CBS COPENHAGEN BUSINESS SCHOOL
HANDELSHØJSKOLEN

EVALUATION OF THE DANISH E-TAX SYSTEM

Small Businesses perspective

Master of Science (MSc) in Business Administration and Ebusiness

CBUSO2000E - Master's Thesis

Authors:

Nathalie Gebhard – 113085

Dimitrios Karyotis – 113073

Supervisor: Rony Medaglia

Date of Hand-in: March 15, 2019

Number of pages: 108

Number of characters: 211.420

List of Abbreviations

D&M	DeLone and McLean
e-Services	Electronic Services
e-Tax	Electronic Tax
G2B	Government to Business
G2C	Government to Citizens
G2E	Government to Enterprise
G2G	Government to Government
ICT	Information and Communication Technology
IQ	Information quality
NB	Net benefit
PLS	Partial Least Square
SEM	Structural Equation Modeling
SPSS	Statistical Product and Service Solutions
SVQ	Service Quality
SQ	System Quality
U	Use
US	User satisfaction

Abstract

E-government is not a new concept in Denmark which in 2018 ranked no. 1 according to UNDESA´s e-government survey 2018 ("United Nations", 2018, 10 Dec). With their digital strategy of 2016-2020 spending's in ICT is increasing ("Den fællesoffentlige", 2016, 15 Dec). Hence, there is a need for measuring achievements in e-government. Within the field of IS success evaluation the DeLone and McLean IS success model (1992) has been one of the most widely used measurement models in the field of information systems. Ten years after the first model they proposed an updated version of their model (2003) exploring the suggestions from validation of researchers who tested the model in other contexts (DeLone and McLean, 2003). The updated version of the model consists of six constructs (system quality, information quality, service quality, use, user satisfaction, net benefits). The model has later been used to evaluate IS in e-commerce and e-government context. However, in the field of e-government and in particular G2B services there was space for further research.

Present study evaluated the Danish e-tax system (TastSelv) in a G2B context and validated the revised version of the D&M IS success model (2003) in this regard. The model which was validated was the updated version of D&M model with minor changes in the relationships between the six dimensions based on literature suggestions. By using online survey this study had a quantitative approach in order to investigate small companies' perception of e-tax Denmark. The results of this study showed that the overall perception of the Danish e-tax service from small businesses was neutral with a negative trend regarding the information quality related items. This study highlighted the direct and indirect effect of system quality, information quality and service quality on user satisfaction and net benefits, where system quality had the strongest effect. In contrary, the empirical data does not support use construct as an IS success factor in G2B (Danish e-tax service) context.

Executive summary

Danish businesses today have become use to the ease of handling all formalities online, whether it be all contact or paying invoices. With the technological advancements in the last decade and support from information and communications technology in the public sector, the governmental services have been vastly improved. The Danish e-government rankings have proven with great results and improvements are to follow.

This master thesis provides an analysis of the perception of e-tax Denmark (TastSelv) from small companies. Moreover, the DeLone and McLean IS success model is examined and validated in the context of G2B e-taxation service in Denmark.

With the framework, D&M IS success model (2003) this thesis will seek to investigate the interrelations of constructs based on a quantitative analysis. Based on an exhaustive literature review it was found that one of the most commonly used e-government evaluation models, D&M IS success model had not yet been validated in the context of G2B e-tax service. In the research quantitative methods in the form online questionnaire where responses were gathered regarding the use and feelings of the system. Through the findings it was shown that users are generally neutral, leaning towards negative in various areas of the system. Furthermore, it was found that several of the constructs of the D&M IS success model was interrelated.

In future research it is proposed to explore future research in validating the D&M success model in the same field of e-tax Denmark G2B but on a larger sample to gain greater understanding. As this study made minor changes to the updated version of the D&M success model, between several constructs, additional research might reveal interesting results.

Table of Contents

Chapter 1

Introduction

In order to provide efficient and transparent government, many governments globally have realized the need of using information and communication technologies (ICT) (Prattipati, 2003). Most research categorizes e-government systems and services in four: government to government (G2G), government to citizen (G2C), and government to business (G2B), and government to employee (G2E) (Rust and Kannan, 2002). G2B e-services covers all relationships amongst governments and businesses including all activities provided by the public to the private sector done online (Evans and Yen, 2006).

Denmark is leading in e-government according to UNDESA´s e-government survey 2018 (UN, 2018), reasons for this is amongst other the healthcare portal that allows healthcare information to be accessible for citizens and healthcare personnel. According to Stancic et al. (2017) the earliest G2B e-government service they were able to find was TastSelv (e-tax service) Denmark. The mandatory mailbox e-boks is also one of the backgrounds for Denmark positioning themselves as number 1. This part is the only mentioned to create a positive development for businesses (private sector) ("Den fællesoffentlige", 2016, 15 Dec). The digital report of 2016-2020 has a large focus on citizens however it is stated that Denmark aspires to create a better framework for the business community.

As it was not possible to find any research regarding the e-tax system of Denmark, from a citizen perspective nor a business, it was intriguing to investigate this topic. Because whilst many IS success models (as the D&M success model) has gained a lot of attention in recent years, not many studies have been conducted to evaluate the success of e-government systems in a G2B context. The extent to which the D&M success model can investigate G2B e-government taxation systems success is yet to be determined.

1.2 Problem area

It is increasingly becoming both easier and more important for governments to interact with citizens, this is done through e-government service systems. Furthermore, both citizens and businesses are requiring more online services and a better standard of those already existing. E-service quality has in the last two decades been widely debated and researched when it comes to private sectors in evaluating performance of provided services. According to Parasuraman et al. (2005) and more researchers constructed service quality evaluation instruments however these models have been developed for measuring private organizations service performance. The area of service quality and evaluation of this in the private sector has been more developed previously and only in recent years has the focus increased on public sector service quality measurement (Zaidi, 2017).

With small changes to the original success model and proposing the updated, revised model, DeLone and McLean (2003) encouraged others to test and question the revised model, in different contexts. As the model has seen limited testing in the context of G2B, it was with great interest this study was conducted. Wang and Liao (2007) stated that there is a need to better understand and advance the factors that measure and assess success of an e-government system efficiently. A vast vulnerability which remains is the narrow amount of evaluation of e-government services (Jaeger et al., 2003). Assessment of perceived quality and contentment of multiservice organizations is complicated (Jaeger et al., 2003).

It is challenging for governments to decide satisfactory measures of assessing efficiency and effectiveness of the pay out in their public services (Peters et al., 2004). What is assessed, monitored and benchmarked rely upon the evaluation criteria, so the government needs to specify these criteria in order to do better complete evaluation of e-government which even more so can help in taking the right decisions (Kunstelj and Vintar, 2004; Lihua and Zheng, 2005).

E-tax filing systems are more complex in comparison with other web-based services, which is why it must be understandable and easy to use by common tax payers (Connolly and Bannister, 2008). The literature review displays that e-government assessment has been done on the grounds of few dimensions. Furthermore, vast majority of the research has been conducted in G2C e-government services. Literature review indicates that there is lack of

effective measures to evaluate the quality of e-government services (Carbo and Williams, 2004).

1.3 Purpose

As the Danish government aims to produce more entrepreneurs and companies in Denmark, setting the private sector up for success is of high importance. When little research has been conducted evaluating e-tax services in a G2B context this area as a study caught our interest immediately. The main objectives of conducting this study was to measure the Danish TastSelv (e-tax) online system and how this is perceived by companies. Furthermore, validating the D&M IS success model and investigating to what degree the six constructs are interrelated in assessing e-government services. By utilizing the updated D&M success model, with the moderations of Wang and Liao (2008), the overall user experiences of small businesses were the desired area of inspection. Furthermore, we also wanted to test the IS success model in a G2B setting.

1.4 Research questions

Prior to this section it was debated which issues were addressed in this thesis leading to the demonstration of the research question. Analyzing studies in e-government, IS success models, e-service quality and G2B e-governmental services disclose the gaps in studies. Based on these two research questions was formulated, these are stated below:

RQ1: How skat.dk TastSelv business services is perceived by small companies?

RQ2: To what extent the constructs of D&M updated IS success model are interrelated in G2B context?

The updated D&M IS success model will be the theoretical framework helping the authors of this study find the answers to the research questions with an online questionnaire as method of data collection. Collected data is regarding the overall use of TastSelv business and companies experiences with this. The participants of the survey are both male and female either owning or working in a small company for whom they use TastSelv skat (e-tax). Based on collected data an analysis will be conducted using SPSS software as well as SmartPLS. At the

end several statistical measures will be analyzed in order to test and validate DeLone and McLean's updated IS success model in an e-government G2B context.

1.5 Scope of the study

Within the scope of this study, researching as vast a topic as e-government in every detail is challenging. Due to this it is critical to limit the breadth of the topic which is possible. Subsequently, the identification of the elements accountable for e-government taxation systems success and D&M success model are the essential areas where current study is concentrated. Furthermore, this study will focus on online taxation service of Denmark aimed at businesses and seek to identify how this is perceived. E-government tax filing system is a type of government-to-business (G2B) electronic service which supply an opportunity of allowing companies to declare their own tax. Hence, this research is limited to measuring (G2B) e-service as part of the e-government discipline. Online questionnaire is used as part of the data collection, of small Danish companies. Quantitative data analyzed in order to validate the DeLone & McLean IS success model.

1.6 Delimitations

In order to accomplish the objectives of current study and further answer the research questions, the D&M IS success model (McLean and DeLone, 2003) was applied to evaluate the TastSelv business. As e-government is a broad topic and difficult to fit into a single study as this. So, to meet objectives of this study it was conducted within online taxation systems in e-government G2B. A study at this size and a single research would not allow a larger topic. This study chose to focus on a more specific area of evaluating the system instead of a broader, but less detailed research. The study is undertaken in Denmark with small businesses, hence the results may not be generalized in other countries, in a G2C context nor another e-government G2B service.

Chapter 2

The chapter Literature review covers concepts, theories, models and perspectives of prior studies relating to the research problem at hand. E-government as a general and in particular in Denmark, is investigated and various IS success models discussed.

2.1 E-Government systems definitions

In the early 1990s, the revolution of information and communication technologies, which had caused significant changes in private sector, had also an effect on governments (Floropoulos et al., 2010). Many governments all around the world begun to be transformed into new forms of government, known as electronic government or e-government (Akman et al., 2005). The level of development has reached different stages of maturity in these countries, in a 2018 survey of United Nations, Denmark is the leading country in E-Government development. The United Nations defines e-government as *"utilizing the Internet and the world-wide-web for delivering government information and services to citizens*" (UN/ASPA, 2002).

E- government is relatively a new research field which is immature (Young-Jin and Seang-Tae, 2007). There are many different perspectives of e-government concepts globally, thus defining the notion of e-government is not an easy task (Roy, 2003). Researchers and stakeholders do not define E-government in the same way (Seifert and Relyea, 2004; Yildiz, 2007). However, there are some common opinions: E-government has changed the way governments provide services and has revitalized the relationship with citizens and business (Metaxiotis and Psarras, 2004). An e-government aims to strengthen individuals through access to information and knowledge, and it does not represent a political ideology; (Oyomno, 2004; Jain and Kesar, 2011).

The definition of E- government varies according to different types of perspectives. From an Information Technology (Technical) point of view *"Electronic government is the use of Information Technology to support government operations, engage citizens, and provide government services"* (Scholl, 2003). With a government process perspective E-government *"is a sophisticated process based on using information and communication technologies with different kind of services as result designated for satisfying stakeholders*

needs" (Kasubien et al., 2007). A definition with a focus on citizens is *"E-government as seamless service delivery to citizens or governments efforts to provide citizens with the information and services they need by using a range of technological solutions"* (Burn and Robins, 2003). Regarding political perspective E-government is *"to use technology to achieve levels of improvement in various areas of government, transforming the nature of politics and relations between the government and citizens"* (Dada, 2006). The definition of World Bank, (2010) which is *"E-government refers to the use of ICT to improve efficiency, effectiveness, transparency, & accountability of governments"* was found close to the context of this study.

From the perspective of interactions and activities with different sectors the e-Government may be divided into four categories: Government to Citizens (G2C), Government to Business (G2B), Government to Employees (G2E) and Government to Government (G2G). (Evans and Yen, 2006; Siau and Long, 2005)

Government to Citizen (G2C):

This dimension allows citizens to obtain information and complete government transaction e.g. e-tax filing. The Government to Citizen (G2C) sector is about all the interactions between citizens and the government online (DeBenedictis et al., 2002) In this regard, G2C applications offer services that are citizen-centric. (AlShihi, 2006) According to a published report by the Organization of Economic Co-operation and Development (OECD, 2003), some examples of the G2C applications include public awareness and basic services, such as: ordering certificates of birth, death, or marriage and filing of income tax returns, license renewals, as well as assistance for basic services such as education, health care, hospital information, libraries etc.

Government to Business (G2B):

The G2B sector deals with transactions about different services and information which are exchanged between the government and the businesses. These services include retrieving information about the existing business, downloading application forms, registration of a new business, obtaining permits and taxes payments (Fang, 2002). The G2B application improves the quality and efficiency of communication and transactions between the business and the government (Metaxiotis and Psarras 2004). Heeks (2006) clarifies that

the government's interactions with businesses are more important than those with citizens in terms of the overall rate of economic growth in the country. The countries could attract more foreign investors by assessing complicated procedures. Furthermore, issues of transparency and elimination of corruption can be facilitated via this type of transaction. (Coleman,2005)

Government to Employees (G2E):

The G2E solution is about the relationship between the Government and its employees. G2E is also an effective way to promote knowledge sharing among them (Ndou, 2004), as well as empowering employees to assist citizens in the fastest and most appropriate way and speed-up administrative processes. Furthermore, G2E relating to services such as human resource training and development that improves the daily procedures and dealings with citizens (Chavan and Rathod, 2009).

Government to Government (G2G):

G2G sector identifies which internal systems and procedures are being integrated into a central system. (Seifert, 2008) G2G services are about to reduce the associated costs, improve strategic decision-making and decentralize the power among all levels of government (Heeks, 2006). Moreover, G2G applications share information, databases, resources, capabilities and skills among government agencies and departments, thus increasing the effectiveness and efficiency of procedures (Seifert, 2008). This actually occurs as governments are allowed to communicate more effectively by reducing duplication and redundancy of information and communication (Evans and Yen, 2005).

2.2 E-Government in Denmark

The Danish E-government current strategy is their digital strategy 2016-2020 which made digital ID, NemID mandatory for all citizens and aims to, amongst other things, deliver efficient services in the public sector ("Den fællesoffentlige", 2016, 15 Dec). For businesses, in particular the strategy seeks to drive connections between sectors and services so that data given to one authority will automatically be available to other authorities which need the same information. These initiatives and digitization's will enable businesses to save money on accounting and by following this strategy they hope to make it easier to function as a business

in Denmark hence strengthen the competitiveness of Danish businesses abroad. In the strategy it is explained that newer technology such as cloud computing will be utilized in order to lessen the administrative burden for businesses. The digital strategy 2016-2020, which was released in May 2016, drafted 33 projects to be carried out in the time period of 2016-2020 ("Den fællesoffentlige", 2016, 15 Dec). The strategy is set by the agency of digitization and run by the ministry of finance.

Skat is the Danish national agency that manages taxation, property taxation, public debt, registration and recording of inventories. Already, in 1970 the agency of taxation began using IT systems in taxation, at the time companies reporting directly to tax how much salary their employees were given (Rigsarkivet, 2018). Since 1996 the citizens have been able to enter their tax information for personal income taxes and as of 1999 it was possible to view information online as well (Rigsarkivet, 2018).

Skat.dk provides e-services for personal taxation and the citizens can view and change their taxation online. In the personal taxation sector, the last decade has become more digital and skat.dk is collecting information directly from the banks and other services.

For businesses skat.dk provides services online for VAT, import taxes, employees and pay, e-capital, business properties, information regarding company type, e-pay services. Furthermore, they provide guided information in how to pay your business VAT and tax based on the company registration type and online live guides.

In 2018 tax agency Denmark was split into seven specialized agencies with their respective working areas, containing the so-called IT and Development agency which is responsible for maintaining existing IT solutions in the public and furthermore adjust and better systems in cooperation with businesses (Skatteministerieriet, 2018, Nov 20). As part of the digital strategy of 2016-2020, the government has initiated so-called pilot projects which will entail volunteering companies to test new services in e-government ("Den fællesoffentlige", 2016, 15 Dec).

According to UNDESA´s e-government survey of 2018, based on a comparison of the countries, Denmark is the leading country in e-government ("United Nations", 2018, 10 Dec). In the e-government readiness index Denmark is listed as number one in development of e-government ("United Nations", 2018, 10 Dec). UNDESA´s newest survey focuses greatly on

sustainable development and the way in which e-government is changing people´s everyday lives and digital innovations effect on the public sector ("United Nations", 2018, 10 Dec). According to Waseda University´s report on digital government 2018 Denmark is also leading the rankings which is based further on the use of ICT, AI and emphasized in the report is the mandatory use of digital mailbox from the government (Waseda, 2018). Furthermore, the report points of the way Denmark is promoting their digital services to the public and a general measurement is how including the country is of their citizens. In the strategy 2016-2020 one goal is to create a better framework for the business community ("Den fællesoffentlige", 2016, 15 Dec).

2.3 E-government evaluation and challenges

2.3.1 E-government Evaluation

Alshawi and Alalwany (2009) argue that e- government evaluation requires taking into consideration many stakeholders perspective, as well as the social and technical context of use. E-government is a multidisciplinary field which involves a number of disciplines such as, Information Systems (IS), Computer Science, Public Administration, and Political Science (Heeks and Bailur, 2007), so it is important to review a sufficient number of existing studies and models in e-government.

2.3.2 E-government evaluation frameworks

When investigating e-government services, evaluation frameworks are necessary in order to examine existing frameworks for assessing e-government services and their correlating elements of measure. Furthermore, it is important in order to decide on which framework and model is the most beneficial for the study at hand. According to Ibrahim et al. (2016) various models have been proposed to evaluate the success of e-government services via assessing users' degree of satisfaction, however they disappoint in contributing a comprehensive evaluations model.

According to Deng & Karunasena (2017) through their extensive review they identified four perspectives/aspects which consist of readiness assessment, availability assessment, demand assessment and impact assessment which is used for evaluating achievements of e-

government development in existing research. Readiness evaluation investigates the maturation of the e-government environment by assessing the awareness, willingness and preparedness of e-government stakeholders and determine the enabling determinants for the development of e-government (Kunstelj & Vintar, 2004). As it operates with quantifiable indicators which are able to contribute an overview of e-government development of individual countries (Dada, 2006). The flaw with the readiness measurement approach is however that it disregards the needs of citizens and the influence of e-government on society and citizens (Kunstelj & Vintar, 2004).

Targeting the supply side of e-government we have the availability measurement (Sambasivan et al., 2010). This evaluation element investigates the usage of e-government channels for the distribution of public services, the content of e-government services, the characteristics of e-government channels and the availability of electronic participation tools (Deng, 2008; Gauld et al., 2010). This type of research is beneficial in measuring the achievements of e-government whilst considering the e-government application and the refinement of such applications (Karunasena & Deng, 2017). It, the availability evaluation, frequently ignore the preferences of individual countries in e-government developments (Codagnone & Wimmer, 2007). Lastly the demand evaluation assesses e-government practice from an e-government user outlook. Demand evaluation concentrates on measuring to which extent e-government is used, and furthermore focus on satisfaction, perceptions, requirements and needs of respective e-government users. In specific society it disappoints when seeking to evaluate the influence and results though (Karunasena & Deng, 2017).

E-GovQual

Papadomichelaki and Mentzas (2009) constructed a framework called e-GovQual; a multiple-item scale framework which evaluates service quality of e-government services from a public perspective. The instrument was largely based on ServQual. Based on extensive research and their own study, validating the instrument, e-GovQual is based on six e-government service quality dimensions: ease of use (personalization, technical efficiency, navigation); trust (security, privacy); functionality of the interaction environment (support in completing forms); reliability (accessibility, availability); and content and appearance of information and citizen support (interactivity). The six dimensions of e-government service quality contains a total of 33 e-government specific attributes, these are summarized in table 2.1.

Table 2.1 The six dimensions of e-government service quality on government attributes

Dimensions	Attributes
Ease of Use	Website's structure, Customized search functions, Site-map, set up links with search engines, Easy to remember URL, Personalization of information, Ability of customization
Trust	Not sharing personal information with others, protecting anonymity, secure archiving of personal data, protecting anonymity, secure archiving of personal data, providing informed consent, use of personal data, non-repudiation by authenticating the parties involved, procedure of acquiring username and password, correct transaction, encrypting messages, digital signatures, access control
Functionality of the Interaction Environment	Existence of online help in forms, reuse of citizen information to facilitate future interaction, automatic calculation of forms, adequate response format
Reliability	Ability to perform the promised service accurately, in time service delivery, accessibility of site, browser-system compatibility, loading/transaction speed
Content and Appearance of Information	Data completeness, data accuracy and conciseness, data relevancy, updated information, linkage, ease of understanding/interpretable data, colors Graphics, animation, size of web pages
Citizen Support (Interactivity)	User friendly guidelines, help pages, frequently asked questions, transaction tracking facility, the existence of contact information, problem solving, prompt reply to customer inquiries, knowledge of employees, courtesy of employees, ability of employees to convey trust and confidence

Ease of use, one of the six dimensions, describes the ease of which users are able to interact with (Papadomichelaki and Mentzas, 2009). Trust is the confidence citizens have in the e-government website and it covers privacy and security. Functionality of the interaction

environment supports users in interacting with government administration, allowing them to enter information online via e.g. forms. Reliability concerns itself with the assurance users feel in the website's dependability and correct delivery of service. Content and appearance of information involve the layout and quality of the information provided which covers everything from colors, size of website to correct on-time information. Citizen support is the guidance and help contributed by the organization/government to users of the website.

The model was tested for reliability and validity by the researchers who found that the model should optimally consist of 21 item attributes on four dimensions (Papadomichelaki and Mentzas, 2009). As the study was done on users normally using e-government sites further research should be conducted in order to test reliability and validity of this model (Papadomichelaki and Mentzas, 2009).

COBRA

Following a comprehensive analysis of e-service assessment models and literature, Ibrahim et al. (2011) proposed a quantitative framework for evaluating e-government services called COBRA. COBRA consists of four primary constructs; cost; benefit; risk and opportunity. Following their own study, they found the COBRA framework a valuable method in assessing the success of e-government services from a citizen's point of view (Ibrahim et al., 2014).

Cost and benefit elements are most palpable and are for the most parts fairly simple to assess, here risk and opportunities are the most intangible (Ibrahim et al., 2014). The model was created by analogy to a strategic management tool known as SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis (Kithandi and Ambale, 2017).

