

# Design Science Approach to Build a Customer Satisfaction Theoretical Framework to Evaluate E-Government Services

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**Abstract:** The vast majority of the literature on E-Government evaluation tends to focus on benchmarking of e-government around the world and performance measurements of customer satisfactions with the use of quantitative rather than qualitative measurements. In this paper, we seek to address this problem by introducing a design science approach to build a new qualitative theoretical framework, namely, return on investment (ROI) vs return on relationship (ROR), as an evaluation tool, to assess E-Government services by classifying customer experiences into categories of customer satisfactions. Our results help government to identify strategic focus areas that need attentions and allocation of funds to improve customer satisfactions.

**Keywords:** Evaluation, design science, customer satisfaction, E-Government, theoretical framework, qualitative

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## 1. Introduction

Although a number of quantitative evaluation research studies have been successfully used in benchmarking (Mellor and Parr, 2002; Rohleder and Jupp, 2004; UNPAN, 2005, 2010; West, 2007) and evaluating (Connolly, 2007; Wong et al., 2009) E-Government, there is still a growing need for more evaluation tools to assess E-Government services (Jones et al., 2006). Research specific about the use of qualitative evaluation research of E-Government services is still rather scarce as most of the E-Government evaluations are quantitative in nature. Public sector organisations that evaluate customer satisfaction often face the problem of translating results into strategic actions. Hence there is a need to revisit the existing E-Government benchmarking and evaluation tools available in the market, and look for areas of gap that needs to be addressed.

From the E-Government literature reviews, we have identified that there are quite a number of international E-Government benchmarking studies, for examples, studies conducted by Brown University West (2007), United Nation Public Administration Network (UNPAN, 2005, 2010), Taylor Nelson Research (Dexter and Parr, 2003; Mellor and Parr, 2002), and Accenture (Cole and Jupp, 2005; Rohleder and Jupp, 2004). Bannister (2007) argues that some of the E-Government benchmarking researches could be biased and not reliable for assessing E-Government progress because the result of such benchmarking can favor the country that initiated the benchmarking activity. Bannister (2007) further asserts that if the benchmarking activity is not pursued correctly, it might distort government policies as government could be seen competing at the international benchmarking activity, and they might overlook the needs of E-Government at local and national level. In addition, some countries could be seen developing information systems to fulfill the benchmarking criteria rather than the needs of the users, e.g., user friendliness and good technical design of the systems.

On the other hand, we also looked at the different types of evaluation tools that can be used to assess E-Government services at local or national level, and we have found a number of service quality evaluation tools that can be used for this purpose. They are: (i) SERVQUAL (Connolly, 2007; Parasuraman et al., 1985, 1988, 1991); (ii) SERVPERF (Cronin and Taylor, 1992, 1994); and (iii) IPA Grid (Martilla and James, 1977; Wong et al., 2009). All these Likert-scale evaluation tools are widely respected and are commonly used in measuring service quality. Normally, the quality of E-Government services is often evaluated using customer satisfaction tools, which are measured through surveys (OECD, 2007). The purpose of these evaluation tools is not only to learn the level of satisfaction, but also to identify areas of strengths (with high satisfaction) and areas for improvement (with low satisfaction). Despite their popularity, SERVQUAL, SERVPERF, and IPA are not applied without its criticisms. One of the most important issues when developing a service quality survey is the need to identify what constructs or concepts to be measured. Though SERVQUAL has five dimensions, its constructs may be unsuitable for different industries (Carman, 1990; Van Dyke and Kappelman, 1997). Because SERVQUAL instrument has problems with its measurement of expectations, SERVPERF (Cronin and Taylor, 1992) is adopted, but SERVQUAL's five dimensions are retained. Hence, the problem of unstable

dimensionality occurs. Martilla and James (1977), the author of the Importance-Performance Analysis (IPA) grid, highlight the importance of deciding what constructs to be used as measurements. Martilla and James (1977) suggest the use of qualitative methods (e.g., focus groups, unstructured interviews) to look for important attributes to be listed in the survey, so that the survey results will be more useful and effective in making strategic decisions.

