USING SERVICE DESIGN TOOL AND QUALITATIVE RESEARCH METHOD TO ASSIST THE E-GOVERNMENT SERVICE PROCESS REDESIGN: A CASE STUDY OF THE TAXATION SERVICE PROCESS IN TAIWAN

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Abstract

Previous studies have determined that information technology dominates numerous e-government projects; information and communications technology has been used mainly as a tool for enhancing the efficiency and service delivery of governments. Electronic government(e-government) should achieve public innovation goals, such as redesigning information relationships among stakeholders, enhancing citizen participation in the policymaking process, and reinforcing policy enforcement to create public value. These goals are more valuable, but also more complex, than the digitization of existing governmental processes. Therefore, this study focused on a crucial e-government service, the Taiwan taxation service, to determine whether, in the current era in which people depend highly on network tools to send and receive information, online services are suitable for taxpayers and how to improve the service process.

In this study, service design tools were combined with a qualitative research method, and observation and individual interviews of participants were conducted to record their perceptions of the tax service process. The results of the study facilitate identifying gaps in the seemingly convenient and progressive tax service process of Taiwan, including insufficient information provision, complex website operation, inconsistent information classification with users' logic, the lack of complete and consistent service for one-stop windows, and difficult document content. The taxation authority should integrate all online taxation services to achieve the expected public service (one-stop e-government window). This research facilitates relevant government agencies to provide effective e-government services, identify problems, and modify service delivery processes.

Keywords: Electronic government, Service design, Qualitative research, Service process

1   INTRODUCTION

Technology plays a crucial role in enhancing people's lives, and the development of the Internet has led to a new paradigm in human communications, affecting consumer culture, service delivery methods, and the expectations for products and services. This powerful transformation has also driven the innovation of public service by changing the manner in which information and services are delivered to citizens.(Hung 2008)

However, a more legitimate goal of e-government is to include continuous modernization initiatives to keep in pace of society progress and needs. Therefore, fostering innovativeness and utilizing ICT to enable public innovation are indispensable in e-government strategy (Bekkers et al. 2006). Efficiency-led innovations are like conventional e-government objectives, whereas needs-led innovations aim to address problems. Demand-pull innovations come from the willingness of potential users, which include businesses, societal organizations or citizens. Supply-push innovations usually happen when the government exercises its influence and regulatory power to achieve policy effectiveness and greater public value. (Homburg 2008; King et al. 1994)

Taiwanese government plans to promote a government organization reform project from 2013, by reforming the whole government structure to improve the efficiency and quality of government services. This study research context arise form then, and focus on Fiscal Information Agency (FIA) of the Ministry of Finance (MOF). MOF is one of the eight main Ministries within Taiwanese government, including eight departments, thirteen divisions, and eight sectors. Before organization reform project, FIA and 5 National Taxation Bureau(NTB) are responsible for back-end support and front-end service. However, after organization reform project, FIA become the Chief Information Officer(CIO) of MOF, responsible for how to integrate the tax service processes which previously scattered among various units, and how to redesign the service.

In Taiwan, taxes are classified as national, metropolitan, county, and city taxes. National taxes include income, estate, gift, commodity, securities transaction, futures transaction, business, tobacco and alcohol, and specifically selected goods and services taxes, whereas metropolitan, county, and city taxes include stamp, vehicle license, agricultural land, land value increment, house, amusement, and deed taxes.(Tax System 2014) Online services are used for managing these taxes to reduce information asymmetry (Clarkson et al. 2007) between taxpayers and tax units and to increase the transparency of the taxation process and the willingness of taxpayers to pay taxes. However, in the current era in which people depend highly on network tools to send and receive information, is online service suitable for taxpayers? If not, how can the service process be improved?

This study applied qualitative research method (Yin 2013) and service design tools; through a case study of income tax in Taiwan, taxpayer perceptions at various steps were analyzed to elucidate the gap between online services and taxpayers. Accordingly, suggestions for enhancing the service steps that require improvement were proposed.

2   LITERATURE REVIEW

Service design is a growing field and is widely applied in private and public sectors. IDEO in the USA and Live|Work in the UK are the most well-known private service design companies (Kimbell 2009); MINDLAB in Denmark and ThinkPublic and Public Policy Lab in the USA are organizations well known for innovative public service (Bason 2013); Köln International School of Design in Germany and Carnegie Mellon University in the USA are outstanding in the academic field (Saco & Goncalves 2008). The Design Council in the UK is the most active government in service design, and the emergency housing service project in Lewisham is a major achievement (Council 2013). The definitions and tools of service design are provided in the following (Stickdorn & Schneider 2012).

2.1 Definitions of service design

Service design combines numerous methods and tools from various research fields, providing a new method of inquiry rather than a new discipline. Service design does not yet have a common definition; therefore, this study investigated service design in academia and in practice.