The figure below exhibits the relationships between the constructs of the COBRA model. The predicted directions of the hypothesized causal-effect relationships between user satisfaction and both constructs of benefit and opportunity are positive, however negative with both cost and risk constructs (Ibrahim et al., 2014).The COBRA model is fairly new and has not yet been validated by many studies in the original study it was tested and validated in Turkey, as the authors themselves state; "*Using international variation to further validate any model has limitations; user satisfaction may be related to other unobserved country-factors,*

such as general cultural features of e-government services development strategies and levels" (Ibrahim et al., 2014).

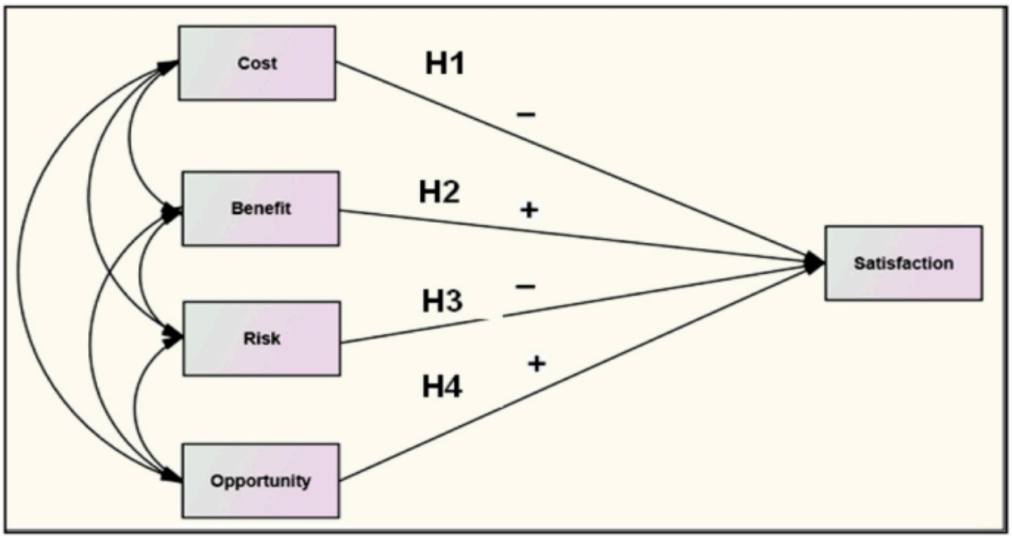


Figure 2.1 The cobra model for user satisfaction

(Source: Ibrahim et al. 2014)

2.4 Information Systems, E-Commerce and E-Government Success Evaluation Models

Numerous of researches has been conducted to identify IS success measures. The success measures of various information systems (IS), are moving beyond traditional financial measures, such as return on investment, as well as information systems quality is being taken into account as an important measure of IS success (Gorla et al., 2010). DeLone and McLean, (1992) created an IS Success model that involves many individual measurements of success. DeLone and McLean, (2003) updated their original success model and made their model applicable to the success measurement of the e-commerce sector. Molla and Licker, (2001) proposed an e-commerce success model based on a variation of the DeLone and McLean IS Success model to an e-commerce system. Further Wand and Liao, (2008) validated the updated DeLone and McLean (2003) model to assess the success of e-government systems by using e-tax services of Taiwan. Hu et al., (2005) proposed a framework of e-government project success based on the DeLone and McLean IS success Model (1992).

The above reviewed literature shows that DeLone and McLean"s IS success models have been used in many researches as a base model. By adding variables from various disciplines (IS, e-commerce) and extensions, various researchers have developed success

models that can be adapted to government e-services, IS and e-commerce. Authors suggest that it is essential to discuss in detail DeLone and McLean success models to know the associated criteria of evaluation.

2.4.1 Delone and Mclean IS success model (1992)

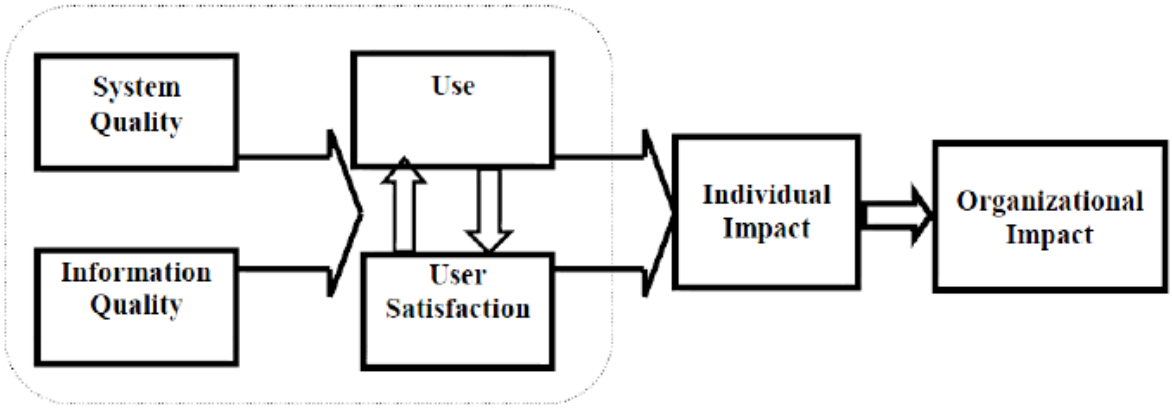


Figure 2.2 Mclean and Delone IS success model (1992)

Source:(Mclean and Delone, 1992)

D&M wanted to provide a more general and comprehensive definition of IS success. The IS success model was implemented 1992 by DeLone and McLean which identified the taxonomy of information systems success factors and presented a broad view of IS-success factors. They reviewed existing literature on IS success and their corresponding components. Six independent measurements of information success were through research and correspondence defined. Important to the study was that the researchers found that a single component cannot describe properly the success of IS and the dimensions are interrelated. These components are what IS is normally evaluated by. The six dimensions of IS-success as described by DeLone and Mclean 1992 are: multidimensional measuring model with interdependent categories.

Information quality: measured by, timeliness, completeness, relevance, reliability amongst other, information quality deals with the quality of information produced by the information system.

System quality: the measures of system quality includes: convenience of access, flexibility of system, integration of systems, response time, realization of user expectations, ease of use etc.

System use/use: is defined as the use of the output of an information system. Measures includes; use or not use of a system, motivation to use, density of use etc.

User satisfaction: measures includes; difference between information needed and information accessible,

Individual impact: measurements includes; efficient decisions, cost awareness etc.

Organizational impact: refers to the effect of information on organizational use/performance. Measures includes; profitability, cost reduction, market share etc.

Most commonly the systems are characterized by the measurements system quality and information quality. In addition to the suggestion of a process model, DeLone and McLean further presented how system quality can affect use and user satisfaction. Furthermore, use and user satisfaction leads to individual impact which in turn leads to organizational impact.

2.4.2 Delone and Mclean revised IS success model (2003)

Another judgment from Seddon (1997) was the view of the model as confusing since it is a combination of process and variance models. Seddon (1997) argued that the D&M model in its original form was complicated, partially since both variance and process models have been mingled in the same framework. While he argued that this was a defect of the model, the authors (DeLone and Mclean, 2003) replied that this aspect of the model was in their opinion one of the core strengths of the model, with insights provided, respectively, by process and variance models being richer than either of them is alone. Since the creation and publication of the D&M IS success model numerable researchers have examined and proposed changes to the original model. This was welcomed by the authors (DeLone & Mclean, 2003), and they considered suggestions as well as commented on revisions of the model accommodate development and validation. One such suggestion was made by Seddon and Kiew (1996); who studied elements of the IS success model (i.e., system quality, information quality, use and user

satisfaction). Similar to the concept of perceived usefulness in TAM by Davis (1989), Seddon and Kiew (1996) argued that the construct "use" should be altered to usefulness arguing that for voluntary systems use can be an appropriate measure; however, if system use is mandatory, usefulness is more applicable as a measure compared with use. The authors (DeLone and McLean, 2003) responded that for mandatory systems there can still be considerable variability of use hence the variable use deserves to be retained.

The model has been validated in many studies however according to Wang and Liao (2008), caution must be taken regarding generalizing the results and in consideration of other e-government categories or user groups. They continue advocating that it is imperative that the D&M success model is validated in various user populations and e-government contexts, particularly in G2B and G2G. (Wang and Liao, 2008). Therefore, the purpose of this study was to determine how the Danish e-government service e-tax for business is perceived by small companies.

This study provides the first quantitative test of the DeLone and McLean IS success model in the context of a G2B e-government taxation service. Several researchers made the suggestion to add service quality to the model and in this SERVQUAL, a measurement instrument, known from marketing, has become common practice within the IS departments (Petter et al., 2003).

As a reaction of the many suggestions and extensions to the original model, DeLone and McLean (2003) reviewed empirical studies from 1992 and made a revised version of the model (DeLone and McLean, 2002, 2003). In the revised version service quality as a construct was included, accepting Pitt et al. (1995)'s proposal. The constructs: organizational impact and individual impact were replaced with the variable net benefit and by that reckoning benefits at several levels of analysis. This made the model more suitable for researchers at any level of analysis. As a final note the construct use was updated in the revised model. The authors DeLone and McLean (2003) specified that *use* must take place prior to user satisfaction in procedure logic where positive experience in use leads to higher user satisfaction in a causal sense. Increased user satisfaction then leads to higher intention to use and this then has an effect on use.

Below is seen the revised version of the D&M IS success model

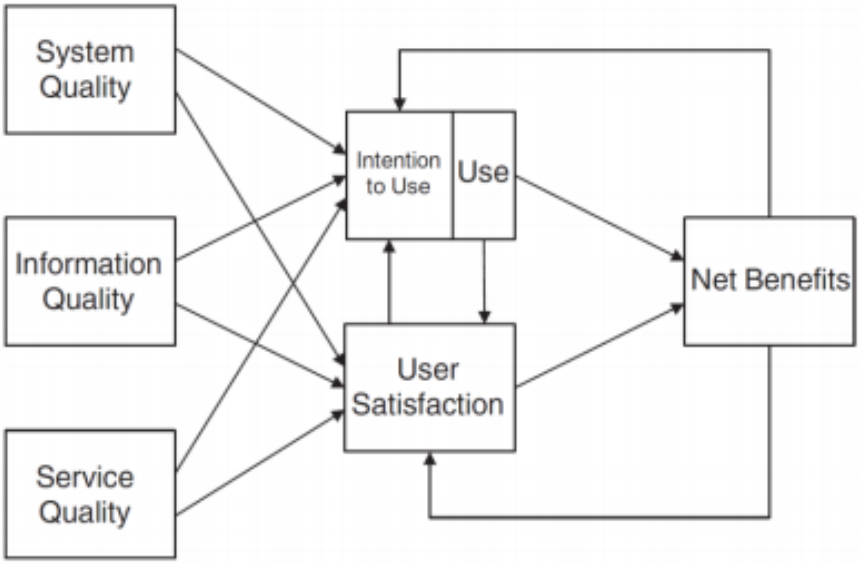


Figure 2.3 Delone and Mclean updated model (2003)

(Source: Delone and Mclean, 2003)

Information quality

On a semantic level of information, we find information quality of communication theory, which deals with the interpretation and meaning of the message by the receiver compared to the original meaning of the message by the sender (Shannon, Weaver, 1949).

Dealing with the quality of the information which the system produces for decision making and is regarded an important element in IS evaluation (Seddon, 1997). Furthermore, according to Rai et al. (2002) information quality is linked to the accuracy, content and format.

In the revised version of the D&M success model DeLone and McLean (2003) had found that in many studies the most frequent measures were timeliness, completeness, consistency, accuracy and relevance. Doll and Torkzadeh (1988) created an instrument which included measures of format, timeliness, accuracy and content. This instrument demonstrated acceptable reliability and validity when it was tested. The instrument of Seddon and Kiew (1996) used for measuring information quality contained relevance, format, timeliness and accuracy. Though for measuring Information Systems success, specifically systems for e-commerce, DeLone and McLean (2003) suggests attributes of relevance, completeness, ease of understanding, personalization and security.

Table 2.2 Information quality measures used in past research

Area of the study	Description of the measures	Author
Success of ecommerce context	Completeness, accuracy, timeliness, relevance and consistency.	DeLone and McLean (2003)
Analyzing Computer User Satisfaction	Accuracy, Timeliness, Precision, Reliability, confidence in system, assistance, currency, completeness, Format of output, Volume of output, and Relevance	Bailey and Pearson (1983)
Measure of User Information Satisfaction	Reliability of output, Understanding of the system, Accuracy of output, Precision of output, Users sense of participation	Baroudi and Orlikowski (1988)
End user's computer satisfaction	Content: Relevancy of output information is useful, Does the information content meet users' needs, Output information is relevant, Completeness of output information Accuracy: Output information is accurate, Accuracy of output information is satisfactory Format: Format of output information is useful, Format of output information is clear Ease of Use: System is user friendly, System is easy to use Timeliness: Timely information, Up-to- date information	Doll and Torkzadeh (1988)

A partial test and development of DeLone & McLean Model of IS success	Output is presented in a useful format, satisfaction with accuracy of the system, Clear information, Accurate System, Sufficient information, Up-to-date information, Information needed in time, Information content addresses needs	Seddon and Kiew (1996)
E-government success	Content,Timeliness,Up-to-dated	Wang and Liao (2008); Edrees and Mahmood, (2013);

System quality

In Shannon and Weaver's (1949) system of communication, system quality exists on the technical level of group communication problems, where it is seen how well a system performs in transferring symbols of communication. According to DeLone and McLean (1992) system quality is the desired attribute of information system and the leading intention of the system is that its users and decision makers produce information. Seddon (1997) states that system quality concerns itself with matters as user interface, system bugs, ease of use and occasionally quality and preservation of program codes. This, by Petter et al. (2009), is described as system quality being the performance of information system in terms of reliability, ease of use, functionality, convenience and other system metrics. Measures, used in previous literature, of system quality are; reliability, flexibility, usefulness, stability, user-friendly interface, response time and ease of use (e.g. Bailey and Pearson, 1983; Doll and Torkzadeh, 1988; Rai et al., 2002;). According to DeLone and McLean (1992, 2003) important elements in an e-commerce setting is availability, reliability, response time, adaptability and usability.

Area of study	Description of the measures	Author
Success in an e-commerce context	Ease-of-use, functionality, reliability, flexibility, data quality.	DeLone and McLean (2003)
Analyzing Computer User Satisfaction	Completeness, response/turnaround time, Convenience of access, Understanding of systems, Confidence in the systems,	Bailey and Pearson (1983)
Measure of User Information Satisfaction	Understanding of system, Time required for new system development, participation in its development Quality of output of the information system	Baroudi and Orlikowski (1988)
End user's computer satisfaction	Content: Relevancy of output information is useful, Does the information content meet users' needs, Output information is relevant, Completeness of output information Accuracy: Output information is accurate, Accuracy of output information is satisfactory Format: Format of output information is useful, Format of output information is clear Ease of Use System is user friendly, System is easy to use Timeliness Timely information, Up-to- date information	Doll and Torkzadeh (1988)
Success factors in the university's Departmental Accounting System	Use requires a lot of mental effort. Use is frustrating Easy to use. The system is efficient. It does what I want it to do. It is easy for me to become skillful. The information is clear.	Seddon and Kiew (1996)
E-government success	Ease of use, navigation, System accuracy	Wang and Liao (2008); Edrees

		and Mahmood, (2013);

Table 2.3 System quality measures used in past research

Service quality

New to the updated IS success model, service quality was included by many researchers and in the revised version of DeLone and McLean they considered it an important measure to be added to the *"system quality"* and *"information quality"* components. Several researchers in time have argued that service quality is derived from a point between what customers expect from a company to the company's actual service performance (Parasuraman et al. 1983).

Based on evaluations of many contributing factors the updated version of the D&M success model included service quality. Together with the constructs information quality, and system quality, service quality affects use and user satisfaction. According to Alanezi et al. (2010) service quality is crucial in order to achieve public recognition and use of e-government websites, however this is often a neglected element when implementing and designing governmental e-services. DeLone and McLean (2003) argue that there is a risk of mis-measurement of IS effectiveness if they do not include a measure of IS service quality as mostly used IS measurements focus on the product instead of the services of an IS function. (Pitt et al, 1995). Pitt et al. (1995) focuses on the importance of the IS department in an organization as a mean of both product and services. From the customer's viewpoint, quality can be achieved when customer's expectations are met regarding the product or service being delivered (Chang et al., 2005). Parasuraman et al. (1988) *concludes* that service quality is established in a correlation between what the consumer expects and what is actually delivered. According to Conrath and Mignen (1990) the second most significant component of user satisfaction, regarding general quality of service, is the match between users' expectations and actual IS service. As service quality impacts usage intention and user satisfaction with a given system it also impacts net benefits.

SERVQUAL is a 22-item instrument known from marketing commonly used for measuring service quality or simply said customer perceptions of service quality (DeLone and

McLean, 2003). The dimensions of SERVQUAL are: tangibles, reliability, responsiveness, assurance and empathy (parasuraman et al., 1988). In the table is shown measures in research of service quality

Table 2.4 Service quality measures used in past research

Area of the study	Description of the measures	Author
Success of ecommerce	Assurance, empathy, responsiveness and assurance.	DeLone and McLean (2003)
Measuring Web based service quality	Responsiveness, Competence, Quality of information, Empathy, Web assistance, Call-back systems	Xie et al., (2002)
Consumer perceptions of service quality	Reliability, responsiveness, assurance, empathy	Parasuraman et al. (1985)
E-S-Qual for assessing electronic service quality	Efficiency Fulfilment System availability Privacy	Zeithaml et al., (2005)
E-government success	Responsiveness, assurance, availability	Wang and Liao (2008); Edrees and Mahmood, (2013);

Use

System usage at any level does not have any precise definition. (DeLone and McLean, 2003). According to Seddon (1997) system use is defined as using the system for everyday work and tasks. According to Petter et al. (2008) use is defined as; "*the degree and manner in which staff and customers utilize the capabilities of an information system"* and adds examples such as nature of use, appropriateness of use and amount of use. DeLone & McLean (2003)

described the construct use as; Use must precede ‘‘user satisfaction’’ in a process sense, but positive experience with ‘‘use’’ will lead to greater ‘‘user satisfaction’’ in a causal sense’ (DeLone and McLean, 2003). Seddon and Kiew (1995) argued that, for voluntary systems, use is an appropriate measure; however, for mandatory systems hours could be spent in the system and this would not convey any meaningful message to success. To this the authors DeLone and McLean (2003) said that the usage in mandatory systems can still vary substantially and therefore the construct use should be sustained. They further state that in order to keep use as variable researchers should keep aware of the context of this use, such as the extent, nature and quality of this usage. Suggested by Seddon (1997) is that the parts of use to measure are the time spent using the system, frequency of use and number of users. Many of the changes to the D&M success model proposed by Seddon would complicate it hence removing the initial intent of the model being complete and parsimonious.

Table 2.5 Use measures used in past research

Area of the study	Description of the measures	Author
Information system use	Frequency of use, heavy or light user	Hartwick & Barki (1994)
Online transactions via mobile commerce E- government	Frequency of use	Wu & Wang (2005)
Microcomputer usage	Self-reported daily use, self-reported frequency of use	Igbaria, Parasuraman & Baroudi (1996)
E-commerce system use	Nature of use, navigation patterns, number of site visits, number of transactions executed/frequency of use	DeLone & McLean (2003, 2004)
Use of E-learning system	Frequency of use, voluntariness, dependency	Wang, Wang & Shee (2007)

Measuring of IS success	amount of use, frequency of use, nature of use, appropriateness of use, extent of use, and purpose of use	Petter et al. 2008
E-government success	Frequency of use, dependence	Wang and Liao (2008); Edrees and Mahmood, (2013);

User satisfaction

User satisfaction is the most widespread measure of success and researchers have developed and validated different instruments to measure user satisfaction (DeLone and McLean, 1992, 2004; Seddon and Kiew, 1996; Seddon, 1997; Rai et al., 2002; Doll and Torkzadeh, 1988).

Seddon and Kiew (1996) said that user satisfaction is regarded the most common measure of Information Systems success. DeLone and McLean (2003) stated that use must come before user's satisfaction, but user satisfaction will lead to increased use. Defined by Bailey and Pearson (1983) as the sum of one's feelings and attitudes, in a given situation, towards various factors affecting the situation. Assessed on a pleasant and unpleasant spectrum it can be defined as a subjective evaluation based on various consequences (Seddon, 1997). The most commonly used instrument for measuring user satisfaction is the End-User Computing support (EUCS) of Doll et al. (1994).

Table 2.6 User satisfaction measures used in past research

Area of the study	Description of the measures	Author
Success attribution and need fulfilment	This product is exactly what I need. My choice to buy this car was a wise one. I am sure it was the right thing to buy this product.	Oliver (1980, 1997)
Success of ecommerce context	Repeat purchases, repeat visits, user surveys.	DeLone & McLean (2003)
End user's computer satisfaction	Content: Relevancy of output information is useful, Does the information content meet users' needs, output information is relevant, Completeness of output information Accuracy: Output information is accurate, Accuracy of output information is satisfactory Format: Format of output information is useful, Format of output information is clear Ease of Use: System is user friendly, System is easy to use Timeliness: Timely information, Up-to-date information	Doll & Torkzadeh (1988)
Satisfaction in e-service context	I am satisfied with this e-service. The e-service is successful. The e-service has met my expectations.	Luarn & Lin (2003)
Assessing effect of satisfaction in behavioral intention in service industries.	My choice to purchase this service was a wise one. I think that I did the right thing when I purchased this service. This facility is exactly what is needed for this service.	Cronin et al., (2000)

E-government success	Overall level of satisfaction	Wang and Liao (2008); Edrees and Mahmood, (2013);
Satisfaction and continuance intention of eLearning system	I am satisfied with the performance of the e-learning service I am pleased with the experience of using the eLearning service My decision to use the e-learning service was a wise one	Roca et al., (2006)

Net benefits

Defined by Petter et al. (2008) as "*the extent to which IS are contributing to the success of individuals, groups, organizations, industries, and nations."* They continue with examples of how IS contributes such as improved decision making, increased sales, cost reductions, improved profits and economic development. According to DeLone and McLean (2003) net benefits is the most crucial construct as it captures the balance of positive and negative impacts on customers, suppliers, employees, organizations, markets, industries, economies and societies of e-commerce. At individual level, perceived usefulness or job impact are the most frequent measures (Petter et al., 2008).