If government were too focus on international benchmarking of E-Government by fulfilling all the criteria listed in the benchmarking, then they might risk of overlooking the needs of citizen at local and national levels. But, if government were to use the existing SERVQUAL, SERVPERF, or IPA evaluation tools, to evaluate service quality and customer satisfaction in E-Government at local and national levels, they will be criticised for the problems of unsuitability of the constructs and concepts to be measured in E-Government contexts. Many of these tools are initially used in the private sectors and they may not work in governments. The existing benchmarking and evaluation tools are quantitative in nature, and the problems with these tools are twofold: (1) benchmarks might overlook customer's needs and satisfactions; (2) existing SERVQUAL, SERVPERF and IPA have problems with constructs and may not be suitable for governments because governments place importance on social values (OECD, 2007). In recent years, there were attempts by researchers using qualitative approach to examine and describe user experiences of E-Government services in India (Kumar et al., 2017), and also non-adoption of E-Government in Germany (Distel, 2018). These studies were exploratory in nature, and none of these researches use a theoretical framework to evaluate E-Government services.

After reviewing these problems, in this paper, we propose a ROI Vs ROR theoretical framework that can help to address the abovementioned problems, that is to understand what is needed by the E-Government users and how to better satisfy them in the future. Secondly, this theoretical framework helps to reveal constructs that can be used as dimensions to be measured in the SERVQUAL, SERVPERF and IPA evaluation tools. To achieve this, we used design science approach to build a new theoretical framework. Before going on to discuss how we used design science approach to build a new theoretical framework in greater detail we will describe how we used the literature reviews of customer satisfaction and customer relationship management to identify constructs or concepts which can be used as the building blocks for our new theoretical framework.

The structure of this article is as follows. First, we will review literatures of E-Government in Malaysia, customer satisfaction and customer relationship management (CRM) as building blocks in the building of a new theoretical framework. After that, we will describe how design science approach is used as a design method to build a new theoretical framework. Lastly, we will demonstrate how we categorised our collected data in the different satisfaction categories to look for strategic focus areas.

## **2. Literature Reviews**

### **2.1 E-Government in Malaysia**

E-Government, which is the first flagship of Multimedia Super Corridor (MSC), is concerned with the use of Information Communication Technologies (ICTs) to transform the way how government interacts and operates between its inter-governmental agencies (G2G), with its external businesses (G2B) and citizens (G2C) (Karim and Khalid, 2003). Using a citizen-centric approach, the Malaysian Administrative Modernization and Management Planning Unit (MAMPU), the leading agency of Malaysia E-Government initiative, ensures that government agencies are developing E-Government services around the needs of the citizen. The primary aim of this E-Government initiative is to enhance the quality of services, which includes improved accessibility and service delivery, convenience of use (24/7 hours), and better interaction with users. As a way of realizing the E-Government flagship, the E-Services project was launched in May 2002, and the interactions were mainly focused between government and customers. The traditional government services approach delivered through the brick-and-mortar of government buildings, face-to-face interactions, mail and forms, are currently complemented with E-Services delivery, and these E-Services are accessible using multiple electronic channels, such as websites, kiosks, interactive voice response (IVR), telephone and Internet channels via web television and ICTs. According to the United Nation's E-Government Development Index (UNPAN, 2018), Malaysia's E-Government was ranked 60<sup>th</sup> internationally in year 2016, and it climbed to 48<sup>th</sup> in 2018. One of the most commonly use E-Government services in Malaysia is E-Filing, a channel which allows taxpayers (or customers) to submit their income tax return forms electronically (Rahman et al., 2018). Therefore, it is imperative to understand the needs of the taxpayers in Malaysia and to assess their satisfaction level on the use of the E-Government services to improve the quality of services in the future.

## 2.2 Customer Satisfaction

One of the problems that we have identified in the existing benchmarking and evaluation of E-Government is that these tools are not able to identify customer's needs. If government does not know what their customers' needs are, government will have problems in delighting their customers. In customer satisfaction literature, it is important to make sure that customer is delighted to have a sustain profit (Rust and Oliver, 2000), but unfortunately, many public sectors are still not delighting their customers in delivering their services (Ulfeder, 2001). Because we are building a new customer satisfaction theoretical framework, it will be good if we briefly discuss about the categories of customer satisfactions that have been identified in the literature.