2.1.1 Academic definition

Service design is a growing field that integrates the tangible and intangible skills and tools from design, management, and manufacturing processes to create suitable concepts based on experiences. These concepts are reflected in the process and system design, assisting an organization to provide a complete service for users and enabling end users to receive the optimal service experience. Service design helps the organization provide new services or improve current services, causing its clients to feel that the services are helpful and be willing to use the services. In addition, service design improves the effectiveness and performance of the organization.

2.1.2 Definition in practice

Service design helps staff improve service quality, substantially enhancing the comfort and efficiency of the service environment, customer satisfaction and loyalty, communication, and products. It can also help companies consider services from customers' perspective and, thus, gain a comprehensive understanding of customer needs. Therefore, service design is a creative and practical method that enables enterprises to improve existing services or create new services.

Regardless of the different definitions, service design has the following five principles:

- User-centered: Service requires user involvement, which entails interaction between the service provider and customers. The objective of service is to fulfill customer needs. Designing a user-centered service requires a clear understanding of customer requirements, attained not only by analyzing experiences and statistical data but also by considering aspects of the customer perspective, such as individual background and service experience.
- Co-creative: Providing service requires considering customers and other stakeholders such as frontline staff, support staff, and administrators, and even vending machines and the service website should be considered. To design a process that integrates a service and related stakeholders, the customers' language must be used as a common language, and all parties must be involved in the creative process. A service design team provides an environment in which various stakeholders create and evaluate ideas. During this service design process, stakeholders can enhance communication to promote the sustainable development of customer and employee satisfaction.
- Sequencing: Services often occur as dynamic processes at a specific time; therefore, during service design, a service timeline is crucial because it affects customers' feelings and satisfaction. The service process is divided into several touchpoints and interactions; combining these touchpoints and interactions result in a complete service process. Every service process has three phases, namely the pre-service, service, and post-service periods.
- Evidencing : Services are often taken for granted and do not attract attention. Service evidencing entails transforming intangible services into tangible services and extends the service experience from the service period to the post-service period. Evidencing can reveal background services, and the design must be based on the original service statements and touchpoint order.
- Holistic: Service is intangible but occurs in a real environment. Customers subconsciously perceive this fact. Although providing comprehensive services is difficult, the service context must be expanded. Considering individual touchpoints, service designers should emphasize the service environment because customers' feelings strongly affect their service experience. When designing a service process, service designers must focus on the history of customer choices and carefully consider and evaluate the touchpoints chosen by customers to improve the user experience. From the service provider perspective, priority must be placed on the characteristics of the service organization, including its system design, organizational culture, values, discipline, structure, and procedures, which play a vital role in service design.

2.2   Service design tools

This study proposes two service design tools: the customer journey map (Figure 1) and customer journey canvas (Figure 2) (Stickdorn & Schneider 2012). The customer journey map is a guide map that represents the interaction between a service and customers' contact points and, thus, describes the customer experience with the service. Using the customer journey map, we can describe a possible scenario or relate the user experience to an existing service procedure. We must prepare a blank customer journey map and a blank card expressing the touchpoints. First, methods and rules can be established according to the specific situation and purpose. We can then select or create a person as a customer, define a goal for this customer, set the contact points that enable achieving the goal, and describe the experience of the customer between these contact points. The blank touchpoint cards provide visual support for enhancing our understanding, and the customer experience is integrated to express the activity sequence and touchpoints. The following list shows the elements that should be included in the customer journey map:

Figure 1.   Customer Journey Map

The customer journey canvas divides service into three periods: the pre-service, service, and post-service periods. The customer journey canvas is mainly applied in the service period. This tool emphasizes that a service provider must meticulously design services during the pre-service period. In addition, before proceeding with appropriate service design and planning, the service provider must execute advertisement and public relations campaigns to understand how consumers receive relevant information through social media and how different consumer groups perceive the reputation of and their experiences with the service provider and its services. When service design and planning is complete, the service provider must direct attention toward managing its relationships with customers to understand how customers receive information through social media and customers'   responses to the service. By predicting the level of satisfaction, a service provider can clearly understand the gap between a service and customer expectations at various stages.
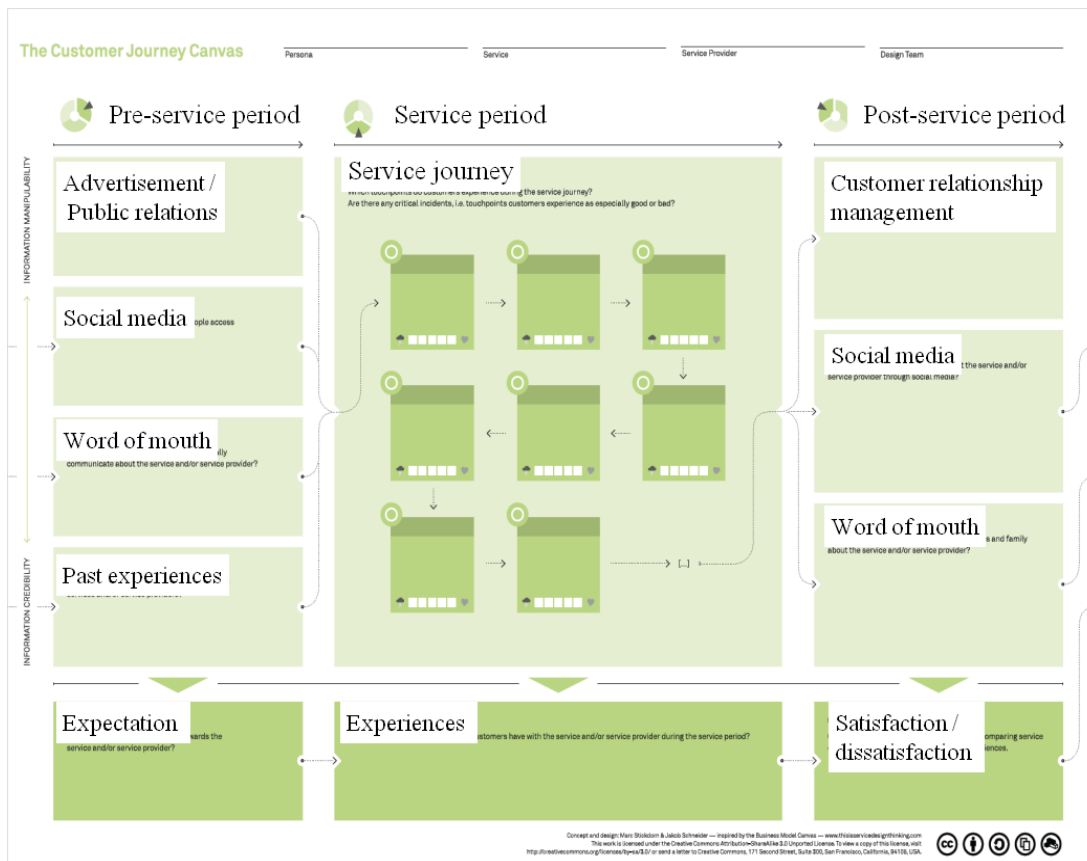
Figure 2.   Customer Journey Canvas

The core concept of service design is user-centred", and all decisions and policies are based on this concept. Because of the broad scope of service design, it must be associated with specific principles such as sequencing (integrated services at all touchpoints, creating a smooth and satisfying user experience), evidencing (the service provider creates intangible value and passes it to the user), and holistic (all details on the user experience are contributed to the impression of the service provider's quality). Among the five principles of service design, co-creative is particularly crucial because the service provider can easily define its internal division of labour and logical barriers.

The concept and contents of service design were integrated in analyzing and improving the design of tax services to satisfy the policy objectives of the MOF in Taiwan. The current tax service situation and possible problems were considered, and the services were analyzed from every perspective to design service improvements according to a customer journey map and customer journey canvas. The service providers were addressed on the three periods of service design, the needs of taxpayers, and specific aspects of the services that required examination. Suggestions were made on the basis of innovative and feasibility analyses.

3   CASE DESCRIPTION

Determining how to allocate national taxes to provide the central and local governments with access to the necessary financial resources for supporting the infrastructure has been the primary target for financial system design. Because of recent advances in the Internet, the public can easily complete taxation services through the Internet without going to the tax authority and queuing in long lines.

The Study Group on Asian Tax Administration and Research (SGATAR)[1], one of the important taxation group in Asia, which also discus related issues in the meeting of 2011 and 2012 held two

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[1]The Study Group on Asian Tax Administration and Research (SGATAR) http://www.sgatar.org/

consecutive years for "enhancing convenience for taxpayers and efficiency in administration by utilizing information technology" and "ICT (information and communication technology): Maximising its usage and all aspects of tax administration at a minimum cost "and other related issues. Tax services status for Asian countries summaries as following Table 1.

	Simplify tax declaration	Simplify tax payment	Simplify authentication	One-stop service	Others
Australia			Integrated Work Distribution	Online service	● Managed Network Services ● Integrated Work Distribution
China					Golden Tax Project (GTP3)
Hong Kong		Electronic Tax Reserve Certificates (TRCs)		Electronic Services	Interactive Voice Phone System
Japan		e-Tax		Final Return Preparation Corner	Tax Answer
Korea	Simplified Year-end Tax Settlement	Cash Receipt System		Home Tax	● National Tax Law Information System ● Tax Consultation System
Macau		Electronic Payment Services)	e-Pass Electronic Signature	One-Stop Service Centre	
Singapore	No-Filing Service (NFS)			My Tax Portal	my Tax Mail
Thailand			Tax Smart Card	One-Stop Service Centre	Mobile Revenue Office
Taiwan	Pre-Calculation of Individual Income Tax paper	E-filling	Citizen Digital Certificate	e-Tax portal	Withholding Statement

Table 1.   *Tax services status for Asian countries*

Taxation offices in recent years have gradually transformed from tax collection offices to tax service providers. All aspects of the taxpayer perspective are addressed; specifically, 21st-century information technology is employed, the Internet is used effectively to simplify tax collection processes, collection manpower has been reduced, and the quality of service has been enhanced. To reduce the costs and time required for taxpayers to file taxes and to realize a paperless taxation system, the Ministry of Finance proposed a major tax reform plan, the Taxation Information System Reform Project, for the lateral and vertical extension of the scope of services to provide a single window of tax services, thereby achieving an action-oriented e-government and other policy objectives by using an information integration platform (Hung 2008).