Table 2.7 Service quality measures used in past research

Area of the study	Description of the measures	Author
EUCS & Perceived impact of IT on work	Task productivity, task innovation, customer satisfaction, and management control	Torkzadeh and Doll (1999)

End user computing satisfaction and user performance	Improves quality of work, makes job easier, saves time, fulfil the needs and requirements of job	Etezadi-Amoli & Farhoomand (1996)
Success attribution & need fulfilment	This product is exactly what I need. My choice to buy this product was a wise one. I am sure it was the right thing to buy this product.	Oliver (1997)
Enterprise System Success Measurement Model	Individual level: Learning, Awareness/recall, Decision effectiveness, Individual productivity Organizational level: Organizational costs, Staff requirements, eGovernment, Business process change, Improved outcomes/outputs, Increased capacity, Cost reduction, Overall productivity	Sedera et al., 2004
E-government success	Ease of use, quality of output	Wang and Liao (2008); Edrees and Mahmood, (2013);

2.4.3 E-government Success Models

According to the literature review many researchers used DeLone and McLean, (1992, 2003) success evaluation models as base model for evaluating the success of e-government systems. DeLone and McLean, (1992) was used by most of the researchers without any change, however some of them have updated the existing model.

Wang and Liao, (2008) proposed a model for assessing e-government systems success, this model is a variation of the DeLone and McLean model (2003). The proposed model was used to assess the success of e-government services in Taiwan, and the data was collected from various e-government systems among them the e-tax service. The hypothesized relationships

between the constructs were supported except of the relationship between system quality and use. According to Wang and Liao (2008) the updated IS success model can be adapted to the system success measurement in the G2C e-government context.

Floropoulos et al., (2010) used the DeLone and McLean, (2003) model to assess the success of the Greek Tax Information System. All hypothesized relationships were supported by the data, except for the relationship between system quality and user satisfaction.

Edrees and Mahmood, (2013) revalidated the Wang and Liao, (2008) G2C e-government systems success model which is based on DeLone and McLean, (2003) model. Wang and Liao, (2008) considered six success measures that are information quality, system quality, service quality, use, user satisfaction, and perceived net benefit. The findings of Edrees and Mahmood's, (2013) study partially support Wang's and Liao's (2008) results.

2.6 Adoption of the model

One of the purposes of this study is to apply and validate the updated DeLone and McLean model of IS success in the context of G2B e-tax Danish system from the small businesses' perspective. DeLone and McLean, (2003) model which is an extension of the DeLone and McLean (1992) success model, have been used as base for the present study. DeLone and McLean (1992) IS success model and its updated version (2003) was widely used by many researchers in IS and e-commerce success assessment. (Pitt et al., 1995; Myers et al., 1997; Molla and Licker, 2001; Seddon, 1997; McKinney et al., 2002). Furthermore, some researchers (Wang and Liao, 2008; Teo et al., 2008; Papadomichelaki et al., 2009; Floropoulos et al., 2010; Saha et al., 2010; Edrees and Mahmood, 2013; Hien, 2014) used DeLone and McLean (2003) model in the context of e-government for assessing the e-government success, e-government websites and their quality by using existing dimensions or by modifying the DeLone and McLean model. A meta-study conducted by Petter et al., 2008 has shown that the updated version of the D&M model has received great appreciation in the IS community, and most of its propositions explaining the success of an IS are supported.

Figure 2.4 shows the relationships among the dimensions of D&M model and how they are supported in individual and organizational level by various previous researches.

Antecedents	→	Explained constructs	Ind.	Org.
System use				
System quality	→	System use	~	~
Information quality	→	System use	~	o
Service quality	→	System use	o	o
User satisfaction	→	System use	+	o
Net benefits	→	System use	+	o
User satisfaction				
System quality	→	User satisfaction	++	o
Information quality	→	User satisfaction	++	o
Service quality	→	User satisfaction	+	o
System use	→	User satisfaction	+	o
Net benefits	→	User satisfaction	+	o
Net benefits				
System quality	→	Net benefits	+	+
Information quality	→	Net benefits	+	o
Service quality	→	Net benefits	+	o
System use	→	Net benefits	+	+
User satisfaction	→	Net benefits	++	o

++, strong support
+, moderate support
~, mixed support
o, insufficient data

Figure 2.4 Construct interrelations (as discussed by Petter et al.,2008)

(Source Urbach et. al., 2011)

Wang and Liao, 2008 validated the DeLone and McLean (2003) model in assessing e-government systems success in G2C context in Taiwan. The validation of DeLone and McLean IS success model by Wang and Liao assessed by following the same dimensions without any further addition. Wang and Liao (2008) model revalidated by Edress and Mahmood (2013), who measured the e-government success of Bahrain using the same six dimensions.

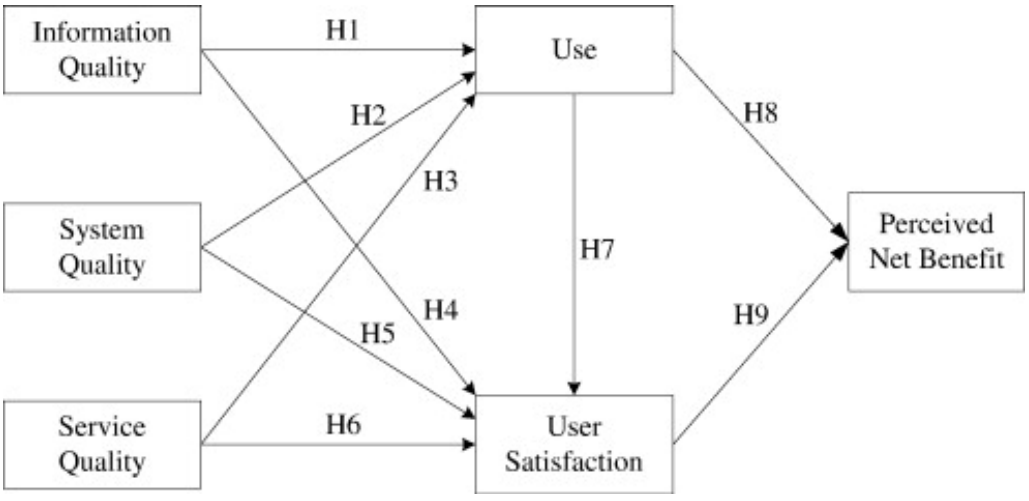


Figure 2.5 E-government success model

(Source: Wang and Liao, 2008)

The authors of this study decided to adopt the Wang and Liao, 2008 which has been applied in e-government context. According to DeLone and McLean (2003) "the challenge for the researcher is to define clearly and carefully the stakeholders and context in which net benefit are to be measured". Wang et al., 2008 argued that since the focus of their research was on the measurement of G2C e government success from the perspective of citizens, net benefit refers to the citizen-perceived net benefit evaluation. Thus, the net benefits dimension was named as perceived net benefit in their research. Moreover, DeLone and McLean (2003) claim that use and intention to use are alternatives in their model, intention to Use is an attitude, whereas Use is a behavior. The present study adopts *"use"* instead of *"intention to use"* in accordance to Wang and Liao, 2008, model.

Another change made by Wang et al., 2008, is the removal of the feedback arrows from the *"perceived net benefits"* construct to both *"use"* and *"user satisfaction"* constructs, to avoid model complexity and to reflect the cross-sectional nature of their study because the model is tested by obtaining empirical data at a single point in time hence constructs of the model are measured only once. Similarly, the arrow from "user satisfaction" to "use" was excluded.

Previous researchers have examined the link from quality related constructs to net benefits but not as part of the complete D&M model (Teo and Wong 1998; Weill and Vitale 1999; Gefen 2000; Bradley et al. 2006;). Pérez-Mira, (2010) proposed an extended Delone and Mclean, (2003) model by adding direct effects from quality constructs to net benefits in order to validate the D&M IS success model at the web site level analysis.

Considering all the above discussed literature several hypotheses were constructed in order to test the applicability of the Wang and Liao, (2008) success model and the relationships between its constructs, in the context of G2B e-government, Danish e-tax system.

According to DeLone and McLean, (1992) IS success model system quality is a main dimension which constitutes the characteristics of an IS. These measures typically focus on usability aspects and assessment characteristics of the system. Wang and Liao, (2008) validated the e-Government system success using DeLone and McLean, (2003) IS system success model and used system quality, information quality, and service quality as key dimensions. While using online

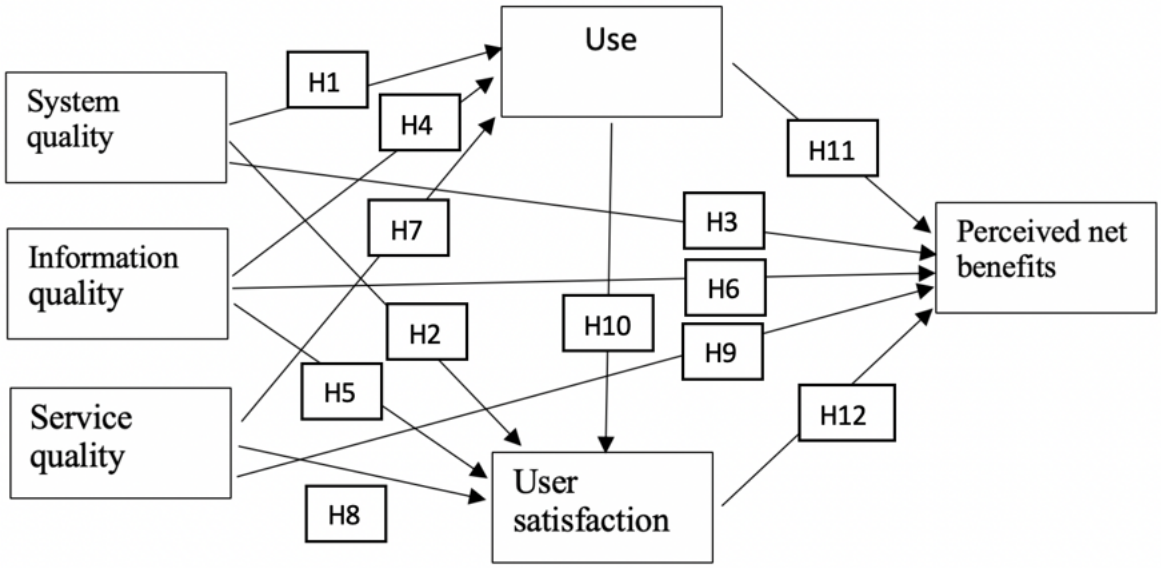


Figure 2.6 The model to be tested

e-government services the system quality affects use and users' satisfaction. Two items (ease of use and navigation), selected from Doll and Torkzadeh's (1988) ease-of-use scale and adapted to specify the G2C e-government system, were used to measure system quality. (Wang and Liao, 2008)

With the above discussion the hypothesized relationships between system quality, use and users' satisfaction can be defined as follows:

Hypothesis (H1): System quality is positively associated with the use of e-tax service in the G2B e-government perspective

Hypothesis (H2): System quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective

Hypothesis (H3): System quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective.

Table 2.8: Hypotheses related to system quality

Hypotheses	References
(H1): System quality is positively associated with the use of e-tax service in the G2B e-government (e-tax service) perspective	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham(2011); Edrees and Mahmood, (2013);
(H2): System quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
(H3): System quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective	(Pérez-Mira, 2010)

Information quality refers to the quality of outputs which are produced by the information system (DeLone and McLean, 1992, 2003). Wang and Liao, (2018) adapted three items for the information quality construct from Doll and Torkzadeh (1988) to measure the information quality of a G2C system: content and timeliness. Regarding information quality three hypotheses can be drawn:

Hypothesis (H4): Information quality is positively associated with use in G2B e-government (e-tax service) perspective.

Hypothesis (H5): Information quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.

Hypothesis (**H6):** Information quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective.

Table 2.9: Hypotheses related to information quality

Hypotheses	References
(H4): Information quality is positively associated with use in G2B e-government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
(H5): Information quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
(H6): Information quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective	(Pérez-Mira, 2010)

DeLone and McLean (2003) proposed an updated model of IS success by adding a service quality measure as a new dimension of the IS success model and argue that service quality deserves to be included along with system quality and information quality as a component of IS success. Wang and Liao (2008) selected three items (assurance, responsiveness, reliability) from Wang and Tang's (2003) EC-SERVQUAL scale, to measure the service quality construct.

Hypothesis (H7): Service quality is positively associated with use in the G2B e-government (e-tax service) perspective.

Hypothesis (H8): Service quality is positively associated with user's satisfaction in the G2B e- government (e-tax service) perspective.

Hypothesis (**H9):** Service quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective

Table 2.10: Hypotheses related to service quality

Hypotheses	References
(H7): Service quality is positively associated with use in the G2B e-government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
(H8): Service quality is positively associated with user's satisfaction in the G2B e- government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
(**H9):** Service quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective	(Pérez-Mira, 2010)

DeLone and McLean (2003) stated that the *use* and *user satisfaction* are closely interrelated. Their model reveals that the positive experience with "use" will lead to greater "user satisfaction" and because of use and user satisfaction, a certain net benefit will occur. Use was measured by Wang et al.,2008 with two measures (frequency of use and dependence measure) adapted from previous studies (Heo and Han, 2003, Rai et al., 2002). Previous researches also suggested that user satisfaction is considered a significant factor in measuring success (DeLone and McLean, 1992; Seddon and Kiew, 1996; DeLone and McLean, 2003) Wang et al. (2008) measured user satisfaction by using measures of overall level of user satisfaction or Web customer satisfaction. Perceived net benefit was assessed by two-item measures (ease of use, quality of output) adapted from Etezadi-Amoli and Farhoomand's (1996) user performance scale.

Hypothesis(H10): Use positively affects users' satisfaction in G2B e-government (e-tax service) perspective.

Hypothesis(H11): Use positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

Hypothesis(H12): User satisfaction positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

Table 2.11: Hypotheses related to use users' satisfaction

Hypotheses	References
Hypothesis(H10): Use positively affects users' satisfaction in G2B e-government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun (2011); Edrees and Mahmood, (2013);
Hypothesis(H11): Use positively affects perceived net benefit in G2B e-government (e-tax service) perspective.	DeLone and McLean (1992, 2003); Seddon (1997); Wang and Liao (2008); Khayun and Ractham (2011); Edrees and Mahmood, (2013);
Hypothesis(H12): User satisfaction positively affects perceived net benefit in G2B e-government (e-tax service) perspective.	(Pérez-Mira, 2010)

Chapter 3

3.1 Research Methodology and approach

Information Systems (IS) are related to several theoretical perspective, so researchers are able to choose an appropriate method from a range of research approaches (Orlikowski and Baroudi, 1991). E-government is classified within the IS field, which covers many areas, including: technology, computing, management, public administration and political science (Heeks and Bailur, 2007). Factors such as research topic, objectives, research questions, are important in the selection of an appropriate research methodology (Yin, 2003). The most significant part of a research is the research question; thus, the research problem must be interpreted into a research question that describes the scope of the research and choose between quantitative and qualitative research methods (Wilson, 2010). This study attempts to measure the effectiveness of Danish e-tax service from a small businesses' perspective. The authors chose the quantitative approach to test the Mclean and Delone model in G2B Danish e-tax service perspective empirically since that approach is more useful for testing theory (Hair et al., 2007). A research approach that follows a quantitative approach falls within the positivist claims of knowledge. Myers and Avison (2002) The main characteristics are dividing the problem to specific variables, developing hypotheses, and testing theories using instruments that provide statistical data (Creswell, 2003). The positivist research is intended to produce results that are reliable and consistent, free from researchers' perceptions and biases (De Villiers, 2005). Positivism is the most common approach in the IS research and it has been widely adopted by many researchers (Jörg Becker and Björn Niehaves, 2007).

3.2 Research Design

The purpose of the current research is to assess the effectiveness of Danish e-tax service (TastSelv) from a small businesses' perspective. The aim is to test the hypotheses and define the relationships among various dimensions. Descriptive research design involves "*designing and collecting data"*, *"checking for errors",* and *"coding and storing data"*. (Hair et al., 2003) It begins with a defined structure model and continues with the collection of data in order to describe the phenomenon which is under analysis. (Hair et al., 2003) Descriptive researches are confirmatory, so they are used to test specific hypotheses (Hair et al., 2003). Therefore, descriptive research design is found to be appropriate for the present study.

3.3 Research Strategy

Saunders et al. (2007) defined research strategy as *"the general plan of how the researcher will go about answering the research questions"*. After the identification of research question and research design, the choice of a research strategy is the most important decision that a researcher should make. An appropriate research strategy has to be chosen based on research questions, the extent of existing knowledge on the subject area to be researched, the available amount of time and resources (Saunders et al., 2007). Research strategy is about the reasoning that is used to answer the research questions and it is classified in deductive and inductive (Blaikie, 2007). Inductive reasoning is considered more exploratory and it develops theory from the observation of empirical reality (Collis and Hussey, 2009). It is most commonly associated with qualitative research (Blaikie, 2007). Deductive reasoning is a top down approach which is narrower in nature. It is most commonly associated with quantitative research which leads to test hypotheses with specific data and confirmation or rejection of the original theories (Blaikie, 2007). Since positivist research design approach was selected for the study for testing the hypotheses, deductive reasoning approach was found suitable.

3.4 Research method

Commonly it is seen that researchers with a positivist approach depend on quantitative analysis, confirmatory analysis, deduction and experiments (Fitzgerald & Howcroft, 1998).

Present study is conducted as a quantitative empirical study which means creating hypotheses based on theoretical statements and evaluated variables. With roots in natural science it belongs to the category of deductive positivists method (Blaikie, 2007). According to Orlikowski & Baroudi (1991) positivists studies are commonly conducted using prior evaluated instruments. Accentuating an objectives scientific approach is underlined by the positivist approach (Blaikie and Priest, 2007). In scientific research an effective process of collecting vast amounts of information for analysis whilst staying objective (Bryman, 2008). E-government studies belongs to the IS discipline which makes the scientific approach of this study applicable. Research methods are defined as the techniques which are used for producing and analyzing data in order to describe patterns, characteristics and processes in social life (Blaikie and Priest, 2007). According to Orlikowski and Baroudi (1991) there are six kinds of research designs when conducting IS research, which consists of case study,

survey, laboratory, experiment, field experiment and action research. Within these we find survey, underlining that it is appropriate for IS research.

3.5 Survey methods

Within the field of quantitative analysis surveys are found, surveys are data collected from either a small or a large sample via numerous ways such as mail questionnaires, telephone interviews or public statistical data which can be analyzed (Gable, 2004). Surveys can be utilized as a data gathering technique combined with other methods, as interviews, within the same area (Straub et al., 2005). The technique of surveys is acknowledged as a data collection approach which can produce accurate evidence and indications regarding large populations. Surveys via questionnaires are the optimal choice for many researchers (Oates, 2006). Gable (1994) stated that surveys are able to precisely document the standard, recognize severe outcomes, and describe associations between variables in a sample. Furthermore, a survey is a methodical manner of assembling information from a sample of the population for the principle of build quantitative attributes (Al-Shafi, 2009). According to Groves et al. (2004) survey methodology look to detect the principle of design, collection, processing and analysis of surveys. Furthermore, surveys are a common practice both within the scientific field and professional management fields. Current study aims to investigate the effectiveness of e-government service from a business perspective meaning, how businesses perceive the provided e-tax service which makes surveys in this regard the most widely used method, especially when considering technological acceptance (Shareef et al., 2009; Dwivedi and Irani, 2009).

There are as vast a selection in types of surveys as their methods to manage them, and many techniques of sampling. Two key characteristics of survey research is found (Neuman, 2003). One being questionnaires, which is a technique involving a predefined series of questions used to obtain information from individuals. Sampling, which is a method where a subgroup of the population is chosen to reply the survey questions and the information gathered can be generalized to any interested party.

3.5.1 Questionnaire

Former researchers have used the questionnaire method to investigate information technology acceptance, adoption, and use (Gilbert et al., 2004; Liu et al., 2005). The questionnaire method is an effective form of data collection in the case when the researchers are familiar with what is necessary and how to evaluate the significant variables (Sekaran and Bougie, 2010). Stated by Peterson (2000); *"the quality of information is obtained from the questionnaire is directly proportional to the quality of questionnaire. A well-designed questionnaire that was used effectively can gather information on both the overall performance of the system to be tested as well as information on specific components of the system".* Commonly empirical studies are identified with a survey form and data is usually gathered from questionnaires, therefore an organized set of data collection from a sizeable population should be carried out by the researchers (Hair et al., 2003). On that background the questionnaire in this particular study has been thoughtfully designed with consideration for length of question, sequence, wording and ease of use. Customarily surveys are managed either in person, via mail, or through online web-surveys systems (Gil-Garcia et al., 2009).

As survey respondents of current study is Danish businesses all participants are able to answer the survey online, directly. Danish government has for many years offered e-tax services for both private as well as businesses and allow them to file their taxes online, however if they choose, they are able to compensate an accountant in order to have him/her file their taxes. Due to this it was a requirement that all participants of the online survey had experience filing taxes online on behalf of their respective small business.

The questionnaire was set up with answers on the likert scale and distributed by mail to recipients from small businesses and entrepreneurs. As a beginning of the survey, participants are introduced to the study itself and provided an understanding of how the questionnaire is understood and answered. All participants received a link via mail with the survey and by that was able to fill out the survey in an environment of their own choice. The questionnaire was distributed to more than 200, however it had certain regulations such as participants had to have knowledge and experience with e-tax business (TastSelv), which made the total replies 52. From those 52 answers all were completed, no answers were left open. The items used in the constructs of this study were adopted from relevant prior research.