One important satisfaction category is – customer delight. Chandler (1989) argues that customer delight goes beyond customer satisfaction because it focuses on exceeding customer expectations. Therefore, to delight customers, it is important to examine their needs and wants in business, and exceed their expectations. Edvardsson et al. (1994) argue that needs are the underlying components of wishes and expectations.

Bergeron (2002) defines customer needs as 'the prerequisites that qualify customers to use a company's goods or services', and wants as 'desirable products and services'. In any business relationship, customer expects timely service, quality products and value for money. Exceeding these expectations in customer satisfaction is a big challenge for government. And according to Zeithaml et al. (1990), customer satisfaction depends on the gap analysis between customer's expectations and customer's experiences with the quality of products and services. This fundamental principle can be used to determine the types of customer satisfactions, and it is also can be seen in the 'disconfirmation of expectations' model (Oliver, 1980; Oliver et al., 1997). Using this model, customer satisfaction is formed by comparing customer's cognitive perceived performance with their pre-purchase expectations. If the perceived performance is lesser than expectations (perceived performance < expectations), it will result in negative disconfirmation or disappointment (dissatisfaction). But if the perceived performance is higher than expectations (perceived performance > expectations), it will result in positive confirmation or delight (satisfaction). And if the service quality or the product performs as expected, it will yield moderate satisfaction, indifference, or contentment. In customer satisfaction/dissatisfaction (CS/D) literatures, Oliver et al. (1997) argue that customer delight research is very important, but the research in this area is very limited, and hence call for further research in this domain. To delight customers, we need to know customers' motivations, e.g., benefits that motivate them to use or purchase the services or products.

Understanding motivations underlying customer behaviour is imperative for better management of customer relationship to satisfy them in the business transactions. In the following section, we will look at the benefits of using E-Government services from Customer Relationship Management (CRM) perspectives.

## 3. Customer Relationship Management

In a highly competitive private sector environment, companies need to maintain a certain type of relationship with their customers to ensure positive outcomes, e.g., customer loyalty, retention and delight. However, in the public sector, where there is no competition, there is ambiguity regarding the value of providing customer delight. Customers are getting better services from the companies because there is a healthy competition; therefore, customers are led to expect the same quality of services from government and this has resulted in an increase of pressures on government to serve their customers better. As a consequence, government needs a better strategy to face these challenges, and to achieve better quality of services and customer satisfaction, CRM is seen as a key enabler.

According to Rohleder (2003), CRM is defined as 'capability that dramatically improves government's relationship with its customers by reorganizing services around actual customer needs'. CRM is seen as a key enabler of E-Government in the development of a 360° view of customer needs and wants, and also in the building of a long lasting relationship with service provider (2007). CRM in E-Government involves the use of information and communication technologies (ICTs) to interact with various stakeholders, including internal and external customers, and helping them in realization of business benefits. In the CRM literature, we have identified two types of E-Government benefits, namely, tangible benefits or return on investments (ROI), and intangible benefits or return on relationship (ROR).

In CRM (Crook and Rohleder, 2003) and E-Government (Hachigian and Kaplan, 2002; Rohleder and Jupp, 2004) literatures, we have found that the ROI terminology has been used to measure cost savings, a successful way

of measuring tangible benefits. Few examples of '*ROI benefits*' that can be viewed objectively and quantified easily are: (1) lower transaction costs, (2) faster transaction time, (3) save petrol, postage and travel costs, (4) faster response time, (5) decrease queuing time, (6) faster access to documents and forms, and (7) decrease face-to-face interaction. However, increasingly, organizations are starting to adopt relationship marketing approach for better return on relationship (ROR) by investing in CRM systems. Return on relationship (ROR) is described as an indirect benefit (Mello, 2001; Randall and Katseva, 2003), and it can be assessed by 'measuring whether relationships produce direct or indirect returns to a company' (Mello, 2001). Literature reviews on CRM and return on relationship (ROR) (Gummesson, 2004; Peterson, 2001; Reary and Springer, 2001; Zingale, 1999) show that researchers have shifted their emphasis from ROI to ROR, and stress the importance of building long term relationships with their customers. Zingale (1999) calls such customer-centric CRM approach a shift from transaction-based customer interaction to relationship-based customer interaction.

