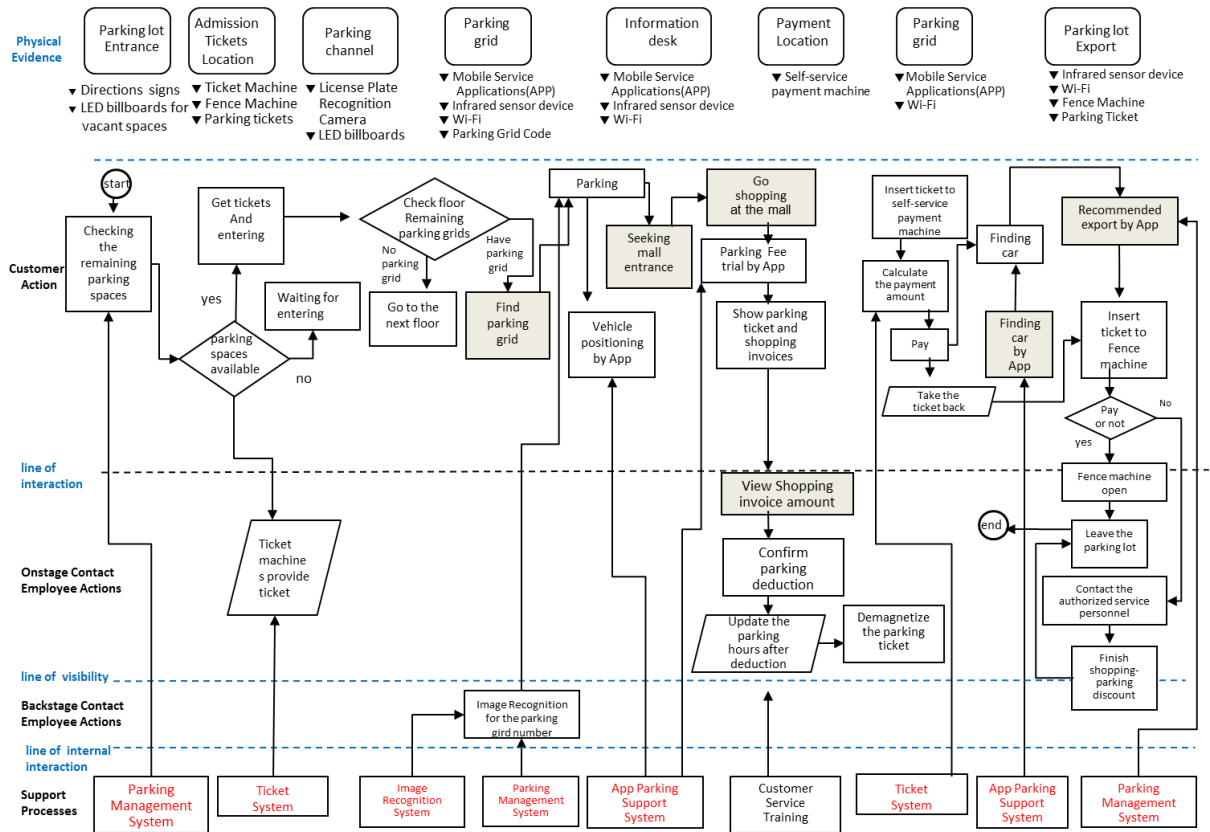| Service parameters	Actions	Support Modules
Initiative to provide customers with the necessary information	Checking the remaining parking space Check floor remaining parking girds Finding parking gird Recommended export by App	Parking management system
Waiting time	Image recognition for the parking gird number	Image recognition system
Responsiveness	Get tickets and entering Ticket machines provide tickets Vehicle positioning by App Parking trial by App Finding car by App	Ticket system App parking support system

Figure 1: The Service Blueprint of Gender-Neutral Support Service

Physical Evidence

Parking lot Entrance	Admission Tickets Location	Parking channel	Parking grid	Information desk	Payment Location	Parking grid	Parking lot Export
▼ Directions signs ▼ LED billboards for vacant spaces	▼ Ticket Machine ▼ Fence Machine ▼ Parking tickets	▼ License Plate Recognition Camera ▼ LED billboards	▼ Mobile Service Applications(APP) ▼ Infrared sensor device ▼ Wi-Fi ▼ Parking Grid Code	▼ Mobile Service Applications(APP) ▼ Infrared sensor device ▼ Wi-Fi	▼ Self-service payment machine	▼ Mobile Service Applications(APP) ▼ Wi-Fi	▼ Infrared sensor device ▼ Wi-Fi ▼ Fence Machine ▼ Parking Ticket