The Taiwan tax information system was established in 1968 by the Tax Reform Commission (formerly the Financial and Taxation Data Processing and Examination Centre of the Ministry of Finance) and became a reputable system observed internationally. In early 1991, when Internet use increased, the Tax Reform Commission began planning a comprehensive income tax service based on a network to simplify processes, promote innovation, and reform the tax service. The Internet has enabled taxation administrations to offer cross-regional filing, inquiry, review, approval, rectification, and issuance of certificates to achieve the goal of a "one-step window" ("The Taxation Information System Reform Project." 2007). However, in the current era in which people depend highly on network tools to send and receive information, is online service suitable for taxpayers? If not, how can the service process be improved?

4 ANALYSIS

Various types of tax services can generally be classified according to the service characteristics and process flow, as shown in Table 2. The services are tax declaration, tax assessment, and tax application, and process elements include notification, processing, and tax payment. Notification provides taxpayers with tax-related information, including tariff descriptions, pay periods, and amount and process information such as reminders regarding individual income tax, papers for precalculating individual income tax, and annual tax and housing tax notices, thereby helping taxpayers understand their obligation and prepare to pay taxes. Processing refers to the relevant touchpoints in the interaction process between the taxpayer and the tax authority, such as using electronic tax-filing systems or software and going to tax authorities. Tax payment refers to the tax items used by taxpayers to pay or receive refunds from related service processes. Taxpayers are the users of tax services; therefore, when designing taxation services, the service provider must focus on improving the three main process elements by providing simple and innovative designs to satisfy demands.

Sequences/ service characteristics	Notification	Processing	Tax Payment
Tax Declaration	o	O	o
Tax Assessment	o		o
Tax Application Services		O	

Table 2.   Taxation sequences and service characteristics

Declaration taxes include national, individual income, business income, business, estate, gift, securities transaction, futures transaction, tobacco and alcohol, commodity, luxury, local, real estate transfer procedures covered land value increment, deed, and stamp taxes, as well as part of the amusement tax. Declaration taxes are usually related to the economic activity of taxpayers and require their initiative to provide relevant information. National taxes and local taxes on real estate transfer activity are typical examples. Before declaration, the taxpayer requires notification from the tax administration and then must use tax-related services such as online services or visit the local tax bureau. Finally, the taxpayer must use tax refund or finance-related services.

Assessment taxes include local housing and land value taxes, as well as part of the amusement and vehicle license taxes. The tax administration can assess these taxes according to government tax rules; therefore, this type of tax service involves only notifying the taxpayer and tax payment service.

In addition to general tax operations, taxpayers sometimes require tax application services such as applications for changing the purpose of land use. Demand for such services usually originates from other taxable activities of the taxpayer; therefore, taxpayers must go to the tax authorities voluntarily for related applications.

The objectives of e-government are to apply user-centeredness in providing convenient services and to create a pleasant user experience in the postinternet era (Christodoulides 2009). To achieve these objectives, the weaknesses of current taxation services and processes from the taxpayer perspective must be reviewed. By placing the service characteristics and sequences shown in Table 2 into the customer journey canvas (Figure 2) for the pre-service, service, and post-service periods, we obtain the taxation services customer journey canvas shown in Table 3.

customer journey period / service characteristics	Pre-service period	service period			Post-service period
		Notification	Processing	Tax Payment	
Tax Declaration	Find Information (laws, regulations, declare and payment methods)	o	O	o	Tax return, evade
Tax Assessment		o		o	Tax evade
Tax Application Services			O		

Table 3.   Taxation Services consumer journey canvas

This study applied the framework of service design in analyzing tax services and designing service improvements. First, the tax service customer journey canvas was referenced to identify service design periods in which service providers should focus and concerns with services warranting examination. Second, the service design tool, namely the customer journey map for the taxpayer, was applied. Finally, according to the analysis results from the customer journey map, possible innovative service solutions were recommended.

This study applied the service design method and qualitative research method in analyzing tax services by simulating the requirements of various people, conducting participant observation and interviews with specific individuals, and recording their true feelings on tax services. This study presented various service process stages that suit the simulated people, including new taxpayers, experienced taxpayers, and taxpayers requiring identity conversion (such as newly married couples). In each group, 3–4 participants were surveyed to understand their perceptions of the three service periods. This study revealed that new taxpayers have the largest gap in using taxation service, as shown in Figure 3-5 and Table 4-6. Therefore, the study focused on the new taxpayers group.