Examples of '*ROR benefits*' or indirect benefits are: (1) giving customer caring and individual attention, (2) keeping customer data private (3) keeping financial information protected, (4) making sure the systems are user friendly and easy to use, (5) promoting social inclusion, (6) providing up to date information, (7) giving prompt service, and helpful responses to customer requests, and (8) providing dependable and reliable service.

Service providers and customers have different needs, wants and expectations when it comes to realizing business benefits. Randall and Katseva (2003) argue that government providers place more emphasis on return on investments (ROI), which focuses more on cost efficiencies and cost savings, whereas customers emphasise more on return on relationship (ROR), which, on the other hand, focuses on customer satisfaction and relationship-based interactions. Likewise, a research conducted by Agarwal and Venkatesh (2002) using Microsoft Usability Guidelines (MUG) reveal that: 'Customers are more concerned with the emotions or feelings they experience from the website, whereas the investors or the system designers are more concerned with the return on investment (ROI) of the system they built'. Similarly, Bergeron (2002) argues that in a customer-company relationship, customers expect value for their money, whereas companies expect money in return, with some form of loyalty in the business relationships. Therefore, our arguments presented in this paper are in line with Bergeron (2002), Agarwal and Venkatesh (2002), and Randall and Katseva (2003), where we argue that service providers rated ROI (tangible) as their primary benefits, whereas customers rated ROR (intangible) as their primary benefits. But, ideally if customers realised both ROI and ROR benefits, they will be delighted.

In the following section, we will demonstrate how we used a design science approach to identify constructs or concepts that will be used as building blocks in building the ROI vs ROR theoretical framework, an evaluation tool that practitioners can use to assess customer satisfaction.

#### **4. Design Science Approach**

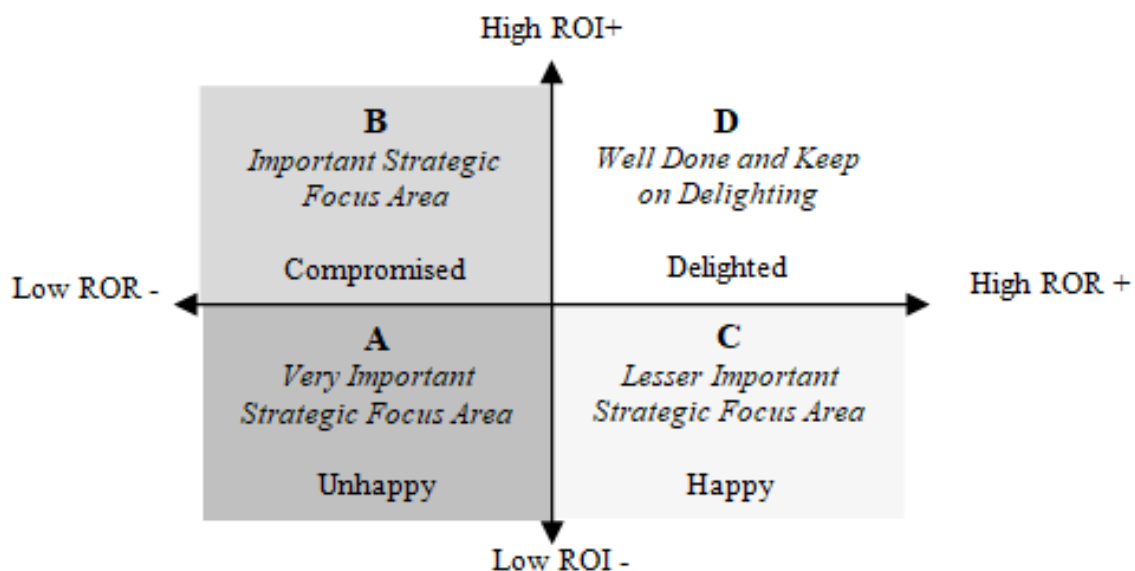
In Information Systems (IS) research, design science is used to build and evaluate IT artifacts to solve identified problems (Hevner et al., 2004; March and Smith, 1995; Orlikowski and Baroudi, 1991), and IS researchers are encouraged to pursue what the IS/IT people call 'design science research' (Hevner et al. 2004; March and Smith, 1995), what the economic people call 'applied science research', and what the management people call 'prescriptive-driven research' (Van Aken, 2004). Hevner et al. (2004) argue that design science approach can be used to discover and extend the limit of human and organizational capabilities by creating novel, innovative and effective (utility) artifacts. According to Peffers et al. (2018), various researchers may have different views of artefact, for example artefact of value is a system or system component (Berndt et al., 2003), while for others it is ought to be theory components or theories (Gregor and Jones, 2007). Design scientists should strive to create models, methods and implementations that are innovative and valuable (March and Smith, 1995). Apart from the quantitative and qualitative research approaches, Peffers et al. (2018) argue that Design Science Research (DSR) approach has evolved into the mainstream and now being well-accepted as one of the research paradigm in Information Systems. According to Vijay and William (2008), design science research (DSR) can contribute to better theory building. Therefore, to build a new theoretical framework, we apply March and Smith's (1995) work as it provides an avenue to build and evaluate theories. March and Smith (1995), a widely cited paper with over 3900 citations, introduces design science research (DSR) artifacts and proposes four general outputs, namely (1) constructs, (2) models, (3) methods, and (4) instantiations, which were used in this research to build and evaluate the ROI vs ROR theoretical framework.