Customer Action: start → Checking the remaining parking spaces → parking spaces available (yes) → Get tickets And entering → Check floor Remaining parking grids (No parking grid / Have parking grid) → Go to the next floor / Find parking grid; (no) → Waiting for entering; Parking → Seeking mall entrance → Go shopping at the mall → Parking Fee trial by App → Show parking ticket and shopping invoices; Vehicle positioning by App; Insert ticket to self-service payment machine → Calculate the payment amount → Pay → Take the ticket back; Finding car / Finding car by App → Recommended export by App → Insert ticket to Fence machine → Pay or not (yes/No) → Fence machine open → Leave the parking lot → Contact the authorized service personnel → Finish shopping-parking discount

line of interaction

Onstage Contact Employee Actions: Ticket machines provide ticket; View Shopping invoice amount → Confirm parking deduction → Update the parking hours after deduction → Demagnetize the parking ticket

line of visibility

Backstage Contact Employee Actions: Image Recognition for the parking gird number

line of internal interaction

Support Processes: Parking Management System | Ticket System | Image Recognition System | Parking Management System | App Parking Support System | Customer Service Training | Ticket System | App Parking Support System | Parking Management System

5. CONCLUSIONS

With the improving education level and economic self-consciousness, female drivers are more common nowadays. According to the literature studies, compared with male drivers, female drivers are more susceptible to the environment and unfavorable in the sensitivity of the sense of space and direction. Due to there is few literature focusing on parking service design which addresses gender differences, this study expects to explore the parking demand, innovative service model from gender characteristics perspective. The study aims to improve parking service quality and optimize customer experience by integrating TRIZ, service QFD and service blueprinting as the service design methods. The three structural phases taken from Chai's problem-oriented model include the problem definition phase, the problem resolution phase and the solution evaluation phase. Eight items of customer requirement for parking are collected from literature in the problem definition phase. Three TRIZ based service parameters with higher scores are chosen in the problem resolution phase. They are "Initiative to provide customers with the necessary information", "Waiting time", and "Responsiveness". In the solution evaluation phase, this study develops four gender-neutral support modules including parking management system, image recognition system, ticket system and

App parking support system. It contributes to extend the range of multiple service design approach for future applications and explore the gender difference of innovation service adoption.

The contribution and novelty of this research is the development and demonstration of a structural and empirical service design using integrated TRIZ-based, service QFD-based and service blueprint. This structural service design can enrich the literature about gender-neutral parking design.

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科技部補助專題研究計畫出席國際學術會議心得報告

日期：　2016　年　03　月　25　　日

計畫編號	MOST 104－2629－E－027－001		
計畫名稱	應用多階段服務品質機能與萃思創新方法論建構性別友善停車服務創新		
出國人員姓名	王育慧	服務機構及職稱	國立台北科技大學資訊與財金管理系
會議時間	2016 年 02 月 04 日至 2016 年 02 月 05 日	會議地點	Melbourne, Australia
會議名稱	(中文) ICBEIM 2016 年第 18 屆商業、經濟與創新管理國際會議 (英文)ICBEIM 2016：18th International Conference on Business, Economics and Innovation Management		
發表題目	(中文)應用萃思創新方法論發展個案創新服務方案 (英文)Applying Theory of Inventive Problem Solving to Develop Innovative Solutions：A Case Study		

一、 參加會議經過

　　2016 年 02 月 04 日至 2016 年 02 月 05 日，計畫主持人參加 ICBEIM 2016 年第 18 屆商業、經濟與創新管理國際會議，除口頭報告發表論文外，同時也擔任發表場次的 session chair，服務證明如照片檔。

二、 與會心得

　　ICBEIM 2016 年第 18 屆商業、經濟與創新管理國際會議討論議題廣泛，計畫主

持人吸收多元議題，收穫豐富。在發表論文時，同場次 Co-chair Prof. Oliver

Mauroner 詢問應用萃思創新方法論時，如何決定工程參數轉換成相關服務參數，計

畫主持人也給予詳細說明，必須藉由對於 domain knowledge 熟悉的專家來協助判斷

與解讀，提問者也認同以專家訪談來進行應用萃思創新方法論。

三、 發表論文全文或摘要

Abstract—Good service design can increase organization revenue and consumer

satisfaction while reducing labor and time costs. The problems facing

consumers in the original serve model for eyewear and optical industry

includes the following issues: 1. Insufficient information on eyewear

products 2. Passively dependent on recommendations, insufficient selection

3. Incomplete records on progression of vision conditions 4. Lack of complete

customer records. This study investigates the case of Kobayashi Optical,

applying the Theory of Inventive Problem Solving (TRIZ) to develop innovative

solutions for eyewear and optical industry. Analysis results raise the

following conclusions and management implications: In order to provide

customers with improved professional information and recommendations,

Kobayashi Optical is suggested to establish customer purchasing records.