The research results showed that taxpayers who have tax service experience, even those who require identity conversion, perceive the tax service process as simple and smooth and can complete the process on the basis of past experience. However, because of the lack of prior knowledge on tax services, new taxpayers must collect relevant information by using the touchpoints of the pre-service period to enter the service period and post-service period. Hence, they must first experience the problems in process navigation during the pre-service period. Therefore, the following provides customer journey results for new taxpayers and a detailed analysis of the results of tax services in a customer journey map.

The customer journey results showed that taxpayers searched for tax-related information on the Internet. Several information search paths were used, and experience scores exhibited a different up-and-down path. The customer journey results also revealed that even after an excessive duration of searching for information, new taxpayers still could not determine how to process transactions; for example, they could not determine how many taxation methods to apply or how to use the electronic filing system. The users reviewed a substantial amount of useless information, causing confusion regarding topics such as tax saving methods and deduction items. Thus, taxpayers had a poor service experience in the information search period, which is in the pre-service period in the customer journey canvas. Most users suddenly understood how to operate the electronic filing system when entering the service period, and reported that employing a citizen digital certificate is the most convenient method for using the electronic filing system. Furthermore, they believed that if they had known how to use this certificate earlier, they could have saved a considerable amount of exploration. In addition, the results showed that the transition from the pre-service period to the service period is not sufficiently smooth. Although the tax administration in the service-transaction-based service is complete, users could not locate the transaction service entrance successfully. Thus, the taxpayers experienced substantial frustration and reported negative perceptions in the pre-service period. According to the comprehensive customer journey maps and the results of the touchpoint analysis, we summarize the causes of taxpayer expectation gaps as follows:

- Insufficient information provision and complex website operation:
  Administration systems are used to manage and design programs to enable agencies that cannot execute programming to manage their data easily; however, this has resulted in limitations of website management functions. Explanatory information must be downloaded, sometimes in the format of zip files, which cannot be read directly on the website. Most users do not read this information because of the complex procedures or because their personal computers or devices do not have the required software.
- Inconsistent information classification with users' logic:
  Information on the official website is mainly classified into tax service categories rather than according to the type of tax, and this is inconsistent with users' logic. For example, information on individual income tax, tax legislation, spreadsheets, and payment methods may be placed in different site categories and, thus, is not easy to find. Therefore, users must complete several steps to obtain tax application information. Users without sufficient background knowledge are likely

to search in incorrect categories and therefore spend a considerable amount of time searching for data, causing them to feel impatient and distrust the official website.

- The lack of complete and consistent service for one-stop windows (Gouscos et al. 2007):

  The current official website for the taxation service touchpoint is the "eTax portal[2]." In this portal, services are provided through multiple websites; therefore, users are frequently directed to new sites and must become familiar with the different designs and classifications of the websites. Thus, divisions of the service indirectly cause users to have inconsistent experiences. Tax service providers must have a division of authority and responsibilities, but the boundaries of the division should be bridged to achieve a one-stop government window; information should be integrated according to the user perspective and unnecessary internal details should be hidden to improve user perceptions.

- Difficult document content:

  To prevent misunderstanding, most document content is highly detailed, and no simple description or flow chart that enables users to quickly understand the necessary information is provided. Users require efficiency as well as correctness. Because reporting taxes is nonvoluntary, understanding the details on rights and obligations causes taxpayers to feel pressure, and they hope to complete the procedure efficiently. Therefore, the user interface design of the official website must be improved, and the accuracy and legibility of the website content must be enhanced. Focusing only on detail and accuracy may cause confused taxpayers to misreport values, resulting in information asymmetry between taxpayers and taxation authorities. This study suggests that the website content be written in the language of users rather than that of internal taxation workers.

According to the aforementioned improvements for individual websites and the identified causes of user expectation gaps, this study suggests that the tax authorities should be more meticulous in integrating various tax website designs and implement a user-centric single-portal website. The Taiwan Research Development and Evaluation Commission provided a full service concept for e-government services, emphasizing that the government should take the initiative to integrate the services of various departments rather than to have each department provide its services separately. In addition, researchers using the service design method AT-ONE reported that the customer experience is always interrupted at the weakest touchpoint; this problem can be rectified by replacing or strengthening touchpoints and then removing all weak touchpoints. Therefore, the government should focus on establishing a single tax portal by integrating all information, service processes, and tax declaration documents to enable the portal to meet the needs of all users. After the establishment of the single tax portal, other tax-related websites can be terminated to prevent user confusion and eliminate negative impressions of government services.
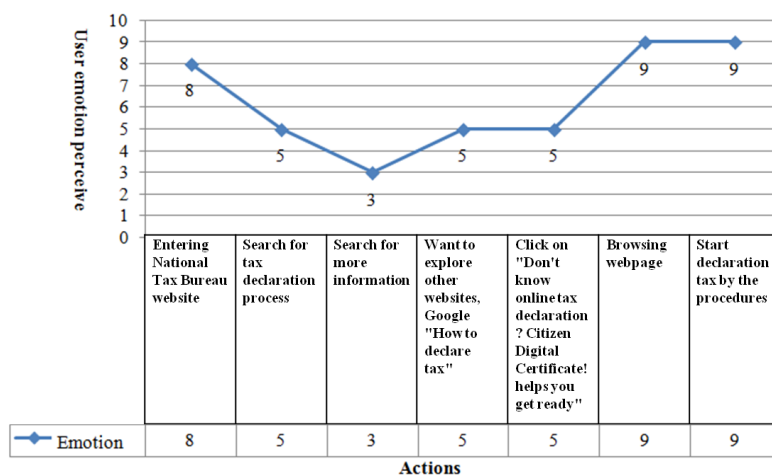