*Constructs* (or concepts) should be defined because it forms the vocabulary of the domain. As explained earlier, it is from the literature reviews that constructs such as customers' needs, wants, expectations, satisfaction and dissatisfaction are formed. Also from the CRM literature reviews, we discover that customer satisfactions are associated with direct (ROI: return on investments) and indirect (ROR: return on relationship) benefits. After we have identified these constructs as building blocks, we then proceed to another stage where we can design a new conceptual model or theoretical framework.

*Model* 'is a set of propositions or statements expressing relationships amongst constructs' (March and Smith, 1995). In the new conceptual model or theoretical framework (see Figure 1), there are two long axes: ROI on the Y-axis and ROR on X-axis. As such, four quadrants are created with each quadrant being labelled as 'unhappy', 'compromised', 'happy' and 'delighted'. The relationship between ROI and ROR is clearly depicted in the ROI vs ROR theoretical framework. In this framework, we argue in line with Bergeron (2002), Agarwal et al. (2002), Randall and Katseva (2003) that customers place most emphasis on Return on Relationship (ROR) benefits.

*Method* 'is a set of steps (an algorithm or guideline) used to perform a task' (March and Smith, 1995). This method is driven by goal, and the goal of this research is to demonstrate the usefulness of this new theoretical framework in the evaluation of customer satisfaction. In this case, we apply the ROI vs ROR theoretical framework to study customer experiences in using E-Filing services and classify their experiences into categories of customer satisfaction (e.g., unhappy, compromised, happy and delighted).

*Instantiation* is the final output of a design research cycle as it helps to 'operationalize constructs, models and methods'. In this stage, we collect data to demonstrate the usefulness of ROI vs ROR theoretical framework in helping practitioners to focus their attention on key areas for improvement in E-Filing services.



**Figure 1:** ROI vs ROR theoretical framework

It is therefore from the CRM literature reviews, especially after reviewing and understanding of the ROI and ROR concepts, and from the reviews of customer satisfaction literature about the needs, wants and expectations concepts, that we can design the ROI vs ROR theoretical framework with explanations for each of the satisfaction categories (see Table 1).

**Table 1:** ROI Vs ROR Explanations

Quadrant	ROI	ROR	Explanations
<b>A</b> <b>Unhappy</b> (Very Important Strategic Focus Area)	Low	Low	Customer needs and wants are not met. Quality of services or products is below expectation.
<b>B</b> <b>Compromised</b> (Important Strategic Focus Area)	High	Low	Customer needs and wants are being compromised by conditions. Quality of services or products is delivered with conditions.
<b>C</b> <b>Happy</b> (Lesser Important Strategic Focus Area)	Low	High	Customer needs and wants are met. Quality of services or products as expected.
<b>D</b> <b>Delighted</b> (Well Done, and Keep on Delighting)	High	High	Customer needs and wants not only met but also exceeded. Quality of services or products exceeded their expectation.