Demographics	**Component**	**Reference**
Age		
Gender		

System quality		
SQ1 Skat.dk tast-selv is user friendly	Ease of use	DeLone and McLean (2003); Wang and Liao (2008)
SQ2 The e-government system (Skat.dk tast-selv) is easy to navigate in	Navigation	DeLone and McLean (2003); Wang and Liao (2008)
SQ3 Using skat.dk tast-selv I have the information I need in time	System accuracy	DeLone and McLean (2003); Wang and Liao (2008)
Information quality		
IQ1 Skat.dk provides the exact information I need to complete filing information on tast-selv.	Content	DeLone and McLean (2003); Wang and Liao (2008)
IQ2 On Skat.dk I can easily find the precise information whenever I need.	Timeliness	DeLone and McLean (2003); Wang and Liao (2008)
IQ3 Skat.dk provides up-to-date information.	Up-to-dated	DeLone and McLean (2003); Wang and Liao (2008)
Service quality		
SVQ1 Skat.dk tast-selv service gives you individual attention.	Responsiveness	DeLone and McLean (2003); Wang and Liao (2008)
SVQ2 You feel safe in your transactions with the e-government system service.	Assurance	DeLone and McLean (2003); Wang and Liao (2008)
SVQ3 Skat.dk is available and running at all times	Availability	DeLone and McLean (2003); Wang and Liao (2008)
Use		
U1 I frequently use skat.dk.	Frequency of use	DeLone and McLean (2003); Wang and Liao (2008)
U2 I am dependent on using Skat.dk tast-selv	Dependence	DeLone and McLean

		(2003); Wang and Liao (2008)
User satisfaction		
US1 I am satisfied with skat.dk tast-selv	Overall level of satisfaction	DeLone and McLean (2003); Wang and Liao (2008)
US2 Skat.dk tast-selv meets all my expectations.	Overall level of satisfaction	DeLone and McLean (2003); Wang and Liao (2008)
US3 Skat.dk provides a service that is exactly what I need	Overall level of satisfaction	DeLone and McLean (2003); Wang and Liao (2008)
Perceived net benefit		
NB1 Skat.dk tast-selv makes it easier for me to providing them with the information I need to.	Ease of use	DeLone and McLean (2003); Wang and Liao (2008)
NB2 Skat.dk tast-selv saves me time.	Quality of output	DeLone and McLean (2003); Wang and Liao (2008)
NB3 Skat.dk tast-selv saves me money (that I might have used on an accountant or other help)	Quality of output	DeLone and McLean (2003); Wang and Liao (2008)

3.5.2 Questionnaire Evaluation Scale

The questionnaire was based on principles of the D&M success model and previous studies utilizing this model. As a central tool of the questionnaire a five-point Likert scale was selected, which help describe businesses impression and experience with e-tax business (Papadomichelaki and Mentzas, 2009). The hypothesized constructs which was evaluated using the scale ranging from *„strongly agree"* to *„strongly disagree"*, in which strongly agree=1, agree=2, neutral=3, disagree=4, strongly disagree=5. It has been widely debated in research whether a five-point Likert scale or a 7-point Likert scale is the optimal. According to Neumann (1983) a five-point Likert scale is suggested particularly when research is done regarding human behavior.

The scale used by Wang and Liao, (2008) was adapted in this research to ensure content vali dity of the scale.

3.5.3 Sampling

Stated by Hague (2010); *"Sampling may be defined as the selection of some part of an aggregate or totality on the basis of which a judgment or inference about the aggregate or totality is made. In other words, it is the process of obtaining information about an entire population by examining only a part of it".* Sampling is the method of picking a sufficient sample, or a representative part of a population with the aim of detecting parameters or characteristics of the whole population. By sampling a small portion, it is possible to gather a specified estimate of a population's characteristics. When creating a questionnaire research, one of the most meaningful parts is the choice of population and developing a technique to sample units from that population (Hair et al., 2007). When dealing with quantitative research, the dominant goal is to gather a representative sample. The goal for the researcher is to gather a small selection of cases from a large population, where a smaller portion is representative of a larger part of the population, which allows the researcher to construct generalizations about the large part (Neuman, 2003). When considering the desired sample, a number of choices should be considered such as sample size, level of precision and timing.

3.5.3.1 Defining Target Population

To allow current study to fulfil it purposes in evaluating the chosen framework and assessing the attitudes towards Danish governments e-tax service for businesses we focused on small businesses and entrepreneurs. Any respondent of the survey has used and filed on e-tax business (TastSelv) at www.skat.dk. Several reasons are behind the choice of country for this thesis. The researchers access to users of business e-tax Denmark made the study form possible. Another reason was that the authors wanted to investigate if the service was perceived in the same manner for businesses as the general ranking which is that Denmark is no.1 in e-government (Sharma, 2018). So even though Denmark is leading when it comes to e-government it became increasingly interesting to see if the public, and in specific businesses, shared this point of view. Investigating whether the attitudes was as expected and if there were

any pattern to detect in the outcomes of such a study became fascinating. This was the sustenance for deciding on a sample of small businesses in Denmark.

3.6 Data Collection

In line with our research study, quantitative research in the form of an online survey was conducted. As mentioned in earlier paragraphs, the optimal form of data collecting for such a study could vary.

There are several factors that determine the best data collection strategy for a research study. However, in IS research commonly research methods as experiments are not often advantageous (Oates, 2006, ch19, p286). This is countered by Willcocks et al., (2016, chp. 4 p.100) who argue that IS research can use various types of methods from different epistemological positions. According to Oates (Oates 2006, ch7, p93) surveys are commonly preferred and used in the field of Information Systems when conducting empirical research.

In order to meet the objectives of our study i.e. to investigate the perception about e-tax business (TastSelv) in Denmark using the updated D&M success model (DeLone & McLean, 2003). The survey used validated and tested instruments in order to obtain answers regarding the use of the system along with utilizing this data in order to validate the model with statistical analysis. Respondents came from small businesses and entrepreneurs.

3.6.1 Selecting the sampling methods

Present study´s sampling method was chosen based on three conditions; the objectives of the study, the budget and the nature of the study (Hair et al., 2003). It is important to be attentive when deciding on sampling technique ensuring it matches the needs of the study. Sampling methods for surveys can be considered in two main categories which are random or probability sampling and non-random or nonprobability sampling. Probability sampling is often used for statistical conclusions (Saunders, Lewis and Thornhill, 2003). According to Teddlie and Yu (2007) representative or probability sampling is commonly used for quantitative studies. At the other side non-probability or nonrandom sampling which can at times be described as biased, is commonly picked during the exploratory stages and whilst pretesting survey questionnaires. In qualitative studies, nonrandom methods of sampling are

most often used (Teddlie and Yu, 2007). Accordingly, with the nature of this study, being quantitative obtaining a proper sample frame was probability sampling. Probability sampling is classified as a sampling method in the following three categories according to Teddlie and Yu (2007). Random sampling: when each sampling unit in a clearly defined population has an even chance of existing in the sample. Stratified sampling: when the researcher splits the population into subgroups in a way that makes each group belong to a single stratum (such as low income, medium income) and then selects units from those strata. Cluster sampling: when the sampling unit is not individual but instead a group or cluster which happens naturally in the population as seen in neighborhoods, hospitals, schools or classrooms, then it is regarded cluster sampling.

3.6.2 Probability sampling

Probability sampling, also known as representative sampling, is often used in survey-based research strategies (Saunders, 2009). According to Bryman (1988), a representative sample is a sample which expresses the population precisely resembling a microcosm of the population.

A probability sampling can be conducted as in the following steps (Saunders, 2009):

1. Identify a suitable sampling frame based on your research question(s) or objectives.
2. Decide on a suitable sample size.
3. Select the most appropriate sampling technique and select the sample.
4. Check that the sample is representative of the population.

Based on the researchers network it was possible to reach the desired sample of small businesses via Facebook groups and direct mailing lists of companies who attended design markets. According to Saunders (2009), the larger a sample size is the lower the error probability is in generalizing on sample. Sample size is often regarded a matter of judgment and calculation. In present study the sample size was chosen based on accessibility, the size of the larger pool of “small businesses in Denmark” and the valid responses. The sample size

which was chosen was 50 and at the end of gathering responses the total number of valid answers came to 52.

In 2014 there was a total of 19.355 entrepreneurial businesses in Denmark, however as a vast amount of these businesses does not file their own taxes but uses an accountant these were not eligible for our study (Erhvervsstyrelsen, 2017, jan 20).

3.6.3 Sampling size

Sample size means the number of individuals or groups necessary to respond in order to obtain the required level of survey certainty. In statistical sampling it is important to determine the size of representative sample and it can affect the quality of the gathered data. There are no set standards when determining sample size, sample design, precision of correctness, no responses, determinants, and sampling techniques used (Weston, 2006). However, the more participants the higher the statistical power yielded (Hair et al., 2010). Hair et al. (2010) further states that a sample size desirable is greater than 100 to continue with factor analysis. However according to Bryman (2008) the judgment of sample size is not straightforward and depends on several factors such as time and cost.

3.7 Data analysis

The data was collected through survey, so the next step was to analyze the data using various statistical techniques. According to Hair et al., 2006 quantitative data analysis involves two stages: (i) descriptive statistics, and (ii) hypothesis testing using statistical testing methods (e.g. SEM). After descriptive statistics analysis follows the measurement model which was estimated using factor analysis to examine whether the constructs had reasonable validation and reliability. The data validity and reliability were examined through internal consistency, convergent validity and discriminant validity. Next stage was the structural model that best fitted the data and the hypotheses were tested between variables of the model (Hair et al., 2006).

3.7.1 Descriptive Statistics

Descriptive statistics describe the performance of the sample (Hair et al., 2010). According to Hair et al., (2010) the data normality should have been examined prior to data analysis. Descriptive statistics contains indicators such as frequency distribution, measure of central tendency (e.g. mean, median, and mode) and measure of dispersion (e.g. standard deviation, variance). The frequency distribution specifies how the scores of the responses are distributed for each of the variables (Janssens et al., 2008). The measure of central tendency helps a researcher to summarize the characteristics of a variable in one statistical indicator to obtain a better understanding (Hair et al., 2007). Furthermore, the range of the standard deviation and variance is used to measure the dispersion (the extent to which a distribution is stretched or squeezed). According to Hair et al. (2006) normality is the assumption about the degree to which the distributions of the sample data correspond to a normal distribution. Normality of the data can be read from the standard deviation. When the standard deviation (S.D. <1) then, it indicates normality. The normality of data also is confirmed by the value of skewness and kurtosis. The range of acceptable limits for skewness and Kurtosis is from - 2.58 to + 2.58. (Hair et al., 2010)

The program SPSS version 23 was used for the descriptive statistics to examine the normal distribution of the data and the results of descriptive statistics are presented in the next chapter.

3.7.2 Structural Equation Modeling (SEM)

According to (Hair et al., 2006), quantitative data analysis needs initially to perform descriptive statistics to obtain a descriptive overview of data, and later statistical tests to perform hypothesis testing. Structural equation modeling (SEM) is a popular tool among researchers, which is used for the assessment of theoretical models (Gefen et al., 2000). There are two approaches that may be used for SEM analysis: (1) Covariance-based structure analysis (CB-SEM), as implemented by the LISREL and AMOS software programs, (2) Component-based structure analysis using partial least square estimation (PLS-SEM), as implemented by PLS-Graph 3.0 or SmartPLS software programs. We used Partial Least Squares (PLS) to analyze the construct relationships. The primary reason for the selection of PLS-SEM is the small sample size of this study. Sample size can affect several aspects of SEM including parameter estimates, model fit, and statistical power (Shah and Goldstein, 2006). PLS-SEM

works with much smaller sample sizes, (Hair et al., 2014) and achieves higher levels of statistical power than CB-SEM in these cases (Henseler, 2010; Reinartz et al., 2009)

According to Hair et al. (2014) PLS-SEM consists of three stages (1) model specification, (2) Measurement model (outer model) evaluation, (3) Structure (inner model) model evaluation.

3.7.2.1 Model specification

In this stage the inner and outer models are created. The outer model, or the measurement model, is used for evaluating the relations between the construct and their associated indicators. The inner model, also known as the structural model, shows the relationships between the constructs.

In PLS-SEM firstly a path model is created, that connects variables and constructs based on theory and logic (Hair et al., 2014). An example of path model is shown in Figure 3.1. Constructs are considered either exogenous or endogenous. Exogenous constructs act as independent variables and do not have an arrow pointing at them (Y1, Y2, and Y3 1), endogenous constructs are the dependent variables and explained by other constructs (Y4 and Y5). The authors of this study used reflective indicators and the paths was based on previous used models which explored in literature review. Reflective items are interchangeable, highly correlated and can be deleted without changing the meaning of the construct, they are linked to a construct through loadings, which are the correlations between the indicator and the construct. (Hair et al. (2014)

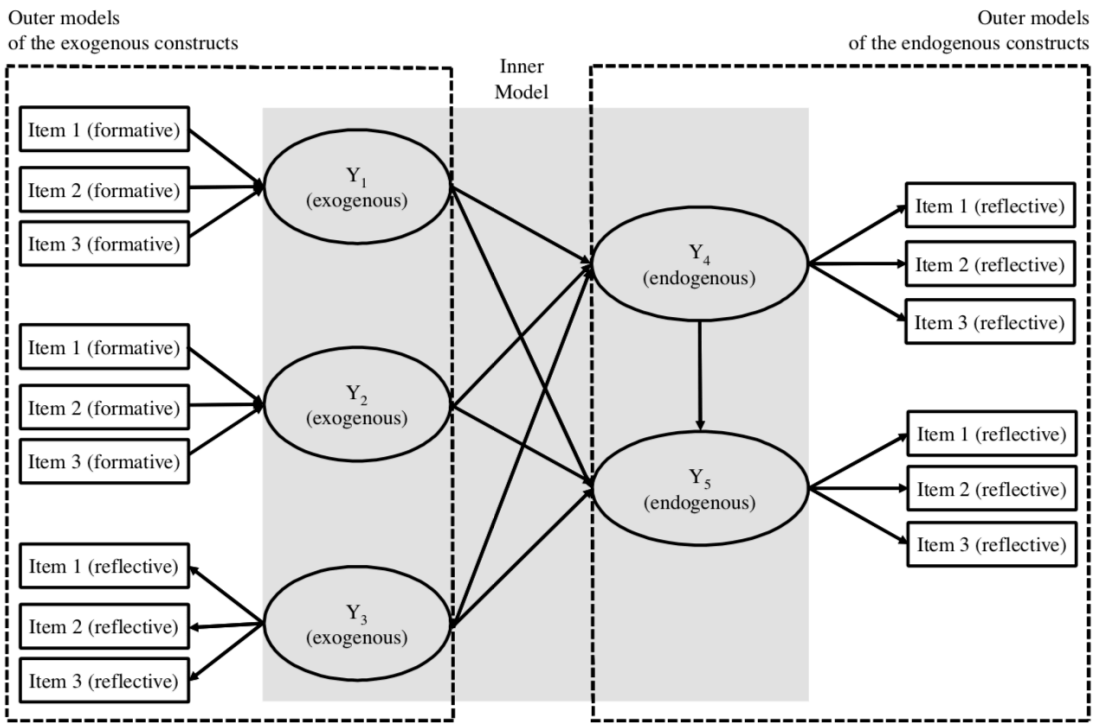


Figure 3.1 A path model

(Source Hair et al., 2014)

3.7.2.2 Measurement model assessment

3.7.2.2.1 Internal consistency reliability

Reflective measurement models are assessed on their internal consistency reliability and validity. The specific measures include the composite reliability (as a criterion for internal consistency reliability), convergent validity, and discriminant validity.

The traditional criterion for internal consistency is Cronbach's alpha, which estimates the reliability based on the intercorrelations of the observed indicator variables. Cronbach's alpha assumes that all indicators are equally reliable (i.e., all the indicators have equal outer loadings on the construct). (Hair et al.,2017) Reliability value of 0.70 or higher is considered as good reliability, whereas reliability between 0.60 and 0.70 may be acceptable provided that other indicators of the model's constructs validity are good (Hair et al., 2006). Due to Cronbach's alpha limitations, it is necessary to apply composite reliability, which takes into

account the different outer loadings of the indicator variables. (Hair et al.,2017) Composite reliability range is between 0 and 1, values between 0.70 and 0.90 are satisfactory. (Hair et al.,2017) Values above 0.95 are not desirable because they indicate that all the indicators are measuring the same phenomenon and maybe they are not a valid measure of the construct. (Hair et al.,2017) Cronbach's alpha and composite reliability both are used in the present study.

3.7.2.2.2 Content validity

Content validity is established when the indicators or items of a construct are truly measuring what they are supposed to measure (Hair et al, 2007). In order to ensure content validity, all the items that measure each construct were mainly adapted from previous research works (Wang and Liao, 2008).

3.7.2.2.3 Convergent Validity

According to Hair et al.,2017 the indicators of a reflective construct are treated as alternatives to measure the same construct, evaluating convergent validity of reflective constructs, needs to consider the outer loadings of the indicators and the average variance extracted (AVE). Indicator's outer loading should be above 0.708 since that number squared equals 0.50, 0.70 is considered close enough to 0.708 to be acceptable (Hair et al.,2017). Hair et al. (2006) for convergent validity suggest first, Critical ratio >1.96, second all standardized regression coefficients should be more than 0.50.

Fornell and Larcker, (1981) recommended three different criteria to determine convergent validity. (1) All indicator factor loadings should be above 0.707 (Gefen and Straub, 2005) but Hair et al. (2006) suggest factor loading >=0.60. (2) Second is composite reliabilities should be above 0.70, and (3) third is average variance extracted (AVE) by each construct should be above 0.50.

According to Hair et al. (2017) indicators with outer loadings between 0.40 and 0.70 should be removed only when the removal of and indicator increases the composite reliability (or the average variance extracted) above the suggested threshold value. Furthermore, the

researcher should be considerate of the effect of an indicator's removal in the content validity. Indicators with very low outer loadings but significant contribution to content validity should be retained. Indicators with very low outer loadings (below 0.40) should always be eliminated from the construct (Hair et al., 2011).

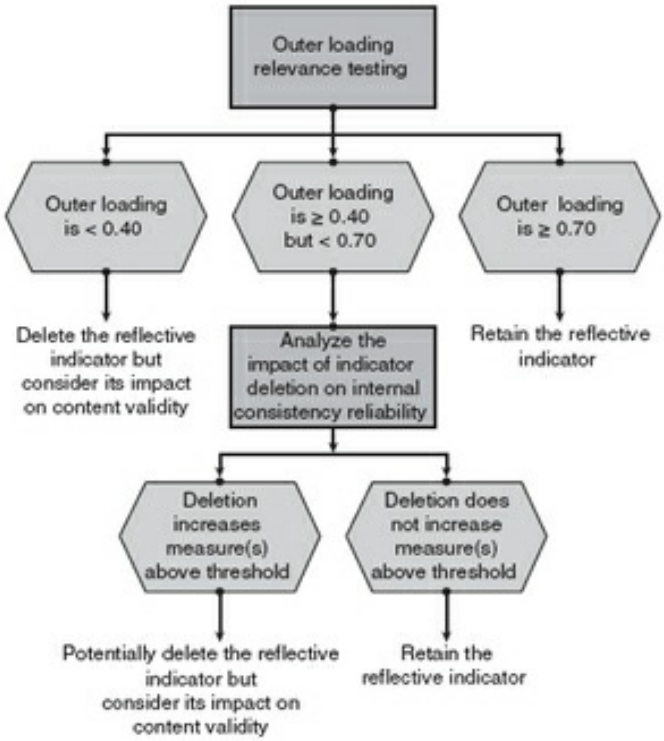


Figure 3.2 Outer loading relevance testing

(*Source: Hair et al.,2017)*

3.7.2.2.4 Discriminant Validity

According to Hair et al. (2017) discriminant validity is 'the extent to which a construct is unique and captures phenomena not represented by other constructs in the model'. The two most common criteria are: First the criterion of Fornell and Larcker (1981) who suggested that the square of the correlation between two constructs should be less than their corresponding average variance extracted (AVE). Comparing AVE values for any two constructs with the squared correlations estimate between these two constructs, the squared correlations should be lower than the AVE by a construct (Hair et al., 2010). The logic of the Fornell-Larcker method

is based on the idea that a construct shares more variance with its associated indicators than with any other construct (Hair et al., 2017). The cross-loadings are the second criterion to establish the discriminant validity of the indicators, according to this criterion an indicator's outer loading on the associated construct should be greater than any of its cross-loadings on other constructs (Hair et al., 2017).

3.7.2.2 Structural Model Assessment

SEM is a combination of factor analysis and path analysis which involves the two aspects of SEM; the measurement model (also called the outer model) and the structural model (Weston, 2006). In PLS-SEM, the calculation of the structural model of the interrelationships amongst the independent latent variables and the dependent variable is validated to confirm if the expected values from the model are probable to precisely predict the responses in future sample (Aibinu and Al-Lawati, 2010). One feature of PLS-SEM which is contrasting CB-SEM is that the model applies sample data to obtain criterions that best forecast the endogenous constructs, as opposed to calculating parameters that minimize the contrast between the observed sample covariance matrix and the covariance matrix calculated by the model (Hair et al., 2014).

When the validation of the measurement model is completed the next procedure is to test and validate the structural model to measure the state of the hypothesized relationships. Simply put, the structural model connects the latent variables together (Kline, 2011). It is possible to accomplish model validation by resampling technique to test the significance of the t-value of the path coefficients of the structural model by the use of nonparametric tests of significance also known as bootstrapping (Chin et al., 1998). In bootstrapping an estimate of variability of that statistic amongst sub-samples rather than from parametric expectations (Aibinu and Al-Lawati, 2010). When conducting hypothesis tests, bootstrapping is beneficial and a strong substitute to statistical inference based on parametric expectations when these expectations are questioning as in the matter of small sample size (Aibinu and Al-Lawati, 2010).

In the following stages the hypothesized dependence relationships are included in checking of standardized path coefficients, p-values, ad variance explained for each equation (Wang and Liao, 2008). The structural model is tested in order to assess the inter relationship of the constructs, it is now possible to evaluate it by the two principles:

a. The ability to explain variance in the dependent variables.

b. The significance of path coefficient

The calculation of variance clarifies the dependent variables determined by square multiple correlations (R square) of the structural equation of the variables. R square calculates how big variability of a dependent variable is interpreted by the independent variable (Hair et al., 2010).

3.8 Ethics

The way a researcher obtains the needed data and explains what it will be used for in their study should be an ethics concern, thought of prior to undertaking the study (Saunders, 2009). Bryman (2008) elaborates by asking; "*how should we treat the people on whom we conduct research?"*. Ethics can be perceived differently according to the researchers' attitude towards ethics. Social research authors can be distinguished by the attitude they have towards ethics, the subsequent stances are some which can be set apart (Bryman, 2008): Universalism, Situation ethics, the end justifies the mean, No choice, Ethical transgression is pervasive, Anything goes (more or less), Deontological versus consequentialist ethics. This study was conducted with the universalist's stance. Universalism: the attitude of a universalist considers ethical precepts as something never to be abandoned. However as stated by Erikson (1967: 372) "*it would be absurd to insist as a point of ethics that sociologists should always introduce themselves as investigators everywhere they go and should inform every person who figures in their thinking exactly what their research is all about."* (Bryman, 2008).

In present study ethical concerns was thought of at all stages of the research. The most critical concerns regarding ethics and this study was the way in which data was gathered; first round was by posting a link to the online survey in various appropriate Facebook groups, however this approach did not lead to many responses. Next step was to send to optimal respondents, this approach was thought long about as it might for some recipients be considered invading. The online survey was also conducted in a manner where

all participants was able to stay anonymous and questions regarding income was optional. Furthermore, the survey explained clearly, prior to the questions, the purpose and handling of information, likewise participants had mail address of the authors if they had any queries or feedback.