Figure 3.   *Customer Journey (1)*

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[2] eTax Portal, Ministry of Finance website: http://www.etax.nat.gov.tw/

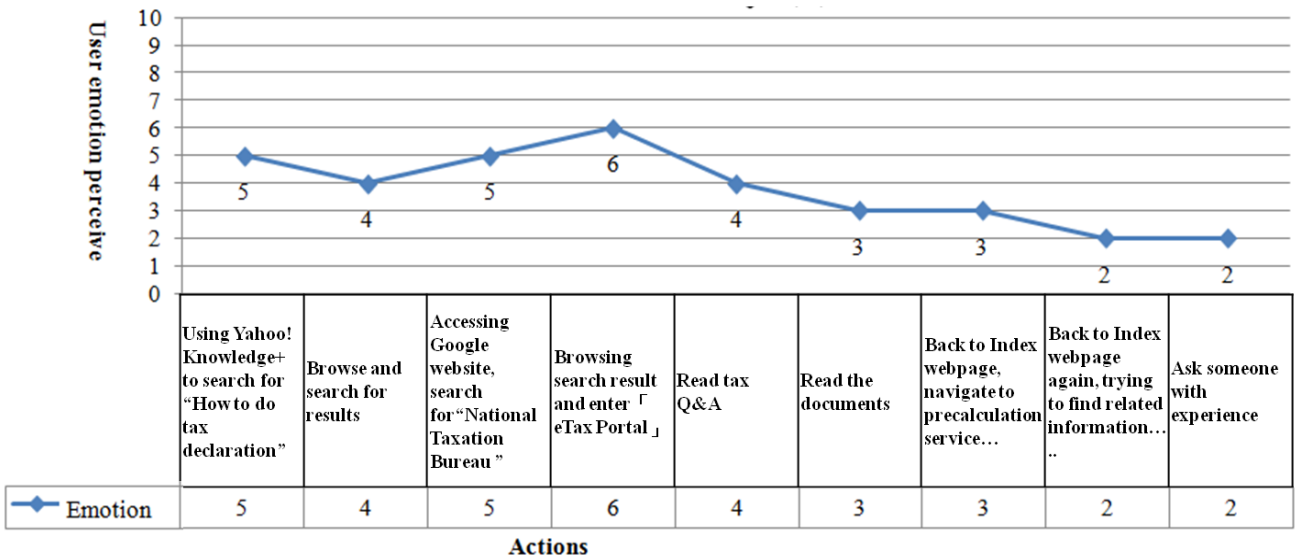| Thinking and feeling	Actions	Touchpoints	User emotion Perceive (1-10, 1 is lowest, 10 is highest)	Service delivery gap between provider and user
User believe that official website provides the right information	Entering National Tax Bureau website	National Taxation Bureau Website	8	
Unstructured data, user can't find useful information	Search for tax declaration process	National Taxation Bureau Website	5	Supposing government will provide a clear description on tax process
Content is very unfriendly, and hard for quick understanding	Search for more information	National Taxation Bureau Website	3	Excepted that official website will have clear procedure and content description
Not willing to go deeper, try another website through Google.	Want to explore other websites, Google "How to declare tax"	Google[3]	5	
The first search result does not looked like official website, but the domain is from government official, should be fine to	Click on "Don't know online tax declaration? Citizen Digital Certificate! helps you get ready"	Google	5	Topic does not match official image, looks like a magazine
The content is favorable and consist of detail information, the description is accurate and friendly, also include detail process flow and descriptions	Browsing webpage	Certificate Authority of MOI website[4]	9	
Feeling confident on handling tax declaration process, and tax declare over internet is a very convenient method	Start declaration tax by the procedures	Minister of Finance website	9	

Table 4. Detail of customer journey (1)

Figure 4.   Customer Journey (2)

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[3] Google portal: http://www.google.com.tw/
[4] Certificate Authority of MOI website: http://moica.nat.gov.tw/