According to March and Smith (1995), building and evaluating conceptual model are the two main processes in design science research activities. Once the novel conceptual model, in this case our new ROI vs ROR theoretical framework has been built, design evaluation method is used to evaluate and provide feedback to the construction phase. As a result, theoretical framework is assessed using the design evaluation method, which provides an iterative and incremental construction of the conceptual artifact. Hevner et al. (2004) assert that the utility and quality of a design artifact must be rigorously tested using well-executed evaluation methods. Design evaluations methods such as; (i) observational, (ii) analytical, (iii) experimental, (iv) testing and (v) descriptive, can be used to evaluate design science models. In this case we use descriptive evaluation methods to assess the theoretical framework itself, and according to Hevner et al. (2004), to assess the design model using descriptive evaluation method, we can use the 'Descriptive Informed Argument' to gather and use collected information from the knowledge base (e.g., relevant research) to construct logical argument to prove the utilization of the theoretical framework. In the following section, we will discuss about our research methodology and how the collected data are used to prove the utilization of ROI vs ROR theoretical framework.

## 5. Methodology and Data Collection

We used an unconventional unobtrusive observation technique to collect our data. Mann and Stewart (2005) argue that unobtrusive observation is like a lurking activity in a way which is unseen by other online users. Using this method, data can be collected anytime and anywhere as long as researcher has access to computer, Internet and websites. According to Snee (2008) and Hewson et al. (2003), one of the advantages of online unobtrusive observation is that researcher is not conditioned to be at the data generation stage because researcher is able to collect data from the online archives. We collected empirical data of customer experiences in the use of E-Filing services in Malaysia from Blogs, E-Community and E-Newspaper. We used the blogsearch function at <http://blogsearch.google.com> to look for information about Malaysian experiences on the use of E-Filing systems. One of the active Malaysian E-Community websites - USJ forum at <http://www.usj.com.my> was chosen as a platform for us to identify customer experiences in the use of E-Filing services in Malaysia. Here, the online community users can visit and revisit the website to discuss about topics which is of their interests, and E-Filing topic is one of them. As for the E-Newspaper, we chose The Star, Malaysia leading E-Newspaper, at <http://www.thestar.com.my> as our source of information to look for customer experiences about the use of E-Filing in Malaysia. Data collected using these three channels can be immediately viewed and transferred into word documents, which can then be analysed using interpretive approach in the data analysis stage. Doing as such, it will help to reduce time and cost in transcribing and collecting the data (Duffy et al., 2005).

## 6. Findings

In this section, collected data are classified into different categories of customer satisfaction. As such, areas of E-Government services that need improvement can be strategically identified.

### 6.1 Quadrant A (Very Important Strategic Focus Area)

Quadrant A, a very important strategic focus area, reflects areas where customers are unhappy. Here in this quadrant, we will identify why customer feels unhappy. We argue that customer is unhappy when their needs are not met and quality of services or products is below expectation. It is imperative for the service providers to focus in this area and they should strategise their next course of actions to improve E-Filing systems in order to increase customer satisfaction.

The following are some examples of relevant blogs, which we have analysed in terms of the ROI vs ROR theoretical framework and annotated (notes in square brackets). Michelle Ho, writing in [blog.thestar.com.my](http://blog.thestar.com.my), noted:

*"Upon obtaining the cert for registration of E-Filing from their counter [low ROI: lining up at the counter], we are to go to <https://e.hasil.org.my> for the registration of Digi-Cert. However, the website has a flaw at the first place, thus disabling the registration of Digi-Cert and the entire process of E-Filing is a total failure. Imagine keying in your NRC No, and you are prompted that you are under 18 years of age! [low ROR: not user friendly] No matter what NRC No. that you keyed in, even it is valid, the same error message is prompted. If this simple error is not fixed, I think there will be no applicant for this E-Filing feature at all! Come on, in this era of IT awareness, this kind of error is unacceptable. Are we ready for this so-called modernisation, else snail mail is the only option available for the submission of BE forms."*

A blogger styled 'kptan2', writing in [blog.thestar.com.my](http://blog.thestar.com.my), also identified the inconvenient use of E-Filing because users need to collect digital certificate physically from Inland Revenue Board (IRB). In addition, 'kptan2' complained about the lack of professionalism amongst officers when handling his E-Filing requests.