Chapter 4

Introduction

The goal of this chapter is to exhibit how the data via the measurement model is validated and the associated constructs supported the hypotheses. Visualized is also the demographics of the participants to help illustrate respondents in a more comprehensive way. An analysis of the gathered data is done in this chapter. After the quantitative research in the form of an online questionnaire was carried out the data was collected to perform a

4.1 Participants Profile

Starting is the initial phase of the data analysis which debates participant and demographic profile of Denmark (the country of our sample population). Online tax service in Denmark allows businesses and citizens to file their taxes online at their own convenience, the action is mandatory however for businesses it is possible to pay an accountant to access and file on behalf of the business. Since 2009 the number of new entrepreneurs every year in Denmark has been rising, a list of requirements for businesses such as filing correct taxes follows these companies (Egedesø et al., 2018). More than half of the new entrepreneurs are people with little or no education (Egedesø et al., 2018). In order to understand how the small enterprises, perceive the Danish E-tax service and investigate the interrelations of the D&M IS success model, the questionnaire was designed and dispersed to more than 100 small companies who file taxes. Of these it was found that 52 filed their own taxes or had experience attempting to file taxes on behalf of the business. Of these 46,15 % was male and 53,85% was female. The ratio on gender of Danish entrepreneurs was in 2017 three out of four new entrepreneurs was men, however the majority in building and construction field (Egedesø et al., 2018). Of the respondents the age was distributed as follows: 7,69% was between 18-25, 67,31% was between the age of 26-25, 17,31% was 36-45 and 7,69% was between 46-55 years of age

Table 4.1 Respondents Gender Ratio

Gender		
	Frequency	**Percent**
Female	28	53.8%
Male	24	46.2%

Total	52	100.0%

Below is shown the respondents demographics in charts:

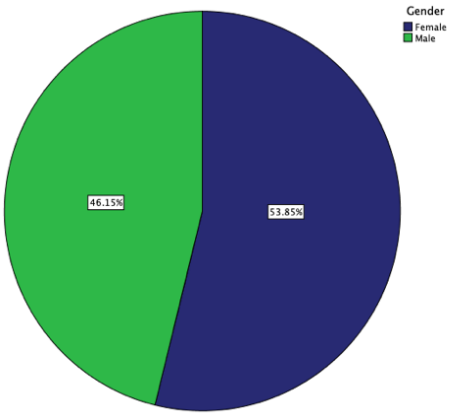


Figure 4.1 Respondents Gender Ratio

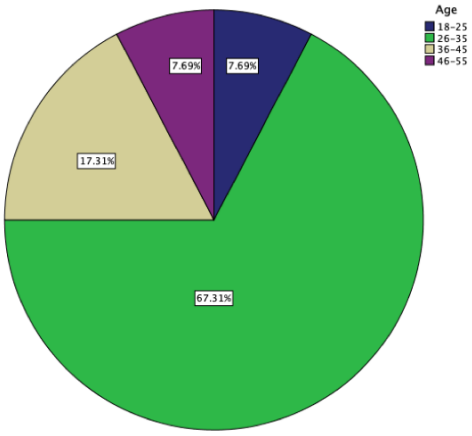


Figure 4.2 Respondents Age Ratio

Descriptive statistics measures were calculated using IBM SPSS 23.0

4.2 Assessing Normality

According to Hair et al., 2017 it is important to verify that the data are not too far from normal prior performing the advanced analysis such as PLS-SEM. Extremely non-normal data prove problematic in the assessment of the parameters' significances as non-normal data increase standard errors obtained from bootstrapping and thus decrease the likelihood that some relationships will be assessed as significant (Hair et al., 2011)

To determine whether the data is normally distributed or not, the descriptive statistics on data have been performed. Skewness and kurtosis tests are widely employed to test the normality (Hair et al., 2010). Skewness is a measure of symmetry and kurtosis is a measure of whether the data is peaked or flat relative to a normal distribution.

Normality of the data items was assessed by their skewness and kurtosis values also assessed by visually examining the pie chart and the histograms of the variables. According to Hair et al., (2010) the most commonly used value of skewness and kurtosis test ranges from – 2.58 to + 2.58. The normal distribution of data was determined by the calculation of mean, standard deviations, skewness, and kurtosis.

The descriptive analysis includes the tables, pie chart and histograms of the variables along with normal distribution curve which depict the results of mean, standard deviations, skewness and kurtosis. Normality assessment tests indicate that the data distribution is found normal and within the acceptable range.

4.2.1 System Quality

The table illustrates the obtained results of the descriptive statistics including standard deviation, mean, skewness, and kurtosis for each item assigned to evaluate the system quality construct. The values of skewness and kurtosis of the items within the system quality are within the range (- 2.58 to + 2.58). Furthermore, we observe that the items record a level of neutrality from respondents at mean which is very close to value 3. Only one item has a mean of 3.5 which shows a level of disagreement. Standard deviation which is measure of value around the mean is lower which shows that no outliner cases exist. (Kline, 2011)

Table 4.2 Descriptive statistics for system quality items

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
SQ1	52	3.15	.958	-.041	-.184
SQ2	52	3.35	.968	-.220	-.559
SQ3	52	3.52	.918	-.296	-.731

We created a summated scale composed of the items within the variable to establish normality of the variable system quality as a whole. The frequency and the pie chart of the resultant distribution appear below

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
SQ	52	3.3397	.85429	-.168	-.395

Table 4.3 Summated system quality

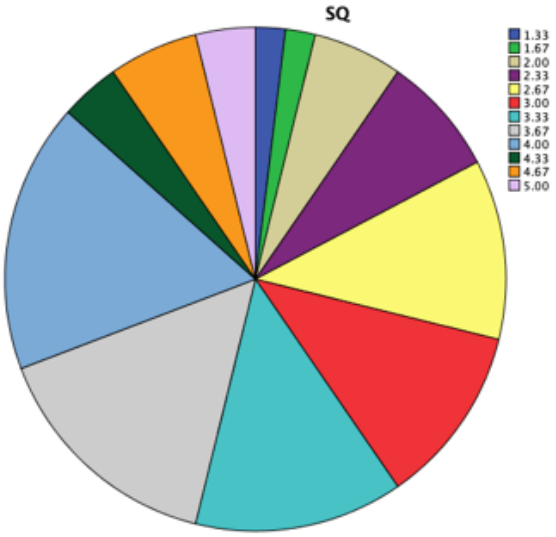


Figure 4.3 Frequency Distribution for System Quality

The mean score of the summated system quality is 3.3397 along with a standard deviation 0.85429. This indicates neutrality response towards the items used in evaluating system quality. Pie chart illustrates that the majority of the values are gathered around 3. The score of skewness and kurtosis are within the acceptable limit ranges. Therefore, the data for the system quality construct is normally distributed.

4.2.2 Information Quality

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
IQ1	52	3.50	.960	-.069	-.893
IQ2	52	3.54	1.056	-.105	-1.172
IQ3	52	3.31	.875	.073	-.692

Table 4.4 Descriptive statistics for information quality items

The range limits of skewness and kurtosis for each item within the information quality construct appear in the above table 4.4. The table shows that respondents are neutral and tending to disagree towards the questions about information quality. Means of all the items are abound 3.5. No item recoded mean (< 3), indicating respondents' disagreement towards information quality. Skewness and kurtosis values found within the limit ranges for a normal distribution.

We created a summated scale composed of the items within the variable to establish normality of the variable information quality as a whole. The summated table of the items depicts the normality of information quality as a whole

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
IQ	52	3.4487	.80001	.025	-.485

Table 4.5 Summated information quality

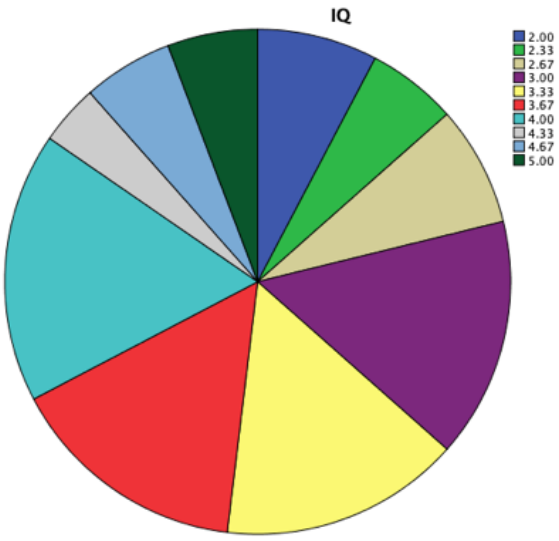


Figure 4.4 Frequency Distribution for Information Quality

The pie chart for information quality construct demonstrates that the majority of responses are "neutral", and a big number "disagree" to the item questions that measure

information quality. The value of skewness (0.025) is within the acceptable range, as well as kurtosis (-0.485) even if it is negative does not exceed the limits.

4.2.3 Service Quality

Mean values for each item represent the overall respondents‟ agreement with the questions formulated to evaluate service quality construct. Two of the items' mean was found close to the level of 2 and one of them close to 3. Obtained values of skewness and kurtosis were found within adequate limits, where the skewness of all items is under the range; also, the kurtosis value is well within range. These values indicate normal distribution of the data.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
SVQ1	52	2.52	1.075	.391	-.871
SVQ2	52	2.10	.634	.402	.892
SVQ3	52	2.85	.998	.444	-.557

Table 4.6 Descriptive statistics for service quality items

The pie chart and descriptive statistics for service quality construct confirm the normal allocation of data on the summated scale. Both of the items are close to 2, representing an overall agreement. The pie chart for service quality construct demonstrates that majority of citizens responded as "agree", and fairly a good number of citizens confirm "strongly agree". Neither skewness nor kurtosis values were found above the ranges for a normal distribution.

Table 4.7 Summated service quality

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
SVQ	52	2.4872	.61733	-.255	-.330

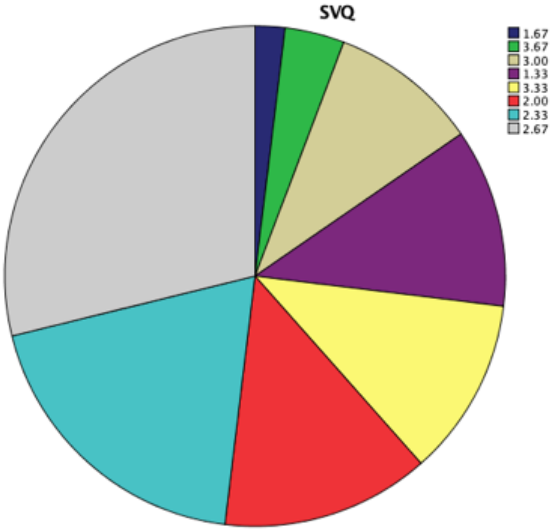


Figure 4.5 Frequency Distribution for Service Quality

4.2.4 Use

Table illustrates the results of descriptive statistics including standard deviation, mean, skewness, and kurtosis for each associated item assigned to measure the construct use of e-tax service. One of the mean values found close to 2, indicating respondents' agreement to this question regarding the use of e-tax service. The other mean is close to 3 indicating neutrality towards this question. The values of skewness and kurtosis were found within the adequate limits.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
U1	52	2.83	.879	.532	-1.040
U2	52	2.13	.886	1.134	1.670

Table 4.8 Descriptive statistics for use items

The pie chart and descriptive statistics for service quality construct confirm the normal distribution of data on the summated scale. The pie chart for the use construct demonstrates that majority of citizens responded as “agree”. The summated mean is 2.48, and from the frequency distribution pie, we see that most of the frequencies occurred close to 2. The skewness value 0.747 and kurtosis value -0.001 for the summated scale are within the ranges. This shows a normal distribution of use construct.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
U	52	2.4808	.74729	.764	-.001

Table 4.9 Summated use

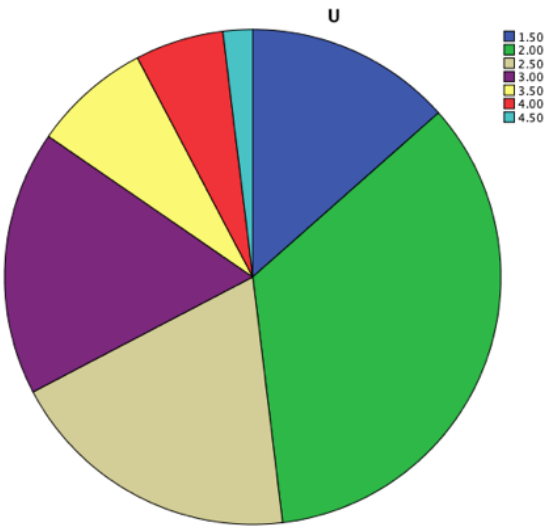


Figure 4.6 Frequency Distribution for Use

4.2.5 Users' Satisfaction

Table illustrates the obtained results of descriptive statistics including standard deviation, mean, skewness, and kurtosis for each indicator assigned to measure the users' satisfaction construct. Mean values about 3 for all items, showing the overall users' neutral attitude to the questions regarding users' construct. The values of skewness and kurtosis were found within acceptable limits. Subsequently, to determine the normality of the users' satisfaction construct as a whole, we constructed a summated scale of the items within the construct.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
US1	52	3.17	.923	.420	-.572
US2	52	3.31	.940	.218	-.785
US3	52	3.40	.891	-.216	-.805

Table 4.10 Descriptive statistics for users' satisfaction items

Descriptive Statistics					
	N	Mean	Std. Deviation	Skewness	Kurtosis
US	52	3.2949	.84186	.226	-.584

Table 4.11 Summated users' satisfaction

The pie chart and descriptive statistics for users' satisfaction construct confirm the normal distribution of data on the summated scale. Here, we see that many distributions are in the range from 3 to 4. Mean is 3.29 and from the frequency distribution, we see that the majority of frequencies occurred close to 3. Therefore, this indicates that large numbers of respondents have expressed opinion "neutral" towards measuring the users" satisfaction. The skewness value .226 and kurtosis value -0.584 for the proposed scale were found well within the limits. This shows a normal distribution of users' satisfaction.

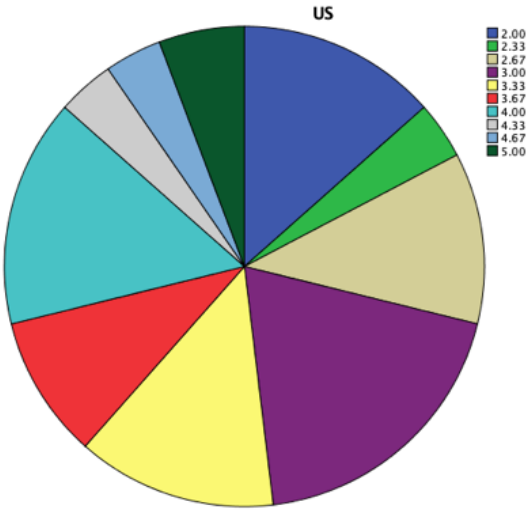


Figure 4.7 Frequency Distribution for users' Satisfaction

4.2.6 Perceived Net Benefits

Table illustrates the obtained results of descriptive statistics including standard deviation, mean, skewness, and kurtosis for each associated item assigned to evaluate the perceived net benefits of e-government service construct. Obtained mean value of all the items with in perceived is close to 3. Mean values for each item represent the overall users' neutrality with the questions formulated to evaluate perceived net benefits of e-government service construct. The values of skewness and kurtosis of various items within perceived net benefits were found within the limits. To determine the normality of the perceived benefits of e-government service construct as a whole, we constructed a summated scale composed of the items within the construct.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
NB1	52	3.23	1.113	.053	-1.200
NB2	52	3.02	1.019	.307	-.903
NB3	52	3.35	1.046	-.001	-.801

Table 4.12 Descriptive statistics for users' perceived net benefits items

The pie chart and descriptive statistics for perceived net benefits construct confirm the normal allocation of data on the summated scale. Most of the allocations are above 3. The skewness value .085 and kurtosis value-.950 for the summated scale are well within the ranges. This shows a normal distribution of perceived net benefits.

Descriptive Statistics					
	N	**Mean**	**Std. Deviation**	**Skewness**	**Kurtosis**
NB	52	3.1987	.87138	.085	-.950

Table 4.13 Summated users' perceived net benefits

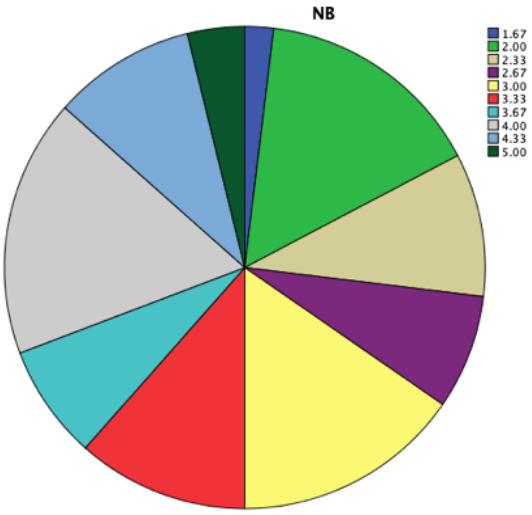
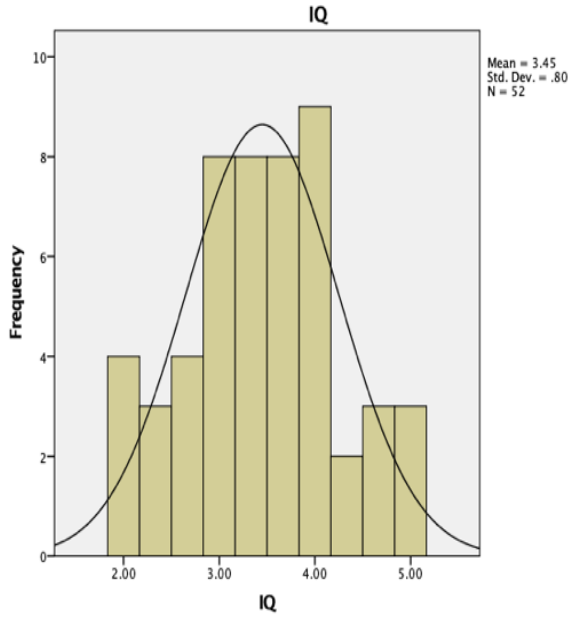


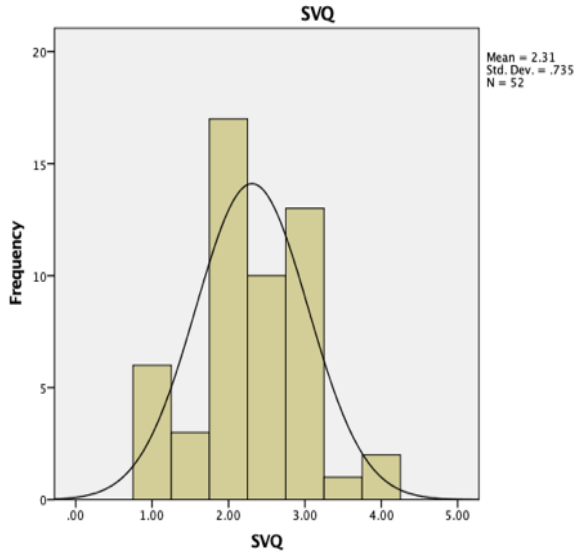
Figure 4.8 Frequency Distribution for users' perceived net benefits

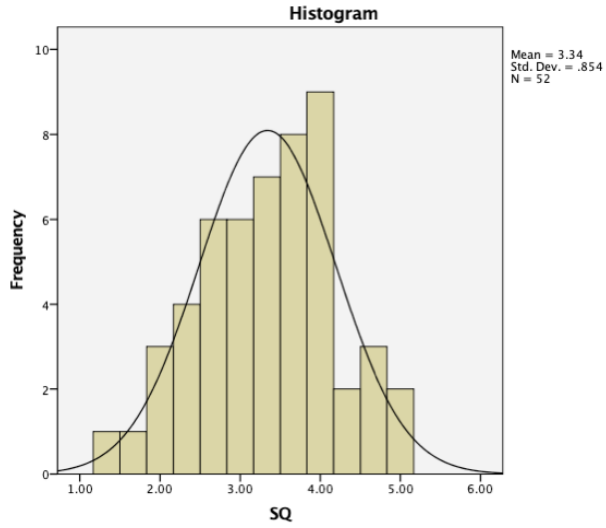
4.7 Histograms for data Normality

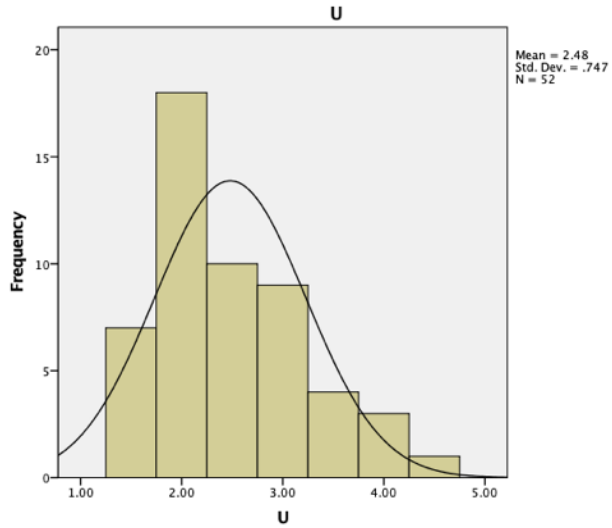
The histograms of constructs and their skewness and kurtosis values depict that the data is normally distributed. Bell shaped curve along with centrally peaked histogram shows a normal distribution of the data. Values of mean, skewness and kurtosis for each item were

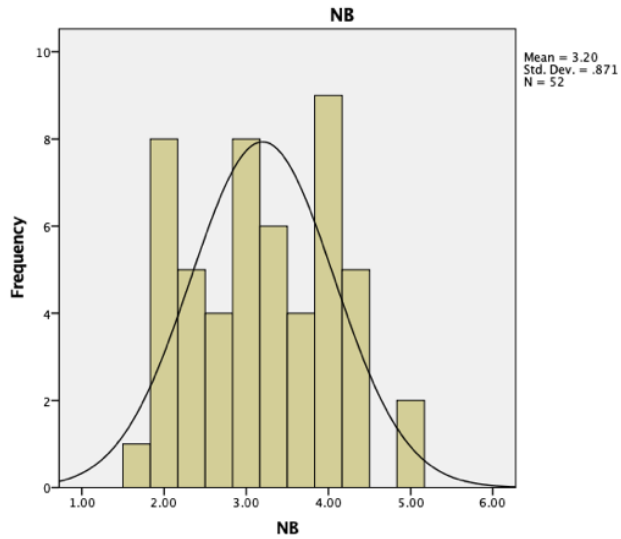
found well within the acceptable ranges confirmed the normality of collected data. Hence the desired statistical measures can be applied to test the measurement and structural model

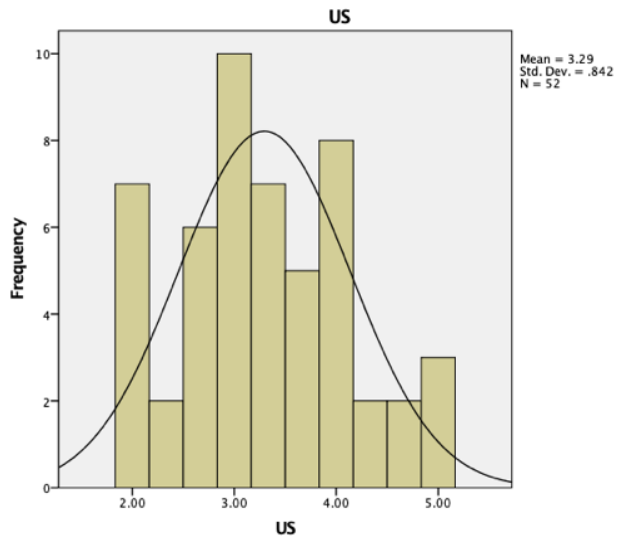





Histogram
Mean = 3.34
Std. Dev. = .854
N = 52
Frequency
SQ


U
Mean = 2.48
Std. Dev. = .747
N = 52
Frequency
U


NB
Mean = 3.20
Std. Dev. = .871
N = 52
Frequency
NB



The normality in the data has been confirmed, thus the PLS regression analysis can be applied. This analysis would prove whether the Wang and Liao (2008) model based in D&M success model is valid and reliable in the context of this study.