Overall service efficiency can be enhanced by applying data mining techniques

to analyze past consumer preferences and purchase histories. Furthermore,

Kobayashi Optical should continue to develop a 3D virtual trial service which

can allow customers for easy browsing of different frame styles and colors. This 3D virtual trial service will save customer waiting times in during peak service times at stores.

四、建議

計畫主持人與參與會議的香港大學、新加坡大學等學者有交流討論，希望後續有機會能一起進行國際合作。

五、攜回資料名稱及內容

ICBEIM 2016：18th International Conference on Business, Economics and Innovation Management Proceeding

六、其他

CERTIFICATE OF ATTENDANCE AND APPRECIATION

This certificate is awarded to
YU-HUI WANG, Session Chair
for oral and technical presentation, recognition and appreciation of research
contributions to ICBEIM 2016 : 18th International Conference on
Business, Economics and Innovation Management

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FEBRUARY 04-05, 2016

科技部補助專題研究計畫執行國際合作與移地研究心得報告

<div align="right">日期： 2016 年 05 月 25 日</div>

計畫編號	MOST 104－2629－E－027－001		
計畫名稱	應用多階段服務品質機能與萃思創新方法論建構性別友善停車服務創新		
出國人員 姓名	王育慧	服務機構 及職稱	國立台北科技大學資訊與財金管理系
出國時間	2016 年 01 月 31 日至 2016 年 02 月 03 日	出國地點	The University of Melbourne, Australia
出國研究 目的	□實驗 □田野調查 □採集樣本 ■國際合作研究 □使用國外研究設施		

一、 執行國際合作與移地研究過程

　　本計畫名稱為「應用多階段務品質機能與萃思創新方法論建構性別友善停車服務創新」，涉及個案研究法(Case Study)之應用。計畫主持人於 2016/1/31 實地參訪 The University of Melbourne，2016/02/01 與該校 Centre for Asian Business and Economics 專職人員討論中心運作模式，2016/02/03 與 Department of Business Administration 專職人員討論，經其提供該校商學院 MBA 與高階主管教育 Executive education 學程資料上四份個案研究法之進行步驟與重點，此田野調查進行觀察個案研究法進行場域與應用限制，對於專題研究計畫之深化與完成有所助益。

二、研究成果

　　「個案研究」偏重於探討當前的事件或問題，尤其強調對於事件之真相、問題形成的原因等方面作深刻而周詳的探討。因此該校商學院 MBA 與高階主管教育 Executive education 學程資料上四份個案研究法之進行步驟與重點有助於本研究在

形塑女性停車全貌的資料蒐集與判斷，找到適合且具量化數據的兩性停車表現指標文獻，來搭配萃思創新方法論所對應的停車服務參數，完成女性停車服務品質機能展開圖。

三、建議

　　該校 Centre for Asian Business and Economics 與 Department of Business Administration 雖然有豐富的個案研究文獻，但仍需研究者自行查找與性別議題相關研究，有建議該校能建立相關個案研究目錄。

四、本次出國若屬國際合作研究，雙方合作性質係屬：（可複選）
　　□分工收集研究資料
　　□交換分析實驗或調查結果
　　□共同執行理論建立模式並驗証
　　□共同執行歸納與比較分析
　　□元件或產品分工研發
　　■其他（請填寫）交流 The University of Melbourne-Centre for Asian Business and Economics 與 Department of Business Administration 相關個案研究法之進行步驟與重點

五、其他

科技部補助計畫衍生研發成果推廣資料表

科技部補助計畫	計畫名稱: 應用多階段服務品質機能與萃思創新方法論建構性別友善停車服務創新
	計畫主持人: 王育慧
	計畫編號: 104-2629-E-027-001-　　　學門領域: 性別主流科技計畫