*"I strongly agree that instead of bringing convenience to the people by the introduction of E-Filing, it is so much of a hassle option [low ROR: inconvenience]. If one were to use E-Filing, the taxpayer will have to make it to the nearest IRB office to collect the Digital Certificate slip, not to mention that either the visit has to be made during lunch hour or at an approved time-off [low ROI: time wasted]. Worse still, some of the officers are not even well-trained for the E-Filing procedure [low ROR: IRB staffs are not skilled]. When requesting for the Digital Certificate slip, one of the officers told us that online registration has to be made first and the slip will only be sent via snail mail. If E-Filing were to be a success, it should eliminate even a single need to visit the IRB office."*

Issasaya, writing in [blog.thestar.com.my](http://blog.thestar.com.my), noted the importance of English usage in E-Filing:

*"Being 'English-educated', I struggled with the Bahasa version to comprehend how to get my E-Filing done [low ROR: language problem]. I made a trip to the IRB outlet situated in a shopping centre to get my PIN [low ROI: waste time spent travelling]."*

Similarly, 'jjoeyzz', a blogger in [blog.thestar.com.my](http://blog.thestar.com.my), complained:

*"I was thinking to myself it is already bad enough that the form only comes in Bahasa which some of the word is difficult to understand (for me at least) why can't there make it bilingual? [low ROR: language problem] I think payment for income tax is a way to contribute back to the society [low ROI: disagree with the return she gets] but please make it an easy process and not a pain. Bottom line is like it or not we have to pay but just make us pay without complaining while we fill up the form."*

Stan from [usj.com.my](http://usj.com.my) forum was dissatisfied with the services he received when he paid a visit to a local IRB. He complained about the lack of computers, the long queue and also the staff, who were slow in dealing with customers:

*"I went to Kelana Jaya, Brem Tower to get the digital cert and PIN. Go up to the 6th floor, there's only one computer that can issue the digital cert. When I was there, there was a queue of about 15 people [low ROI: wasting time]. Shouldn't take a long time (about 2-3 minutes per person) but the lady there was a bit slow [low ROR: staff]."*

## **6.2 Quadrant B (Important Strategic Focus Area)**

Quadrant B, an important strategic focus area, reflects an area where users feel that they are subject to conditions and not getting their primary ROR benefits. We will identify why customers feel compromised. We argue that customer is compromised when their needs are being compromised by conditions and quality of services or products is delivered with conditions.

Tohca, one of the online community members of usj.com.my forum, complained about the lack of user-friendliness of the E-Filing system:

*"I have submitted the E-Filing for my tax return successfully [high ROI: successful transaction], with some difficulty. It is certainly not the friendliest software to use [low ROR: not user-friendly], but it is better than the manual way to some extent."*

PJS from usj.com.my forum noted that although he spent little time in filing his tax return, he was still unsure whether he had completed the E-Filing successfully. He said:

*"I completed my E-Filing in less time than it took to read new postings in usj.com.my. About 30 minutes was all it took [high ROI: fast transaction]. I clicked 'Sign and Submit' button, then nothing happens! Duh! So what now? Will I get an acknowledgement via E-Mail or what? I kept checking my E-Mail, but I didn't find anything, yet! How do I confirm if my form has reached IRB safe and sound? [low ROR: the user was not sure whether the transaction successfully completed because there was no confirmation]."*

Jand from usj.com.my forum had successfully filed his tax return using Form B, but he was unsure whether he was needed to file other BE forms; hence, he tried to contact IRB, but to no avail:

*"I've already submitted the form B via E-Filing [high ROI: fast transaction]. So how? Do I have to submit again using BE form? I tried calling the IRB, but the lines were too busy; therefore, I sent an E-Mail and got a standard auto-reply [low ROR: unsatisfactory response]."*

## **6.3 Quadrant C (Lesser Important Strategic Focus Area)**

In quadrant C, a lesser important strategic focus area, customer experiences low ROI and high ROR benefit realizations. Here in this quadrant, we will identify why customers are happy. We argue that customer is happy when their needs are met and quality of services or products is delivered as expected. Therefore, IRB needs to look into gap areas to increase the ROI benefits to delight their customers.