4.8 Model evaluation

4.8.1 Path Model Creation

The path model was created using the SmartPLS Software and it is based on the D&M model with direct connection from Information quality, System quality and Service quality to perceived net benefits. The model shows the constructs, with their corresponding indicators(questions), as well as the relationships among them.

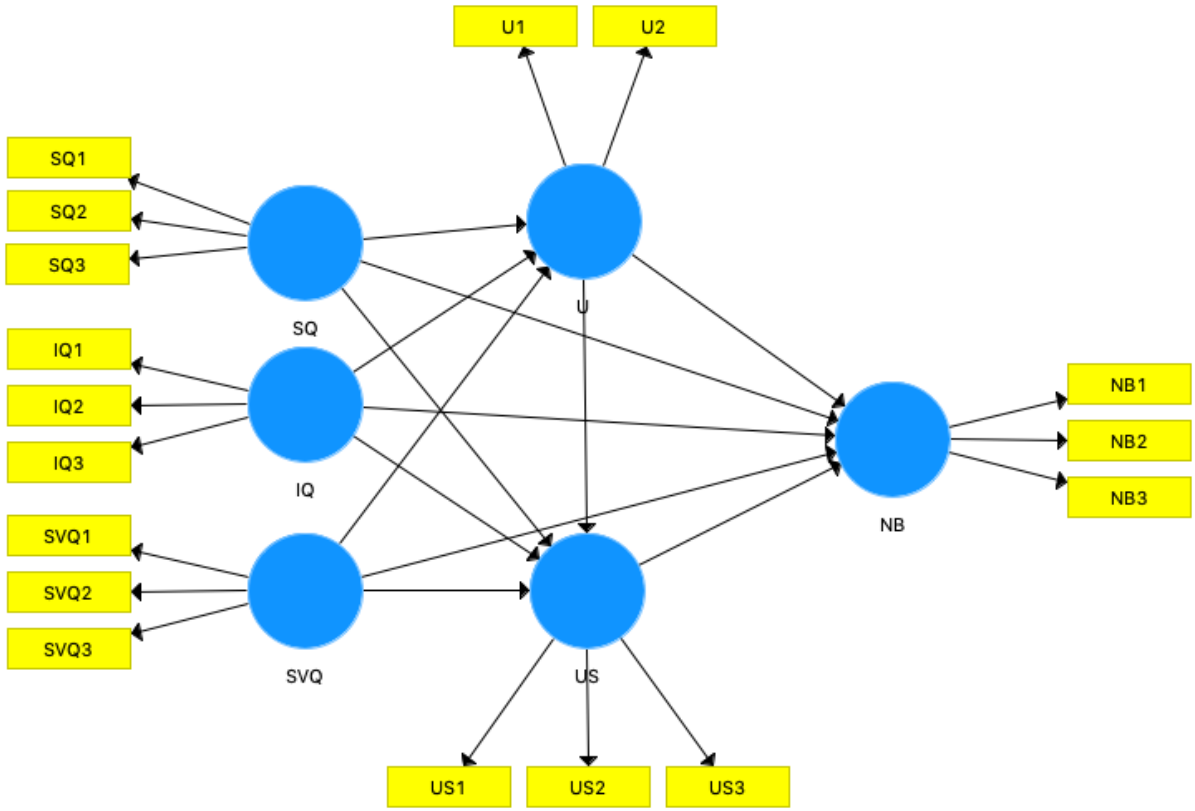


Figure 4.9 Path model designed in SmartPLS

4.8.2 Convergent Validity

The convergent validity of reflective constructs is evaluated by considering the outer loadings of the indicators (indicator reliability) and the average variance extracted (AVE). (Hair et al.,2017)

4.8.2.1 Indicator Reliability

According to Hair et al.,2017 indicators with outer loadings between 0.40 and 0.70 should be eliminated when by removing the indicator the value of composite reliability (or the average variance extracted) is increased above the threshold value. Furthermore, indicators

with low outer loading, that contribute significantly in the content validity should be retained in the construct. However, indicators with outer loadings below 0.40 should be removed from the construct (Hair et al., 2011). The loadings of IQ3, SVQ3 and U2 are below 0.70. Firstly, we decided to eliminate the indicator SVQ3, because the values of AVE and composite reliability are low (table 4.16). We didn't remove the U2 considering content validity and IQ3 is close to 0.70.

Table 4.14 Indicators' outer loadings

	IQ	**NB**	**SQ**	**SVQ**	**U**	**US**
IQ1	0.874					
IQ2	0.905					
IQ3	0.679					
NB1		0.926				
NB2		0.757				
NB3		0.769				
SQ1			0.93			
SQ2			0.918			
SQ3			0.854			
SVQ1				0.59		
SVQ2				0.83		
SVQ3				0.58		
U1					0.998	

U2					0.491	
US1						0.909
US2						0.939
US3						0.902

Table 4.15 Values of AVE and composite reliability before indicator's elimination

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
IQ	0.768	0.864	0.683
NB	0.757	0.862	0.676
SQ	0.884	0.928	0.812
SVQ	0.431	0.721	0.467
U	0.604	0.756	0.63
US	0.905	0.94	0.84

The indicator IQ3 is still below the limit of 0.70 after removing SQ3(table 4.16). However, the elimination of this indicator does not affect positively on composite reliability and AVE, as it was calculated with SmartPLS, thus we decided to retain this item. We can observe to the table 4.16 that all outer loadings of the indicators are above 0.70 except for IQ3, which is still within the acceptable range limits.

Table 4.16 Indicators' outer loading after eliminating indicator SVQ3

	IQ	**NB**	**SQ**	**SVQ**	**U**	**US**
IQ1	0.874					

IQ2	0.906					
IQ3	0.678					
NB1		0.927				
NB2		0.759				
NB3		0.767				
SQ1			0.93			
SQ2			0.918			
SQ3			0.853			
SVQ1				0.71		
SVQ2				0.946		
U1					0.917	
U2					0.757	
US1						0.91
US2						0.939
US3						0.901

We can observe to the table 4.17 that all the values are above the acceptable range limits after the elimination of SQV3 indicator.

Table 4.17 Values of AVE and composite reliability after indicator's elimination

	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
IQ	0.768	0.864	0.683
NB	0.757	0.861	0.676
SQ	0.884	0.928	0.812
SVQ	0.614	0.83	0.711
U	0.604	0.826	0.706
US	0.905	0.94	0.84

Below, figure 4.10, we can see the tested model after running the PLS algorithm with the outer loadings of each variable, path coefficients and the R square inside the circle of dependent variables. According to Hair et al. (2017) R square value depends on the model and research discipline. R square values of the endogenous constructs (US, NB, U) in our model can be described as substantial, moderate, and weak (Hair et al., 20017) with values 0.733, 0.578 and 0.071 respectively. Path coefficients show the strength of the relationship between the dependent and independent variables and R square values indicate the amount of variance explained by the independent variable (Hair et al., 20017).

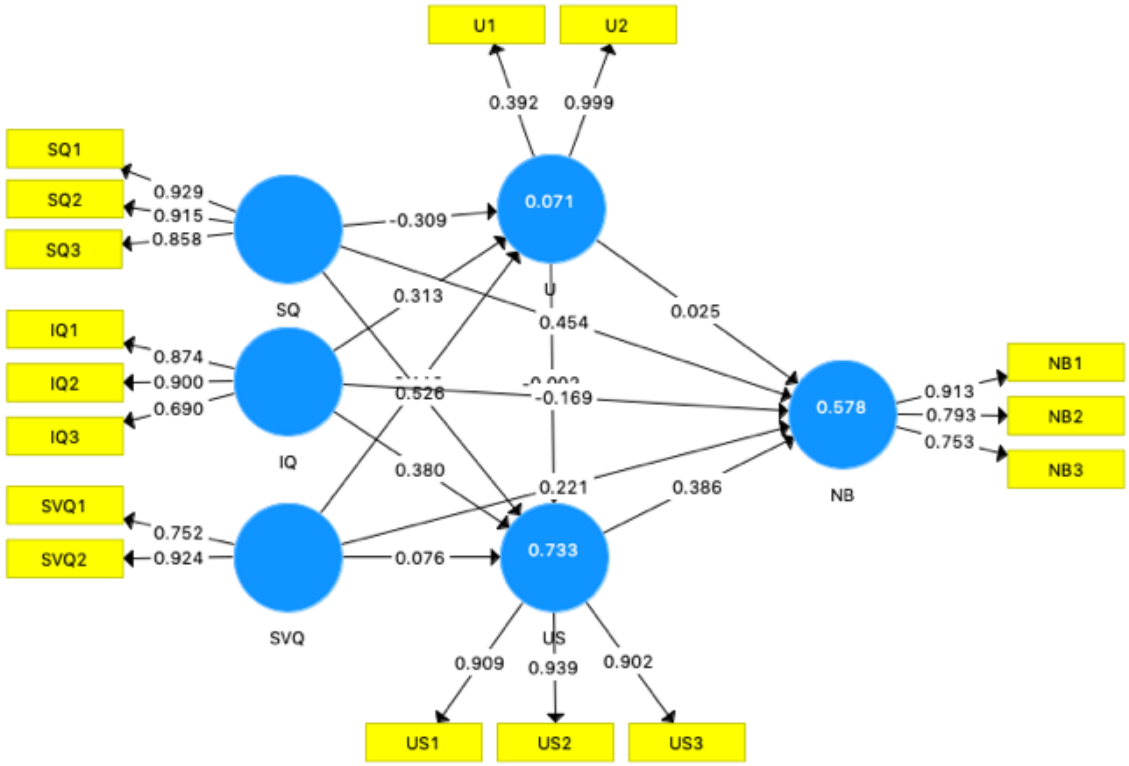


Figure 4.10 Model after running PLS algorithm with outer loadings, path coefficients and R2

4.8.2.2 Average variance extracted

According to Hair et al. (2017) a common measure to establish convergent validity is the average variance extracted (AVE), and AVE value above 0.50 indicates that, on average, the construct explains more than half of the variance of its indicators.

This criterion is calculated using the following formula:
Average variance extracted = (Sum of the squared loadings) / (number of indicators)
We can see to the table 4.17 that AVE value for each indicator is well above the threshold of 0.50.

	Average Variance Extracted (AVE)
Information quality	0.682
System quality	0.812

Service quality	0.699
Use	0.707
User satisfaction	0.84
Perceived net benefits	0.674

Table 4.18 Variables' AVE

4.8.3 Internal Consistency Reliability

Then the constructs reliability was tested. In order to validate the reliability of the research instrument the constructs was tested. To establish the internal consistency of the assessment instrument, reliability analysis was conducted. It was demonstrated by calculating Cronbach's Alpha, also known as coefficient alpha, to evaluate the internal consistency of the measurement scale (Hair et al., 2017). By that the reliability analysis of the six constructs was done by calculating Cronbach's (α). According to Hair et al. (2010) a satisfying level of reliability demonstrate that participants are responding to the questions in a consistent manner. Four different criteria of reliability have been advised; excellent reliability (0.90 and above), high reliability (0.70 – 0.90), high moderate reliability (0.50-0.70) and low reliability (0.50 and below) (Hair et al.; 2010). Furthermore, Hair et al. (2010) suggests values of Cronbach's alpha or strength of measurement of constructs: excellent (>=0.9), very good (0.8 to <0.9), good (0.7 to < 0.8), moderate (0.6 to < 0.7), and poor (<0.6). According to Hair et al., 2017 *"the true reliability usually lies between Cronbach's alpha (representing the lower bound) and the composite reliability (representing the upper bound)".*

Below is shown the internal reliability for each latent construct:

Construct	**Cronbach's alpha**	**Composite reliability**
Information quality	0.768	0.863
System quality	0.884	0.928

Service quality	0.614	0.820
Use	0.604	0.827
User satisfaction	0.905	0.940
Net benefits	0.757	0.860

Table 4.19 Values for Cronbach's alpha and Composite reliability

The table above shows all the latent constructs and their respective score of Cronbach's alpha and Composite reliability. The table shows that all constructs Cronbach's alpha is found (>0.6) which is regarded as high moderate reliable. A Cronbach's value above threshold indicates that all constructs are internally consistent and measure what the construct is supposed to measure. The constructs User satisfaction (0.905) and System quality (0.884) shows excellent internal consistency.

Composite reliability was calculated for all constructs in this study. This measure of reliability indicates how well each of the constructs in the measurement model is described by their indicators. Suggested minimum value is 0.70 (Chin, 1998). As all constructs are above minimum value no construct needs to be deleted, hence the study we found adequately reliable to continue.

The composite reliability was calculated with this formula: Composite reliability = (Square of sum of outer loadings) / [(Square of sum of outer loadings) + (Sum of the variance of the measurement error)]

4.8.4 Discriminant Validity

Established discriminant validity implies that a "*construct is unique and captures phenomena not represented by other constructs in the mode*l" (Hair et al., 2017). Fornell and Larcker (1981) suggested that "*the square of the correlation between two constructs should be less than their corresponding average variance extracted (AVE)*". Analysis indicated that the squared correlation between constructs were lower than the average variance extracted of the individual construct, which confirms the discriminant validity.

Table 4.20 Fornell Larcker criterion

	IQ	NB	SQ	SVQ	U	US
IQ	**0.826**					
NB	0.5	**0.821**				
SQ	0.699	0.692	**0.901**			
SVQ	0.204	0.367	0.196	**0.836**		
U	0.067	0.029	0.02	0.114	**0.841**	
US	0.766	0.693	0.806	0.267	0.138	**0.917**

Cross loadings are another approach for establishing discriminant validity. Indicator's outer loading on the associated construct should be greater than any of its cross-loadings (its correlation) on other constructs (Hair et al., 2017).

Referring to the table we can observe that for each indicator's loadings are higher on its own constructs than on the others. The measurement of discriminant validity indicates that each indicator is well correlated with its associated construct

Table 4.21 Cross-loadings criterion

	Information quality	Perceived net benefits	System quality	Service quality	Use	User satisfaction
IQ1	**0.874**	0.449	0.595	0.191	0.068	0.638
IQ2	**0.906**	0.455	0.736	0.204	0.111	0.773

IQ3	**0.678**	0.316	0.305	0.084	-0.065	0.415
NB1	0.553	**0.927**	0.646	0.304	0.074	0.714
NB2	0.331	**0.759**	0.503	0.46	-0.014	0.428
NB3	0.299	**0.767**	0.542	0.181	-0.016	0.513
SQ1	0.615	0.654	**0.93**	0.148	-0.083	0.786
SQ2	0.53	0.556	**0.918**	0.205	0.054	0.691
SQ3	0.748	0.657	**0.853**	0.181	0.097	0.694
SVQ1	0.173	0.232	0.179	**0.71**	0.101	0.11
SVQ2	0.18	0.36	0.167	**0.946**	0.099	0.289
U1	0.019	0.039	0.068	0.087	**0.917**	0.176
U2	0.119	0.001	-0.065	0.116	**0.757**	0.024
US1	0.694	0.598	0.788	0.348	0.046	**0.91**
US2	0.754	0.638	0.717	0.197	0.156	**0.939**
US3	0.656	0.671	0.71	0.186	0.18	**0.901**

4.9 Structural model Hypothesis testing

The measurement model has been validated and established, so the next step was to test the hypothesized relationships among the constructs using structural model. According to Hair et al. (2010) "A structural model represents the theory with a set of structural equations and is usually depicted with a visual diagram". Latent constructs are measured by their corresponding items or indicators, and these variables are unobserved. There are two types of latent variables the endogenous and exogenous (Kline, 2011; Hair et al., 2010). Endogenous variables are the U, US and NB and exogenous are the SQ, IQ, and SVQ variables in this study.

According to Hair et al. (2017) the rules of Thumb for Structural Model Evaluation are (1) examination for collinearity; each predictor construct's tolerance (VIF) value should be higher than 0.20 (lower than 5). Otherwise, we should consider eliminating constructs. Next step, (2) Evaluation of f square, f2 values of 0.02, 0.15, and 0.35 indicate an exogenous construct's small, medium, or large effect, in the endogenous constructs. (3) Use of the bootstrapping method to examine the significance of path coefficients. The number of bootstrap resampling should be 5.000 and Critical t values for a two-tailed test are 1.65 (significance level = 10%), 1.96 (significance level = 5%), and 2.57 (significance level = 1%). Furthermore, the p value should be lower than 0.10 (significance level = 10%), 0.05 (significance level = 5%), or 0.01(significance level = 1%).

Referring to the table of inner VIF values we can see that all values are between the range limits. The values are below five, therefore, there is no collinearity issue among the predictor constructs and we can continue examining the model.

Table 4.22 VIF values

	IQ	**NB**	**SQ**	**SVQ**	**U**	**US**
IQ		2.61			1.963	2.069
SQ		3.097			1.958	2.061
SVQ		1.086			1.051	1.064
U		1.077				1.077
US		3.747				

SmartPLS version 3.2.8 was used to calculate the path coefficients between independent constructs (System Quality, Information Quality and Service Quality) and dependent constructs (Use, User Satisfaction and Perceived Net Benefits).

The bootstrap resampling method, by generating 5000 samples, was used to determine the significance of paths by calculating the t-values and p values within the structural model.

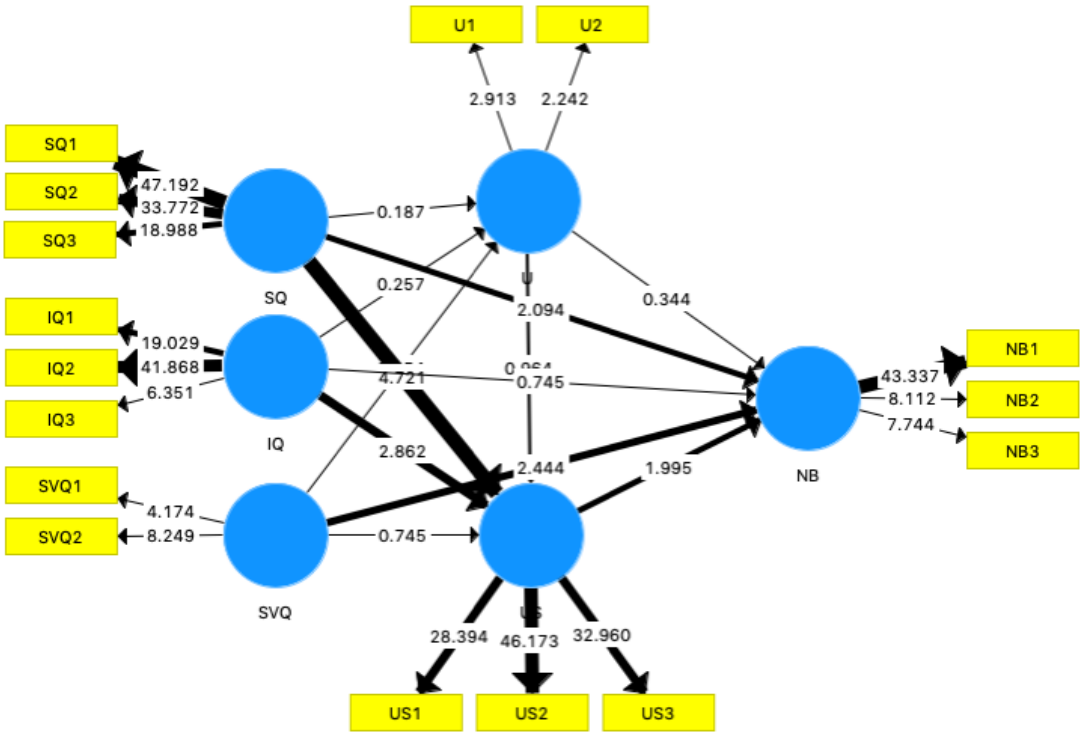


Figure 4.11: structure model with t values after bootstrapping

Table 4.23 Results of Hypotheses Testing from Structural Model

Hypothesis	Relationship	Path coefficient	t values	p values	Decision	f square
H1	SQ -> U	-0.309	0.187	0.852	Rejected	small
H2	SQ -> US	0.526	4.721	***	**Supported**	large
H3	SQ -> NB	0.454	2.094	*	**Supported**	medium

H4	IQ -> U	0.313	0.257	0.797	Rejected	small
H5	IQ -> US	0.380	2.862	**	**Supported**	medium
H6	IQ -> NB	-0.169	0.745	0.456	Rejected	small
H7	SVQ-> U	0.110	0.654	0.513	Rejected	-
H8	SVQ -> US	0.067	0.745	0.456	Rejected	small
H9	SVQ -> NB	0.221	2.444	*	**Supported**	small
H10	U -> NB	0.025	0.344	0.731	Rejected	-
H11	U -> US	-0.002	0.964	0.335	Rejected	-
H12	US -> NB	0.386	1.995	*	**Supported**	small

*** indicates that the item is significant at the $p < 0.001$

** indicates that the item is significant at the $p < 0.01$

* indicates that the item is significant at the $p < 0.05$

In order to test the hypotheses of the model, the path analysis was performed. Figure above shows the t-values in the hypothesized framework. The bold lines show the 5 hypothesized paths (SQ -> US, SQ -> NB, IQ -> US, SVQ -> NB, US -> NB) out of 12 that found statistically significant.