無研發成果推廣資料

104年度專題研究計畫成果彙整表

計畫主持人：王育慧				計畫編號：104-2629-E-027-001-		

計畫名稱：應用多階段服務品質機能與萃思創新方法論建構性別友善停車服務創新

成果項目				量化	單位	質化 （說明：各成果項目請附佐證資料或細項說明，如期刊名稱、年份、卷期、起訖頁數、證號...等）
國內	學術性論文	期刊論文		0	篇	
		研討會論文		0		
		專書		0	本	
		專書論文		0	章	
		技術報告		0	篇	
		其他		0	篇	
	智慧財產權及成果	專利權	發明專利 申請中	0	件	
			發明專利 已獲得	0		
			新型/設計專利	0		
		商標權		0		
		營業秘密		0		
		積體電路電路布局權		0		
		著作權		0		
		品種權		0		
		其他		0		
	技術移轉	件數		0	件	
		收入		0	千元	
國外	學術性論文	期刊論文		1	篇	Top 10 most downloaded paper of the ADVEI.
		研討會論文		1		Applying Theory of Inventive Problem Solving to Develop Innovative Solutions：A Case Study, ICBEIM 2016:18th International Conference on Business, Economics and Innovation Management, Melbourne, Australia, 2016/2/4-2/5.
		專書		0	本	
		專書論文		0	章	
		技術報告		0	篇	
		其他		0	篇	
	智慧財產權及成果	專利權	發明專利 申請中	0	件	
			發明專利 已獲得	0		
			新型/設計專利	0		
		商標權		0		

		營業秘密	0		
		積體電路電路布局權	0		
		著作權	0		
		品種權	0		
		其他	0		
	技術移轉	件數	0	件	
		收入	0	千元	
參與計畫人力	本國籍	大專生	2	人次	
		碩士生	0		
		博士生	0		
		博士後研究員	0		
		專任助理	0		
	非本國籍	大專生	0		
		碩士生	0		
		博士生	0		
		博士後研究員	0		
		專任助理	0		
其他成果 （無法以量化表達之成果如辦理學術活動、獲得獎項、重要國際合作、研究成果國際影響力及其他協助產業技術發展之具體效益事項等，請以文字敘述填列。）			發表期刊論文Service design for intelligent parking based on theory of inventive problem solving and service blueprint獲Advanced Engineering Informatics期刊(SCI)top 10 most downloaded paper.		

科技部補助專題研究計畫成果自評表

請就研究內容與原計畫相符程度、達成預期目標情況、研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性）、是否適合在學術期刊發表或申請專利、主要發現（簡要敘述成果是否具有政策應用參考價值及具影響公共利益之重大發現）或其他有關價值等，作一綜合評估。

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1. 請就研究內容與原計畫相符程度、達成預期目標情況作一綜合評估
   ■達成目標
   □未達成目標（請說明，以100字為限）
   　　　□實驗失敗
   　　　□因故實驗中斷
   　　　□其他原因
   說明：

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2. 研究成果在學術期刊發表或申請專利等情形（請於其他欄註明專利及技轉之證號、合約、申請及洽談等詳細資訊）
   論文：■已發表　□未發表之文稿　□撰寫中　□無
   專利：□已獲得　□申請中　■無
   技轉：□已技轉　□洽談中　■無
   其他：（以200字為限）

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3. 請依學術成就、技術創新、社會影響等方面，評估研究成果之學術或應用價值（簡要敘述成果所代表之意義、價值、影響或進一步發展之可能性，以500字為限）

   近年來女性經濟自主能力提高，加上女性駕駛人的比例逐年增加，依文獻研究指出女性比起男性更容易受到環境的影響，且在空間感與方向感的敏感度遠不及男性，由於諸多條件皆不利於女性駕駛，過去也鮮少有針對兩性差異議題進行設計的科技輔助停車服務，本研究以Chai's以問題為導向之服務設計模組四步驟，應用多階段服務品質機能與萃思創新方法論解析兩性對於停車需求特性，研究結果顯示，在問題定義階段，從文獻上共蒐集到八個顧客重視的需求。在方案解決階段，三個被顧客所重視的參數分別為「提供客戶需要資訊」、「等待時間」與「回應性」。在方案評估階段，產出四個性別友善的停車輔助系統概念，包括停車管理系統、影像辨識系統、票券系統與App停車輔助系統，提供後續服務提供者可採取之行動策略、指標訂定，建構性別友善停車服務創新以改善停車場服務品質及優化顧客體驗，兼達提升兩性平等效益及產業附加價值之雙贏目標。

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4. 主要發現
   本研究具有政策應用參考價值：■否　□是，建議提供機關
   （勾選「是」者，請列舉建議可提供施政參考之業務主管機關）
   本研究具影響公共利益之重大發現：■否　□是
   說明：（以150字為限）

本研究產出四個性別友善的停車輔助系統概念，包括停車管理系統、影像辨識系統、票券系統與App停車輔助系統，提供後續服務提供者可採取之行動策略、指標訂定，建構性別友善停車服務創新以改善停車場服務品質及優化顧客體驗，兼達提升兩性平等效益及產業附加價值之雙贏目標。