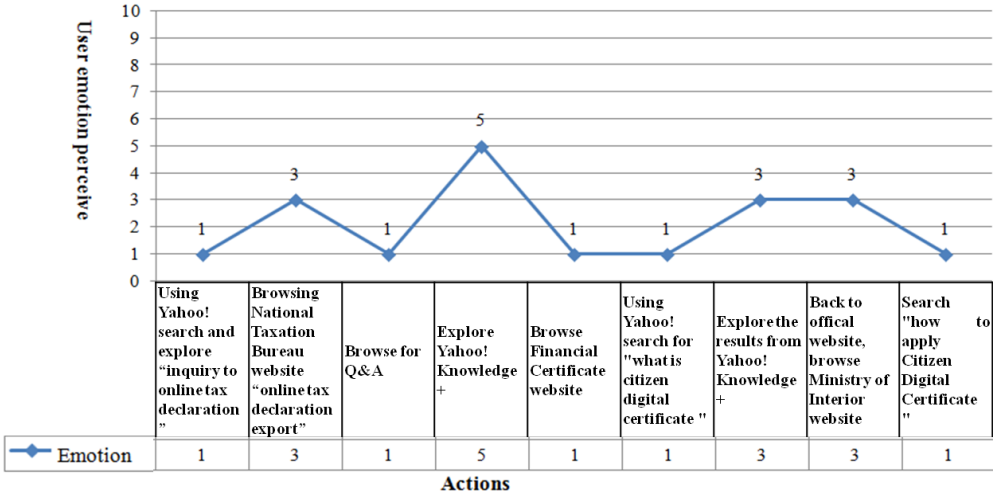| Thinking and feeling	Actions	Touchpoints	User emotion Perceive (1-10, 1 is lowest, 10 is highest)	Service delivery gap between provider and user
Without any related knowledge, feeling uncertainty for future	Using Yahoo! Knowledge+ to search for "How to do tax declaration"	Yahoo! Knowledge+[5]	5	
Unable to find useful information, fragmented without a concept, don't know how to start	Browse and search for results	Yahoo! Knowledge+	4	
Browsing official sites should get more details	Accessing Google website, search for "National Taxation Bureau "	Google	5	
Feeling at the first glance is great, should be able to complete smoothly	Browsing search result and enter 「eTax Portal」	e-Tax Portal[6]	6	
The structure is complicated and unclear, found related information but very hard to understand	Read tax Q&A	e-Tax Portal	4	
After reading the documents, user think self calculation is necessary to pay tax	Read the documents	e-Tax Portal	3	No recommendation for online tax filing
Do not understand what is exemption	Back to Index webpage, navigate to precalculation service…	National Taxation Bureau of Kaohsiung website[7]	3	
Spend lots of time exploring the website, but the information is not helpful, still do not know how to fill the tax	Back to Index webpage again, trying to find related information…..	e-Tax Portal	2	
Losing patience, better ask someone	Ask someone with experience	Friend	2	

Table 5.   Detail of customer journey (2)

Figure 5.   Customer Journey (3)

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[5] Yahoo! Knowledge+ website: https://tw.knowledge.yahoo.com/
[6] eTax portal, Ministry of Finance website: http://www.etax.nat.gov.tw/
[7] National Taxation Bureau of Kaohsiung website: http://www.ntbk.gov.tw/

Thinking and feeling	Actions	Touchpoints	User emotion Perceive (1-10, 1 is lowest, 10 is highest)	Service delivery gap between provider and user
Explore information on internet	Using Yahoo! search and explore "inquiry to online tax declaration"	Yahoo[8]	1	descriptions for new users, no confidence and security for new user
Keep on exploring data	Browsing National Taxation Bureau website "online tax declaration export"	National Taxation Bureau Website[9]	3	Downloads available for forms and applications, don't know how to start
Questions and Answers	Browse for Q&A	National Taxation Bureau Website	1	No Q & A for new user, therefore quit
Willing to get some information from Yahoo Knowledge +	Explore Yahoo! Knowledge+	Yahoo	5	Unable to understand all tax declare methods
Enter Financial Certificate website and select"apply"	Browse Financial Certificate website	Financial Certificate website[10]	1	1. Unstructured texts, losing patient to read. 2. Too many technical terms
Decide to understand what is " Citizen Digital Certificate "	Using Yahoo! search for "what is citizen digital certificate "	Yahoo	1	No page shows what is Citizen Digital Certificate
Explore user responds on the internet	Explore the results from Yahoo! Knowledge+	Yahoo Knowledge+	3	
Willing to know more about " Citizen Digital Certificate"	Back to offical website, browse Ministry of Interior website	Ministry of Interior[11]	3	
After understanding, try to apply" Citizen Digital Certificate"	Search "how to apply Citizen Digital Certificate "	Yahoo	1	Office hours only

Table 6.   Detail of customer journey (3)

5   CONCLUSION

Both the infrastructure and online transaction procedure of the Taiwan taxation system have internationally recognized designs. However, the customer journey map for new taxpayers revealed that the infrastructure and investments in online transactions are inadequately integrated, the websites in the tax service portal are not integrated, the excessive amount of tax-related information confuses taxpayers, and the sophisticated infrastructure and accumulated online transactions cannot be combined to provide human-centred tax liability, which would improve the service efficiency of tax authorities and create a win-win situation. Figure 6 shows that, although the information technology capabilities are complete, the appropriate service design processes must be combined to manifest the functionality of the system.