The path between information quality and use (IQ -> U), and information quality and net benefits (IQ -> NB) were found statistically insignificant. Thus, these hypothesized relationships are found to be invalid in this perspective. Furthermore, the relationship among service quality and use (SQ->U) with t-value 0.187 (<1.96). Therefore, this hypothesis was rejected. The hypothesized relationships between service quality and use (SVQ-> U) and service quality and users' satisfaction (SVQ -> US) with t-values 0.654 and 0.745 respectively, both were found statistically insignificant, as well as the path between use and perceived net benefits (U -> NB) with t- value 0.344 and the relationship among use and users' satisfaction

(U -> US) which has a t-value 0.964. These results rejected the hypotheses H1, H4, H6, H7, H8, H10 and H11.

Table above shows that system quality and information quality have a significant effect on users' satisfaction. Hypothesized relationships between system quality and users' satisfaction (SQ-> US), information quality and users' satisfaction (IQ -> US) were found to be significant as their critical ratios (4.721 and 2.862) were found greater than 1.65. Furthermore, system quality has greater effect on user satisfaction than information quality according to f square value. The hypothesized relationships (SQ-> US, IQ -> US) were significant and confirmed the proposed hypotheses H2 and H5.

System quality and service quality constructs are positively correlated and show significant effect on perceived net benefits (SQ -> NB, SVQ -> NB), system quality has a medium effect on perceived net benefits and service quality a small effect. This means that for assessing perceived net benefits of e-government; the system quality and service quality are major contributory constructs. Hence, this confirmed the proposed hypotheses H3 and H9.

Similarly, users' satisfaction shows strong impact on perceived net benefits (US -> NB) of e-government service. This indicates that for assessing perceived net benefits of e-government services, users' satisfaction is a strong antecedent. The hypothesis H12 is supported.

From the structural equation model (PLS-SEM) and hypotheses analysis, it is found that most of the hypothesized relationships are not supported by the empirical data.

	Direct effect			**Indirect effects**		**Total effects**		
	U	**US**	**NB**	**US**	**NB**	**U**	**US**	**NB**
SQ	-0.309	0.526	0.454	0.001	0.195	-0.309	0.526	0.649
IQ	0.313	0.38	-0.169	-0.001	0.154	0.313	0.379	-0.014

SVQ	0.11	0.076	0.221	0	0.032	0.11	0.076	0.253
U		-0.002	0.025		-0.001		-0.002	0.024
US			0.386					0.386

Table 4.24 Direct, Indirect and total effects

Furthermore, it is interesting to examine if there are any indirect effects of the three independent constructs system quality, information quality and service quality on perceived net benefit.

The direct (path coefficient) and total effect of user satisfaction on perceived net benefit is 0.386. Among the three quality constructs, system quality had the strongest total effect on perceived net benefits. Total effects do not show something different due to indirect effect on the relationships among the independent and dependent constructs. However, we can observe that information quality has indirect effect (mainly through user satisfaction) on perceived net benefits stronger than service quality. System quality compared to the other quality-related constructs has the strongest indirect effect on perceived net benefits through user satisfaction. Referring to the table 4.25 we can see that there is no indirect effect through the use construct. Total effects of system quality, information quality, service quality, use, and user satisfaction on perceived net benefit are summarized in the following table.

Table 4.25 Specific indirect effects

	Specific Indirect Effects
IQ -> U -> NB	0.008
SQ -> U -> NB	-0.008
SVQ -> U -> NB	0.003
IQ -> US -> NB	**0.147**

SQ -> US -> NB	**0.203**
SVQ -> US -> NB	0.03
IQ -> U -> US -> NB	0
SQ -> U -> US -> NB	0
U -> US -> NB	-0.001
SVQ -> U -> US -> NB	0
IQ -> U -> US	-0.001
SQ -> U -> US	0.001
SVQ -> U -> US	0

Chapter 5

5.1 Overview of the Study

The purpose of this study was to identify how the Danish e-taxation system was perceived by small businesses and assess the validity of the D&M success model and how the constructs of the model are interrelated. Following an extensive literature review the framework was modified to fit present study. After deciding on the optimal framework and constructs for the study the questionnaire was constructed fitting within the IS field. The area was further narrowed by focusing on e-tax services for small businesses as we found the practice for larger companies would differ significantly. The center of the proposed model was based on DeLone & McLean information systems (IS) success model. When evaluating the context of the study, some minor changes was done to incorporate variables accordingly with Wang & Liao (2008)'s proposed D&M success model.

Current study used the updated DeLone & McLean IS success model and modified the model accordingly with the Wang & Liao (2008) study. The study continued with the six constructs of the revised D&M success model being: Information quality, System quality, Service quality, Use, User satisfaction, and Net benefits. The study empirically assessed the proposed framework and the hypotheses derived from the exhaustive literature review and validated the framework in the context of e-government. In thought of this intention, the research problem was identified as:

"This study will investigate the effectiveness of the Danish E-tax system for small businesses. Examining information success factors by using DeLone & McLean IS success model to explore corresponding components of IS success factors."

The research has been successful in its objectives by exploring the attitudes of small business employees handling e-tax business system. The main objectives of this study were: 1. Explore small business attitude towards e-government service e-tax Denmark. 2. Examine previous studies in areas as e-government, IS success models, e-tax and identify gaps in literature. 3. Find measures and instruments in various models for evaluating the effectiveness of e-government services. 4. Establish validity of the D&M success model in the context of e-

government Denmark taxation service. 5. To add research in the field of e-government G2B information systems.

The reviewed literature provided foundation in identifying gaps in literature to be examined to the deepen the understanding of e-government service effectiveness evaluation. The literature review was undertaken in connection with the research problem area which was along the study separated into more focused areas. The research problem was then narrowed into research questions of following: *"How is skat.dk business services used and perceived by small companies?* And further a sub question: *"To what extent are the constructs of the D&M success model interrelated in G2B e-government context?"*.

A set of 12 hypotheses was constructed based on the concepts of D&M IS success model and interestingly, five of these was found valid. The hypotheses were tested by collected data during the empirical section of this study.

5.2 Discussion on hypotheses testing

This section presents and discusses findings, beginning with the interesting results of hypotheses testing.

Hypothesis (H1): System quality is positively associated with the use of e-tax service in the G2B e-government perspective

Hypothesis H1 investigated the relationship between the two constructs; system quality and use. H1 expected system quality to impact use positively. In current study system quality is defined as availability, ease-of-use, reliability and usability. Concretely it examines how system quality impacts companies use of service in an e-government setting. Hypothesis 1 was rejected and by that did not show a positive correlation between system quality of e-government with companies use/usefulness of TastSelv business. The connection between these two constructs indicates no support for this hypothesis (β =-0.084, t = 0.219). Seddon & Kiew (1996) stated that increased system quality is associated with increased usefulness of a system, however this hypothesis rejects that. The discoveries of this first hypothesis suggests that when in the context of G2B in e-government taxation service, company's perception of use of service is not depending upon the system quality. These findings are interesting as they

are inconsistent with those found in literature; DeLone and McLean (1992, 2003, 2004); Seddon (1997); Saha et al., (2008); Khayun and Ractham (2011) in the area of information system success and e-government success. These studies all advocated that higher system quality of a service would result in an increase in use of the system. One reason for present study to contradict literature could be the context in which the study has, such as sample size of 52, the fact that it is concentrated in Denmark or that it is conducted in G2B. However, the result of this study relating to H1 is consistent to Wang & Liao (2008) findings where they found an insignificant relation between system quality and use in G2C context in Taiwan. Wang & Liao (2008) argued that their results was based on the fact that citizens have advanced computer competences and vast usage experience with internet. Further the system quality or ease-of-use of an e-government service system is not critical for citizens in determining whether to use the system or not. From previous studies thee items was chosen to measure system quality in a G2B context.

One aspect that needs to be kept in mind is that effect of use might be difficult to detect since the nature of this service is in some way mandatory since all companies must file taxes, yet not mandatory as all businesses are able to compensate an accountant to file the taxes on their behalf. Hence, use might not be directly affected by system quality. The results show that an up-to-date system is important as this provides useful information to users of that service.

Hypothesis (H2): System quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.

Hypothesis H2 tested the effect of system quality on users' satisfaction. The relationship between the two constructs indicates a strong support for this hypothesis (β = 0.526, t = 4.754, p***). This result indicates that an increase in system quality results in higher overall perceived user satisfaction of the system. In other words, a direct relationship between system quality and user satisfaction is supported. The finding is the same as found in literature from DeLone and McLean (1992, 2003) it was stated that system quality does in fact affect user satisfaction. DeLone and McLean (1992, 2003) found in their studies that an increase in system quality leads to a higher user satisfaction. Prior studies which likewise found strong support for relations between system quality and user satisfaction (Wang and Liao, 2008; Saha et al., 2008; Hala Al-Khatib, 2011, 2013) who also saw system quality as a valuable factor of satisfaction. On the contrary it was found in a study by Saha et al. (2010) displayed a disruption in the relationship between system quality and user satisfaction. In a study by Dwivedi et al.

(2018) it was found that user satisfaction can be upgraded by enhancing system and service quality.

Hypothesis (H3): System quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective.

Hypothesis H3 determined the impact of system quality on net benefits of e-government service while using the e-government e-tax service. In the analysis of the data, hypothesis H3 was found to be supported by empirical data. Put simply, the hypothetical relationship between system quality and net benefits was positively correlated. The relationship between these two constructs shows positive support for this hypothesis with the obtained values (β =0.426, t =2.094, p<.036 / p***). Path coefficient (β =0.426) from system quality to net benefits of e-government service at value (p <.036/ p*) is significant and critical ratio / t = 2.094 (> 1.96) was found positive which confirmed the positive and significant relationship between these two constructs. As path coefficient and t-value at p *** is fairly high correlation is supported. This finding means that in G2B e-taxation service context, system quality influenced perceived net benefits of an e-government service. According to the updated model (DeLone & McLean, 2003), it measures IS system success by using; information quality, service quality, use and user satisfaction and measuring their impact on net benefits. Net benefits can be used in a different manner depending on the researchers need (Wang & Liao, 2008). Wang & Liao (2008), evaluated e-government success as "perceived net benefits", according to Scott et al. (2010) it was measured as "citizens‟ value", whilst Saha et al. (2010) measured "Citizens Satisfaction", Khayun and Ractham, (2011) measured "Perceived Net Benefits" of e-government services. While reviewing literature it was clear that net benefits have been used in many different contexts by researchers and is not clearly described and appear ambiguous (Zaidi, 2017). However, in current study, authors have chosen to keep net benefits as describing this construct as we believe it formulates the combined impacts to companies. It is therefore underlined with the above that system quality positively affects net benefits which in turn supports current literature regarding this hypothesis. According to Petter et al., (2008) the relationship between system quality and net benefit has moderate support in individual and organizational level in several previous researches.

Hypothesis (H4): Information quality is positively associated with use in G2B e-government (e-tax service) perspective.

The impact of information quality on use was tested in hypothesis 4. Information quality was established as a very meaningful construct in the field of taxation services. In order to complete their filings and report their taxes online on time, companies are dependent on satisfactory information. In present study information quality deals with the quality of information produced by the information system. Thus, it was tested how the quality of information affected the use of e-tax G2B of companies. Hypothesis 4 was rejected, meaning that there was not found any significant correlation between information quality and use of the e-government e-taxation service. This finding is supported in existing literature by Sambasivan et al. (2010). The relationship between these two constructs is not supported by the ($\beta = .313$, $t = .257$, $p < .797$). This would suggest that even with greater information quality, use of the e-government system would not increase. The relationship between information quality and use has mixed support in literature (Petter et al. ,2008). Wang & Liao (2008) found that information quality had a greater effect on use and user satisfaction than did system quality and service quality. Furthermore, Khayun & Ractham (2011) found that perception of information quality is not significantly correlated to use, however most other studies observed information quality and use of e-services as a significant relationship; DeLone and McLean (2003).

Hypothesis (H5): Information quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.

Hypothesis H5 examined the impact of information quality on user satisfaction of the e-government service system. The analysis proved that hypothesis 5 was supported by the data. Put differently, a positive correlation was found in the relationship between information quality and user satisfaction. Ergo, it was found that the relationship between information quality and user satisfaction was significant in an e-government G2B context. The association between these two constructs indicates support for this hypothesis with the obtained values ($\beta = .382$, $t= 2.862$, p**). Path coefficient from information quality to user satisfaction is $\beta = .382$ at p** which was positive also the critical ratio $t = 2.862$ value was found positive which confirmed the positive and significant correlation. This result translates to information quality does affect user satisfaction directly in an e-government G2B context. This is supported by several prior studies (DeLone and McLean, 1992, 2003, 2004; Almutairi and Subramanian, 2005; Roca et al., 2006; Wang and Liao, 2008; Khayun and Ractham, 2011). According to DeLone & McLean (2003) they found that information quality in most studies showed the following most frequent measures; timeliness, completeness, consistency and accuracy which implies that

accuracy of information, and on-time correct information influences user satisfaction of an e-government G2B service.

Hypothesis (H6): Information quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective

Hypothesis H6 observed the impact of information quality on perceived net benefits while using the e-government G2B e-tax service. From the analysis of the data hypothesis 6 was rejected. This means that the hypothetical relationship between information quality and perceived net benefits was not significantly correlated. Consequently, the relationship between information quality and perceived net benefits of e-government G2B service was found to be insignificant. The link from information quality to perceived net benefits of the e-government service is insignificant with critical ratio / t = .745 and $\beta = -0.169$ which confirmed the negative and insignificant relationship between the constructs. In the updated version (DeLone & McLean, 2003) the IS success model measures success using system quality, information quality, service quality, use and user satisfaction constructs and evaluate the impact of these on net benefits. More so, DeLone & McLean, (2003) explains that net benefit can be used in different context depending on the researchers need. Which could indicate that coming researchers shall cautiously define stakeholders and context in which net benefit will be evaluated (Zaidi et al., 2017). Various stakeholders can have different opinions as to what makes a benefit in their eyes (DeLone & McLean, 2003). According to Wang & Liao (2008) e-government success was evaluated as perceived net benefits. From literature it is found that net benefits as a final construct used in different contexts is not clearly defined and seems ambiguous (Zaidi, 2017). According to Petter et al., 2008 the correlation among information quality and net benefits has moderate support in literature. Proposed hypothesis looked at the effect of information quality on perceived net benefits found not significant.

Hypothesis (H7): Service quality is positively associated with use in the G2B e-government (e-tax service) perspective.

Hypothesis H7 described the effect of service quality on use of the IS G2B service. Users expect reliable, transparent and guaranteed services in a well-timed manner to file their online taxes (Zaidi, 2017). Service quality is defined in current study as a point between what is expected from the users of an IS system to what is actually delivered. Therefore, how service

quality impacts use of the present G2B online taxation service was evaluated. H7 was rejected which means it shows no correlation between service quality and use of G2B e-government service. The relationship between these two constructs display no support for this hypothesis which has the acquired values of (β = .110, t = 654, p=.513) which confirms the positive and insignificant correlation. These results mean that in G2B context, service quality does not affect use of an e-government taxation service. This is contradicted by previous studies. According to Wang & Liao (2008) service quality's effect on use was marginally supported. Wang & Liao (2008) and Wangpipatwong et al. (2009); stated that better service quality can assure and enhance the use of e-government services by users. Service quality describes the quality of e-government communication which is efficiently used by citizens and include dimensions of tangibility, reliability, responsiveness, assurance, and empathy (Chutimaskul et al., 2008). This is contradicted by current study's hypothesis that citizens perception of use of a service is dependent on the quality of that service, however keeping in mind that the context is G2B. In the revised model (Delone & McLean, 2003), the authors proposed to add a measure of service quality as a new aspect of the IS success model. In most research DeLone & McLean (2003) is supported, they consider service quality as a component of IS success. In prior studies measures of e-government service quality is referred to as; assurance, flexibility, empathy, reliability, tangible, transparency, and responsiveness (DeLone and McLean, 2003, 2004; Wangpipatwong, S. and Chutimaskul, W., 2005; Chutimaskul et al., 2008; Bhattacharya et al., 2011). According to Alanezi et al. (2010), suggested to evaluate service quality, e-government, using website design, reliability, responsiveness, security, personalization, information and ease to use as the seven-item scale. For this study the focus of measurement was defined as; reliability, transparency, easy-to-use, responsiveness, and empathy.

Hypothesis (H8): Service quality is positively associated with user satisfaction in the G2B e-government (e-tax service) perspective.

Hypothesis H8 tested the impact of service quality on user satisfaction of an e-government service. In the context of an online taxation service, service quality as a factor was found insignificant. Hypothesis H8 was rejected as it does not show any positive correlation between constructs service quality and user satisfaction of an G2B e-tax service. The relations between these two measures indicates no support for this hypothesis (β = .067, t = .745, p =.456). The association within these two constructs does not indicate positive support for the proposed hypothesis. Which means that service quality does not directly affect user satisfaction

of an online e-government taxation service in an G2B context. This result is contradicting those found in previous studies. In previous studies; (DeLone and McLean 2003, 2004; Wang and Liao; 2008; Bhattacharya et al., 2011; Khayun and Ractham, 2011) from literature of information systems success and e-government success counter results was found. The interrelation among service quality and user satisfaction has moderate support in literature (Petter et al., 2008). Wang & Liao (2008) found that improved service quality can assure continued use of e-government services by citizens. This can be translated to: increased service quality is related to citizens satisfaction of the aforementioned service. Though, in the study of Saha et al., (2010) for evaluating the success factors of e-government shows discrepancy in this relationship amongst service quality and user satisfaction. Interestingly the results are not in line with found research which can be due to…?

Hypothesis (H9): Service quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective

Hypothesis H9 observed the impact of service quality on perceived net benefits while using the e-government G2B e-tax service. From the analysis of the data hypothesis 9 was supported by the obtained data. Meaning that the hypothetical relations amongst service quality and perceived net benefits was positively correlated. As a result, the relationship between service quality and perceived net benefits of e-government G2B service was found to be significant. The association between these two constructs indicates positive support for this hypothesis with the obtained values ($\beta = .221$, $t = 2.444$, p^*). Path coefficient ($\beta = .221$) from service quality to perceived net benefits of the e-government service at value (p^*) is significant and critical ratio / $t = 2.444$ (> 1.96) was found positive which confirmed the positive and significant relationship between those two constructs. Whether this is supported by previous research is difficult to conclude completely on as this relationship has not been tested in many studies.Net benefits are defined by Petter et al. (2008) as the extent to which information systems are adding to the success of individuals, groups, organizations, industries and nations by helping e.g. decision making, increase sale or job creation. According to Igbaria et al. (1997) external computing support was connected with perceived service usefulness, however internal computing support was not related to perceived usefulness. It was determined by Gefen (2000) that an increased perception of the vendor is cooperative results in greater perceived usefulness of the service.

Petter et al. (2008) the relationship between the constructs; service quality and perceived net benefits was tested, and it was concluded that there is a positive correlation

between service quality and perceived net benefits in the context of an e-government G2B e-taxation system. Stated by Petter et al. (2008) at the organizational entity of analysis further evaluation is required.

Hypothesis(H10): Use positively affects users' satisfaction in G2B e-government (e-tax service) perspective.

Hypothesis H10 tested the impact of use on user satisfaction of an e-government G2B service. From analyzing the data, it was found that the hypothesis is not supported. In other words, the relation between use and user satisfaction was found insignificant in an e-government G2B context. The correlation between the two indicates negative support for this hypothesis with the acquired values of (β = - 0.076, t = .344, p =.731). Path coefficient from use to user satisfaction at value (p=.076) and critical ratio / t = .344 (< 1.96) was found insignificant. In the context of e-government G2B online taxation service, use does not directly affect user satisfaction. This finding contradicts most research expectation as it was supposed to be found positive. Stated by DeLone & McLean (1992, 2003, 2004), use does affect user satisfaction, an increase in use will result in an increase in user satisfaction. Support for this hypothesis was likewise found in the following studies; (Roca et al., 2006; Wang and Liao, 2008; Khayun and Ractham, 2011). On the contrary, the study of Saha et al. (2010) found a dispute in the correlation of perceived ease of use and user satisfaction. According to the study of Khayun & Ractham (2011) the evaluation of e-excise service success factor, use of an e-service will lead to user satisfaction if the user has obtained positive experiences with system use, which then leads to more satisfaction. From current study it was found that there is no relationship between use and user satisfaction in the context of e-government G2B online taxation service in Denmark, which is in line with the study of Saha et al. (2010) and Zaidi (2017). Lastly, suggested hypothesis was not supported by the empirical data. This finding indicates that businesses user satisfaction with an online taxation service in Denmark is more affected by various quality than actual usage. The study showed an unexpected result which indicates that small companies use is found to be a weak and insignificant construct in determining the user perception towards using the e-government e-tax service of Denmark.

Hypothesis(H11): Use positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

Hypothesis H11 observed the impact of use on perceived net benefits while applying the e-government G2B e-tax service. From the analysis of the data hypothesis 11 was rejected by the evaluated data. Meaning that the hypothetical relations between service quality and perceived net benefits was not positively correlated. As a result, the relationship between use and perceived net benefits of e-government G2B service was found to be insignificant. The association between these two constructs indicates no positive support for this hypothesis with the obtained values of (β = .441, t = .964, p <.335 / p*). When reviewing empirical studies, it was found that there is moderate support for the relationship amongst system use and benefits at individual level (Petter et al., 2008). On measures it is seen that several previous studies are positively associated with improved decision making. Further, Burton-Jones (2006) found a strong significance in relationship of system use and task performance. According to the study of Halawi et al. (2007) they found a significant relationship between intention to use and net benefits as evaluated by improvements in job performance. Even more so, many prior studies found confirmation in finding significant relationships and/or correlations amongst system use and net benefits (Seddon & Kiew, 1996; Igbaria & Tan, 1997; Torkzadeh & Doll, 1999; Rai et al., 2002). On the contrary one study identified that intended use is not significantly connected to individual impact (task–technology fit and performance) (McGill et al., 2003).

Hypothesis(H12): User satisfaction positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

Hypothesis 12 observed the impact of user satisfaction on perceived net benefit while applying the e-government G2B e-tax service. From the analysis of the data hypothesis 12 was supported by the acquired data. Meaning that the hypothetical relations between user satisfaction and perceived net benefits was positively correlated. As a result, the relationship between user satisfaction and perceived net benefits of e-government G2B service was found to be significant. The association between these two constructs indicates positive support for this hypothesis with the obtained values (β = 0.386, t = 1.995, p < 0.046 / p*). Path coefficient (β = 0.386) from user satisfaction to perceived net benefits of the e-government service at value (p*) and critical ratio / t = 1.995 was found positive which confirmed the positive and significant relationship between those two constructs. Livari (2005) found empirical results of a strong correlation amongst user satisfaction and system benefits. User satisfaction was indicated to have a positive effect on a user's job (Yoon & Guimaraes, 1995; Guimaraes & Igbaria, 1997; Torkzadeh & Doll, 1999), to increase performance (McGill et al., 2003), to

improve productivity and effectiveness (Igbaria & Tan, 1997; Rai et al., 2002; Halawi et al., 2007). On the contrary a study of Yuthas & Young (1998) established that user satisfaction had only a fragile correlation with decision making performance.