Despite the public sector's stereotype of delay in handling citizens' requests, Janelim (from usj.com.my forum) still could collect her E-Filing slip and managed to file her tax using E-Filing system easily. She said:

*"You gotta go to one of their counters and get a number series [low ROI: time wasted], which is a slip for online E-Filing. With that serial number then only you go online and fill up that assessment form. It is self-tabulation and you will have the actual taxable sum at the bottom. You will get a screen telling you 'Berjaya' meaning the process of submission is successful. Print out a copy for your file. We have done it and it's quite simple [high ROR: user friendly]."*

PJS from usj.com.my forum was happy although he had to file his tax for the second time:

*"I checked the digisign cert and it was fine [high ROR: good security]. On my next attempt, I turned off the personal firewall and set the IE security and privacy settings to be low, and tried to submit the same form I filled up on 28th April again, still nothing. Then as a last resort, I thought, perhaps it didn't want to accept a form dated in the past, so I filled up a fresh new form manually [low ROI: time wasted], and clicked 'submit' button. Walla! Done! I got the confirmation slip. So happy now."*

## 6.4 Quadrant D (Well Done, and Keep on Delighting)

In quadrant D, customers who experience high ROI and high ROR benefit realizations, are delighted, and these customers are the source of the organization success. We will identify why customers feel delighted. We argue that customers are delighted when their needs are not only met but also exceeded, and quality of services or products exceeds their expectation. Ideally, all successful organizations should keep their customers delighted.

Jand from usj.com.my forum noted:

*"Anyway, it's a good system if more people start filing the returns electronically hence saving petrol, subsidies, and parking fee [high ROI: saves cost], less pollution [high ROR: environmentally friendly], paper, ink [high ROI: saves materials and costs], etc."*

Patrick from usj.com.my said:

*"I am impressed with our Taxman's new delivery system. I had completed my form when I went to their office in Shah Alam on 11th April to submit my returns. There the officer persuaded me to do E-Filing and said it would facilitate a faster tax refund. So, apprehensive as I was, there and then I did an E-Filing. And guess what? I received my tax refund today (3rd May)! Cheque was dated 23rd April. Guess if not for the holidays, I would have received the cheque even earlier! Thank You Mr Taxman! Greatly appreciate your efficiency. What a breath of fresh air!"*

## 7. Conclusions

In this research, we have successfully used design science approach to build a novel customer satisfaction theoretical framework and have identified ROI and ROR concepts, which are used as constructs, the building blocks for a model, and evaluated the theoretical framework using collected data from the Blogs, E-Community and E-Newspaper. This customer satisfaction theoretical framework is envisaged to complement existing quantitative customer satisfaction tools and it can be used to identify strategic focus areas for improvement. In the classifications of customer satisfaction, ranging from unhappy, compromised, happy to delighted experiences, we managed to identify problems in each of the customer experiences and that proper strategic actions should be taken to transform customer's undesired state (unhappy, compromised) and the positive state (happy) to a highly positive state (delight). We are suggesting that the qualitative ROI vs ROR theoretical framework and the Likert-scale quantitative SERVQUAL, SERVPERF or IPA evaluation tools should be applied synergistically to strengthen the usefulness of the empirical findings.

The contribution of this design science research is the output production of a novel customer satisfaction theoretical framework (ROI vs ROR). This novel customer satisfaction theoretical framework can be used by natural scientist for future research, e.g., theory testing in different service industries. Both academics and practitioners will benefit from this evaluation tool as it has been seen as one of the solutions to capture the richness of customer experiences in the use of E-Government services. This design research has answered the call for more design research in the IS profession (Hevner and March, 2004) to help and to inform managers of new capabilities and solutions that this novel theoretical framework can provide. From a practical point of view the outcomes of our study serve to guide and assist governments in ensuring not only higher return on investments (ROI) but also better return on relationships (ROR). Finally, to conclude, we managed to demonstrate the usefulness of the ROI vs ROR theoretical in classifying E-Filing customer experiences and revealed areas of strategic focus, which needs attention. For further research, more empirical social science research using the ROI vs ROR theoretical framework is envisaged to complement the existing quantitative customer satisfaction tools.

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