The various taxpayer service processes involve pre-service, service, and post-service periods and touchpoints including the entrance into the eTax portal, e-filing and payment taxation service system, local tax portal, and e-plus, and each is responsible for different functions and processes in the tax service periods. The Ministry of Finance is responsible for the eTax portal, which provides tax-related

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[8] Yahoo portal: https://tw.yahoo.com/
[9] National Taxation Bureau Website: http://www.ntbt.gov.tw/
[10] Financial Certificate website: https://itax.twca.com.tw/
[11] Ministry of Interior

information, applications for national and local taxes, and electronic-filing-related information. The local tax portal provides information on local tax declaration and electronic filing services; e-plus is not a service supervised by the tax authorities, but provides some tax- and tax-refund-related payment notices. The tax service process is evidently incomplete. Taxpayers cannot clearly navigate between the Ministry of Finance eTax portal and related sites. Numerous websites are provided by tax authorities from various districts, causing taxpayers to encounter service gaps among the portals, experience information overload, and search for alternative service touchpoints. The taxation authority should integrate all online taxation services to achieve the expected public service, that is, a one-stop e-government window, as shown in Table 7.
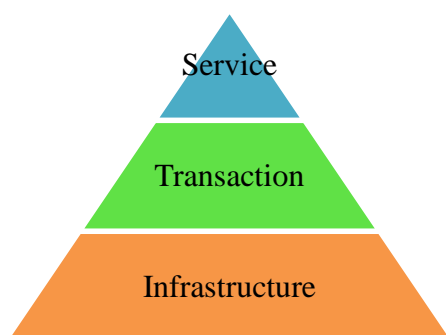

Figure 6.   Service pyramid for taxation service

Customer journey canvas service periods	Pre-service		Service			Post-service
Taxation service process	Notification	Information providing	Declaration	Application	Assessment	Tax return
eTax Portal	X	O	X	O	X	X
e-filing and payment taxation service system[12]	X	O	O	X	X	X
local taxes portal[13]	X	X	O	O	X	X
e-plus[14]	O	X	X	X	X	O
Expeted one-stop e-government window	O	O	O	O	O	O

Table 7.   taxation customer journey canvas and touchpoints

In this study, service design tools were combined with a qualitative research method, and observation and individual interviews of participants were conducted to record their perceptions of the tax service process. The results of the study facilitate defining gaps in the seemingly convenient and progressive tax service process of Taiwan, enabling the relevant government agencies to provide effective e-government services, identify problems, and modify service delivery processes.

Enhancing the tax service is not only the policy objective of the tax authorities but also part of the Taiwan e-government strategy. The tax service is a transaction-based and service-oriented service. Transactional services in e-government development are approaching maturity; in other words, delivering transactional services by using information technology hardware and software is a basic ability of the e-government service. Creating online trading services is common, but the lack of integration in information technology causes users to experience information overload. Determining how to integrate the service design concept, improve the tax service as a service-oriented service, and provide a full-service experience are challenges for enhancing tax services in the post-internet era.

[12] e-filing and payment taxation service system: http://tax.nat.gov.tw/
[13] local taxes portal: https://net.tax.nat.gov.tw/
[14] e-plus website: https://msg.nat.gov.tw/

References

Bason, C. (2013). Design-Led Innovation in Government. Social Innovation Review.

Bekkers, V. J., van Duivenboden, H., & Thaens, M. (2006). Information and communication technology and public innovation: assessing the ICT-driven modernization of public administration (Vol. 12): IOS Press.

Christodoulides, G. (2009). Branding in the post-internet era. Marketing Theory, 9(1), 141-144.

Clarkson, G., Jacobsen, T. E., & Batcheller, A. L. (2007). Information asymmetry and information sharing. Government Information Quarterly, 24(4), 827-839.

Council, U. D. (2013). Design for public good. Annual Review of Policy Design, 1(1), 1-50.

Gouscos, D., Kalikakis, M., Legal, M., & Papadopoulou, S. (2007). A general model of performance and quality for one-stop e-government service offerings. Government Information Quarterly, 24(4), 860-885.

Homburg, V. (2008). Understanding e-government: Information systems in public administration: Routledge.

Hung, M.-C. (2008). The Factor Analysis of Local Tax Declaration Via Internet. Master, National Chung Hsing University, Taiwan.

Kimbell, L. (2009). The turn to service design. Design and creativity: Policy, management and practice, 157-173.

King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K., & Yap, C.-S. (1994). Institutional factors in information technology innovation. Information systems research, 5(2), 139-169.

Saco, R. M., & Goncalves, A. P. (2008). Service design: An appraisal. Design management review, 19(1), 10-19.

Stickdorn, M., & Schneider, J. (2012). This is Service Design Thinking: Basics, Tools, Cases: John Wiley & Sons.

. Tax System Retrieved 9/8, 2014, from http://www.ntbca.gov.tw/etwmain/front/ETW118W/CON/1776/6651098747876268559

. The Taxation Information System Reform Project. (F. I. Agency, Trans.). (2007). Taiwan: Ministry of Finance.

Yin, R. K. (2013). Case study research: Design and methods: Sage publications.