5.3 Discussion on Theoretical Implications

A comprehensive review of the literature was carried out about e-government evaluation frameworks and e-government success models. Review of the literature clearly indicated that evaluation of e-government service was required from the users' viewpoint in G2B context. DeLone and McLean (2003) model has been used widely for assessing IS success and e-commerce success. DeLone and McLean (2003) consists of six dimensions system quality, information quality, service quality, system use, user satisfaction and net benefits to measure the IS system success and e-commerce success. The model which was tested in this study has these six dimensions and the relationships among them are based in Wang and Liao (2008) model and the meta-study of Petter et. al (2008). However, other studies (Wang and Liao, 2008; Khayun and Ractham, 2011) validated the DeLone and McLean (1992, 2003) model in G2C e-government it has not been tested in G2B e-government context previously.

The hypotheses information quality -> use, system quality-> use, service quality -> use, use-> user satisfaction and use -> perceived net benefits are not supported, hence, in this study all the hypotheses which are associated with the "use" dimension are rejected. However, the hypotheses System quality -> user satisfaction, information quality -> user satisfaction and user satisfaction -> perceived net benefit is supported. Seddon (1997) detected some issues in Delone and Mclean model IS success model and proposed a model with two linked subsystems, one that explain use and the second one that explain impact (perceived net benefit). On the one hand he argued that use is not an indicator of IS success, on the other hand he stated that user satisfaction is a success indicator because it is associated with impact (perceived net benefits).This study does not support Seddon's (1997) model with two subsystems, but the results of this study relating to use and user satisfaction are in consistent with his arguments that use is not an IS success indicator and user satisfaction is a key dimension. We could suggest that use is not a success indicator in G2B e-government (Danish e-tax service) context. The insignificant role of use as a success indicator might be due to the fact that Danish citizens are familiar with the use of e-government services.

5.4 Discussion on Practical Implications

In addition to above mentioned theoretical implications there are some practical implications of the research findings. This study offers an understanding of user's perceptions of an e-government system. Despite the fact that the study focused on a small sample size, it provides useful insights into the determinants of e-government service usage by small enterprises.

According to the results, the most important issues, that need consideration when implementing an e-government service in G2B context, are system quality, information quality, and service quality factors and users' satisfaction toward e-government service. The findings clearly indicate that the effect of system quality on users' satisfaction (β=0.518 and t=4.721) is higher than information quality and service quality in the context of G2B e- government. This means that e-government agencies should pay much more attention to system quality of e-government services to enhance the users' satisfaction. Furthermore, service quality (β=0.215 and t=2.444) and system quality (β= 0.426 and t=2.094) show strong impact on perceived net benefit. Government agencies that design e-services should consider above mentioned quality factors for providing better quality of e-government services. Providing effective quality of e-service is a continuous and innovative process hence to maintain the quality of such services is a vital factor in influencing and generating citizen satisfaction which are indicators of effectiveness evaluation. Furthermore, this study has provided valid and reliable measure of these constructs and encourages e-government authorities to include them in their evaluation techniques of e-government system success and have a better knowledge about users' perceived net benefit to improve their systems

Chapter 6

6.1 General Conclusions

In the previous chapter, the obtained results and discussion was presented. This chapter examines the discussion on the findings and introduce the conclusions as a result of interpreting results derived from prior chapter.

The purpose and aim of this study were to measure the Danish TastSelv electronic tax service system from the point of view of small companies. It was evaluated using DeLone and Mclean IS success model (2003) and to validate the updated model in a G2B e-government context. In order to accomplish this, we divided the assignment into two research questions. Based on our questionnaire results and analysis, displayed in former chapter, we arrived at the following conclusions of each research questions:

RQ1: How is skat.dk business services used and perceived by small companies?

Based on investigation of our results, TastSelv Erhverv (e-tax business) is unsuccessful from a G2B business point of view, since most of the company participants feel moderately unsatisfied with the overall system information which is also indirectly connected to use of the system. The results found in this part of the study was anticipated by the authors. The researchers of present study expected a reasonable level of dissatisfaction with the Danish e-taxation service, as this area of e-government has not been researched much furthermore the excellent results of Danish e-government is based on G2C findings. As it has been encouraged by government to start more entrepreneurs, the development of the online taxation system has not followed. As the Danish taxation system in a G2B context has not yet been examined as present study, comparing it to prior results cannot be found directly. With these findings we can conclude that the current digital strategy 2016-2020, with the aim of making it easier for businesses and further invest in developing the services, is a valuable aim. From the viewpoint of the six constructs of the revised IS success model, the answers received regarding the various constructs was differentiated and agreement was shown towards trust and security in using the system. As the system can be viewed as both mandatory and not, seen as it is mandatory to use

but possible to compensate an accountant to file on one's behalf, the answers leaned towards agree which is understandable when viewing the service as mandatory.

System Quality

System quality of TastSelv erhverv online taxation service has been regarded at a moderately bad level by the Danish small companies. Most respondents feel that the system is not user friendly, however asked this in the questionnaire most respondents are neutral, this could be influenced by the level of interaction they have with the system as it is only used five times a year for tax declarations.

Very similar is it when looking at how participants feel about the system and how easy it is to use and presents the desired information in timely manner. This is regarded negatively by most participants.

Information Quality

The users of the system, companies in this study, view information quality poorly. Respondents of the question regarding up-to-date information, answered most neutral and after that disagree was the highest score. Towards the item concerning whether participants felt they had the exact information they needed in order to file their taxes the majority replied that the disagreed with this statement.

Service Quality

From the results it is seen that the construct service quality is the element of TastSelv (e-tax) service regarded most successful by the businesses. They do feel safe in completing their tax information, transactions and in general feel that their information is handled with confidentiality.

User Satisfaction

User satisfaction is a vastly important stage of any IS service evaluation. This construct showed that participants does not feel that skat.dk delivers a service which is what they need in order to declare taxes on behalf of their company. However, questioned whether they were

satisfied with skat.dk in general most respondents were neutral, this answer could indicate that respondents might confuse this with their general use of skat.dk, including as a private citizen.

Questioned whether skat.dk provided the service they needed answers was yet again mostly neutral, perhaps users do not have specific requirements for a service which is so fairly new to them.

Perceived Net Benefit

Perceived net benefit was the last construct and the one with the most scattered answers, users equally agreed and disagreed with skat.dk making it easier for them to declare their taxes. Asked if skat.dk made it faster for them to file their taxes 36,54% answered agreed. The last question referred to whether skat.dk helped them save money on filing their taxes, 21,15% agreed, 32,69% was neutral and 28,85% disagreed.

RQ2: "To what extent are the constructs of the D&M success model interrelated in G2B context?"

One of the aims of this study is to present the factors that influence the use, user satisfaction and net benefit of the Danish e-tax service from small enterprises perspective. The Delone and Mclean IS success model (2013) was used in this study, as well as the model which is proposed by Wang and Liao (2008) for G2C context. Several variables used in the model, i.e. systems quality, information quality, service quality which are perceived to have correlation with user satisfaction and use variable, and perceived net benefit. The last two variables are also perceived to influence the degree of the perceived net benefits of the e-tax service. All the variables have indicators of which have items of questions. According to the model, 12 hypotheses was developed to explore the correlation of all variables in the model.

Having the data collected from 52 respondents and tested using validity and reliability test, the data are then analyzed using SmartPLS to explore the correlation among the variables. For six constructs of the DeLone and Mclean (2003) updated IS success model, 5 links between constructs were supported and 7 were rejected.

Hypothesis (H1): System quality is positively associated with the use of e-tax service in the G2B e-government perspective

H1 was not supported and the data analysis shows that the link between system quality and use was found insignificant. This indicates that in this research study, system quality does not affect use.

Hypothesis (H2): System quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.

H2 was supported as revealed by empirical results that system quality had a strong effect on users' satisfaction in G2B e-government context. This implies that in e- government (G2B Danish e-tax) context, system quality affects use.

Hypothesis (H3): System quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective.

H3 also supported and as the data revealed, the relationship between system quality and perceived net benefit was significant. This also suggests that system quality affects perceived net benefit in e-government G2B context

Hypothesis (H4): Information quality is positively associated with use in G2B e-government (e-tax service) perspective.

H4 was not supported and the correlation between information quality and use found insignificant. Hence, information quality does not affect use.

Hypothesis (H5): Information quality is positively associated with users' satisfaction in G2B e-government (e-tax service) perspective.

H5 was supported and the relationship between information and user satisfaction was significant and data also shows that information quality has medium effect on user satisfaction.

Hypothesis(H6): Information quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective

H6 was not supported by the data and the relationship among information quality and perceived net benefit found insignificant which implies that information quality does not affect directly perceived net benefits.

Hypothesis (H7): Service quality is positively associated with use in the G2B e-government (e-tax service) perspective.

H7 was also not supported and the relationship between service quality and use was found insignificant. Thus, it can be concluded that service quality does not affect use.

Hypothesis (H8): Service quality is positively associated with user satisfaction in the G2B e-government (e-tax service) perspective.

H8 was not supported and the relationship between service quality and user satisfaction was not found significant. In this way the construct of service quality does not affect perceived user satisfaction construct.

Hypothesis(H9): Service quality is positively associated with perceived net benefits in G2B e-government (e-tax service) perspective

H9 was supported and the relationship between service quality and perceived net benefits was found to be significant. Thus, the construct of service quality affects perceived net benefits construct, however the effect is small

Hypothesis(H10): Use positively affects user satisfaction in G2B e-government (e-tax service) perspective.

H10 was not supported and the relationship between use and user satisfaction was not found to be significant. Thus, it can be concluded that use does not affect user satisfaction.

Hypothesis(H11): Use positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

H11 was not supported, as revealed by the data the relationship between use and perceived net benefit was insignificant. This implies that, in this research study, use does not affect perceived net benefits

Hypothesis(H12): User satisfaction positively affects perceived net benefit in G2B e-government (e-tax service) perspective.

H12 was supported and the hypothesized relationship between user satisfaction and perceived net benefit was significant as revealed by the empirical results of this study. It means that user satisfaction affects perceived net benefit

6.2 Future research

Based on this research limits and results, the following implications and recommended research, as well as learnings may be proposed to future practitioner and managers.

As this study had significantly different findings compared to previous research, future studies in validating D&M IS success model in G2B context would be interesting. Present research was a quantitative study, validating the D&M success model and assessed the Danish e-tax service G2B which is why a qualitative study in the same area could contribute to knowledge.

Results of the analysis of the construct "perceived net benefits" showed discrepancy in results which could indicate that respondents either misunderstood one question or validity of the Likert scale is not sufficient, in either case further research is needed.

RQ1 was answered in a prior paragraph and it was found that small companies perceive TastSelv (G2B) negatively in various areas, it could be intriguing to delve even deeper into the causes of this in the future research using qualitative methods.

Lastly, the DeLone and McLean (2003) IS success model was validated within one e-government service system, validating it in other e-government services would add valuable insights.

References

A. Rai, S.S. Lang, R.B. Welker. Assessing the validity of IS success models: An empirical test and theoretical analysis Information Systems Research, 13 (1) (2002), pp. 50-69. Retrieved January 4, 2019 from https://pdfs.semanticscholar.org/629e/b95e14dcabdc2c63a5fdaae28d7cf216df07.pdf

Aibinu, AA; Al-Lawati, AM, (2010). Using PLS-SEM technique to model construction organizations' willingness to participate in e-bidding, Automation in construction, 2010, 19 (6), pp. 714 - 724. Retrieved November 10, 2018 from Science Direct.

Akman, I., Ali, Y., Mishra, A., & Arifoglu, A. (2005). EGovernment: A global view and an empirical evaluation of some attributes of citizens. Government Information Quarterly, 22(2), 239–257. Retrieved November 10, 2018 from Science Direct.

Alanezi, M. A., Kamil, A., and Basri, S. (2010), "A proposed instrument dimensions for measuring e-government service quality", International Journal of u-and e-Service, vol. 3, no. 4, pp. 1-18. Retrieved November 10, 2018 from Research Gate.

Al-Hakim, L. ed., Global e-government: Theory, applications and benchmarking, Global-E-Government, pp. 340-369. Retrieved November 10, 2018 from http://www.untag-smd.ac.id/files/Perpustakaan_Digital_1/E-GOVERNMENT%20Global%20e-government%20%20theory,%20applications%20and%20benchmarking.pdf.

Al-Khatib, H. and Lee, H. (2011), "E-government systems success and user acceptance in developing countries: The role of perceived support quality", International journal of eBusienss and eGovernment studies, vol 3, no. 2. Retrieved November 10, 2018 from: www.sobiad.org.

Almutairi, H. and Subramanian, G. H. (2005), "An empirical application of the Delone and Mclean model in the Kuwaiti private sector", Journal of Computer Information Systems, vol. 45, no. 3, pp. 113-122. Retrieved November 10, 2018 from Research Gate.

Al-Shafi S. H. (2009), " Factor affecting e-government implementation and adoption in the state of Qatar", Ph.D. thesis Brunel University, London, Retrieved November 10, 2018 from dspace.brunel.ac.uk/bitstream/2438/6266/1/FulltextThesis.pdf

Alshawi, S. and Alalwany, H. (2009), "E-government Evaluation: citizen‟s Perspective in Developing countries", Information Technology for Development, vol. 15, no. 3, pp. 193-208. Retrieved November 10, 2018 from Research Gate.

AlShihi, H. (2006), Critical factors in the adoption and diffusion of e- government initiatives in Oman. Unpublished doctoral dissertation, Victoria University, Australia. Retrieved November 20, 2018 from Research Gate.

Bailey, J. E., & Pearson, S. W. (1983). Development of a tool for measuring and analyzing computer user satisfaction. Management Science, 29(5), 530–545. Retrieved November 10, 2018 from Research Gate.

Becker, J. and Niehaves, B. (2007), "Epistemological perspectives on IS research: a framework for analysing and systematizing epistemological assumptions", Info Systems Journal, vol. 17, pp. 197-214. Retrieved November 10, 2018 from Research Gate.

Bhattacharya, D., Gulla, U., and Gupta, M. P. (2012), E-service quality model for Indian government portals: citizens' perspective, Journal of Enterprise Information Management, vol. 25, no. 3, pp. 246 - 271. Retrieved December 12, 2018 from Research Gate.

Blaikie, N. (2007), Approaches to Social Enquiry, 2nded, Polity Press, U.K. Retrieved January 20, 2018 from Sage Pub.

Bradley, R.V., Pridmore, J.L., and Byrd, T.A. 2006. "Information Systems Success in the Context of Different Corporate Cultural Types: An Empirical Investigation," Journal of Management Information Systems (23:2), Fall2006, pp 267-294. Retrieved February 20, 2018 from Jstor.

Bryman, A. (2008). Social Research Methods (3rd ed.). Oxford: Oxford University Press.

Burn, J. and Robins, G. (2003), Moving towards e-government: a case study of organisational change processes, Logistics Information Management, vol. 16, pp.25- 35. Retrieved January 4, 2019 from Research Gate.

Carbo, T. and Williams, J. G. (2004), "Models and metrics for evaluating local electronic government systems and services", Electronic Journal of E-Government, vol. 2, no. 2, pp. 95−104. Retrieved December, 2018 from file:///Users/nathaliegebhard/Downloads/ejeg-volume2-issue2-article26.pdf.

Chang, J. C. J. and King, W. R. (2005). Measuring the performance of information systems: A functional scorecard. Journal of Management Information Systems, vol. 22, no. 1, pp. 85-115. Retrieved January 4, 2019 from Research Gate.

Chavan, G. R. and Rathod, M. L. (2009). E-Governance and Its Implementation. SRELS Journal of Information Management, vol. 46, pp. 17-24. Retrieved November 4, 2018 from Research Gate.

Chen, W. and Hirschheim, R. (2004). A Paradigmatic and Methodological Examination of Information Systems Research from 1991 to 2001", Information Systems Journal, vol. 14, no. 3, pp. 197-235. Retrieved December 10, 2018 from http://130.18.86.27/faculty/warkentin/papers/ChenHirschheim2004_ISJ143_ISResearch1991to2001.pdf.

Chin, W. W. (1998). The Partial Least Squares Approach to Structural Equation Modelling in G. A. Marcoulides (ed.), Modern Methods for Business Research. Lawrence Erlbaum Associates, Mahwah, NJ, pp. 295-336. Retrieved November 16, 2018 from Research Gate.

Chutimaskul, W., Funilkul, S. and Chongsuphajaisiddhi, V. (2008). The quality framework of e-government development. Proceedings of the 2nd international 270 conference on theory and practice of electronic governance, ICEGOV" 08, pp. 105- 109. Retrieved November 16, 2018 from Research Gate.

Coleman, S. (2005). The lonely citizen: indirect representation in an age of networks. Political Communication, Vol. 22 No. 2, pp. 197-214. Retrieved November 16, 2018 from Taylor and Francis Online.

Colier, J. E. and Bienstock, C. C. (2006). Measuring service quality in e- retailing. Journal of Service Research, Vol. 8, No. 3, pp. 260-75. Retrieved November 20, 2018 from Research Gate.

Collis, J. and Hussey, R. (2009), Business Research: A practical guide for undergraduate and postgraduate students, 3rd ed., Palgrave Macmillan New York.

Connolly, R. and Bannister, F. (2008). eTax Filing & Service Quality: The Case of the Revenue Online Service. Proceedings of World Academy of Science, Engineering and Technology, vol. 28, pp. 313-317.

Conrath, D.W., Mignen, O.P., (1990). What is being done to measure user satisfaction with EDP/MIS. Retrieved January 4, 2019 from ScienceDirect.

Creswell, J. W. (2003). Research Design: Qualitative, Quantitative, and Mixed Methods Approaches. 2nd ed., Sage Publication.

Cronin, J. J., Brady, M. K. & Hult, T. M., 2000, Assessing the Effects of Quality, Value, and Customer Satisfaction on Consumer Behavioral Intentions in Service Environments, Journal of Retailing, Volume 76(2) pp. 193–218, ISSN: 0022-4359.

Dada, D. (2006). The failure of e-government in developing countries: A literature review. The electronic journal of information systems in developing countries, vol. 26, no. 7, pp.1-10. Retrieved January 4, 2019 from Research Gate.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use and user acceptance of information technology. MIS Quarterly, vol. 13, no. 3, pp. 318-39. Retrieved February 10, 2019 from Science Direct.

DeBenedictis, A., Howell, W., Figueroa, R., and Boggs, R. A. (2002). E-government defined: an overview of the next big information technology challenge. International Association for Computer Information Systems (Issues in Information Systems), vol. 3, pp. 130-136. Retrieved January 4, 2019 from Research Gate.

DeLone, W. H., McLean, E. R. (1992). Information systems success: The quest for the dependent variable, Information Systems Research, vol. 3, no. 1, pp. 60-95. Retrieved november 5, 2018 from Research Gate.

DeLone, W. H. and McLean, E. R. (2003). The DeLone and McLean Model of Information Systems Success: A Ten-Year Update. Journal of Management Information Systems, vol. 19, no. 4, pp. 9-30. Retrieved november 5, 2018 from Research Gate.

De Villiers, M. R. (2005). Three approaches as pillars for interpretive information systems research: development research, action research and grounded theory. Proceedings of the annual research conference of the South African institute of computer scientists and information technologists on IT research in developing countries, pp. 142-151. Retrieved november 5, 2018 from ACM Digital Library.

Dwivedi, Yogesh K. ; Veeramootoo, Narvadha ; Nunkoo, Robin. What determines success of an e-government service? Validation of an integrative model of e-filing continuance usage. Government Information Quarterly, April 2018, Vol.35(2), pp.161-174. Retrieved January 4, 2019 from ScienceDirect.

Edrees, M. E. and Mahmood, A. (2013). Measuring eGovernment Systems Success: An Empirical Study. Proceedings of the First International Conference on Advanced Data and Information Engineering (DaEng-2013), Lecture Notes in Electrical Engineering, (15 Dec 2013, Springer), vol. 285, pp. 471-478. Retrieved December 10, 2018 from Research Gate.

Egedesø, C.J., Hansen, K.E.H., Nielsen, P.B., (2018). Iværksætteri i Danmark. Retrieved January 20, 2019 from https://www.dst.dk/Site/Dst/Udgivelser/nyt/GetAnalyse.aspx?cid=31441.

Erhvervsstyrelsen, (2017). Udvikling i CVR-registreringer i Erhvervsstyrelsen og iværksættervirksomheder i Danmarks Statistik. Retrieved January 20, 2019 from https://erhvervsstyrelsen.dk/udvikling-i-cvr-registreringer-og-ivaerksaetter-virksomheder.

Etezadi-Amoli, J., & Farhoomand, A. F. (1996). A structural model of end user computing satisfaction and user performance. Information and Management, 30(2), 65−73. Retrieved December 10, 2018 from Science Direct.

Evans, Donna & Yen, David. (2006). E-Government: Evolving relationship of citizens and government, domestic, and international development. Government Information Quarterly. 23. Retrieved November 10, 2018 from 207-235. 10.1016/j.giq.2005.11.004.

Fang, Z. (2002). E-Government in Digital Era: Concept, Practice, and Development. International Journal of the Computer, vol. 10, no. 2, pp. 1-22. Retrieved December 10, 2018 from Science Direct.

Fitzgerald, G., and Russo, N. 2005. "The Turnaround of the London Ambulance Service Computer-Aided Despatch System (Lascad)," European Journal of Information Systems (14:3), pp 244-257. Retrieved January 14, 2019 from Research Gate.

Fornell, C. and Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. Journal of Marketing Research, vol. 18, pp. 39-50. Retrieved December 10, 2018 from Jstor.

Gable, G. G. (1994). Integrating Case Study and Survey Research Methods: An Example in Information Systems. European Journal of Information Systems, vol. 3, no. 2, pp. 112-126. Retrieved January 11, 2019 from https://eprints.qut.edu.au/5853/1/5853.pdf.

Gefen, D., Straub, D. W., & Boudreau, M. C. (2000). Structural equation modeling techniques and regression: Guidelines for research practice. Communications of the AIS, 1, 1–78. Retrieved January 20, 2019 from Research Gate.

Gefen, D. 2000. It Is Not Enough to Be Responsive: The Role of Cooperative Intentions in Mrp Ii Adoption. DATA BASE for Advances in Information Systems (31:2), pp 65-79. Retrieved January 5, 2019 from Research Gate.

Gilbert, D., Balestrini, P., and Littleboy, D. (2004), "Barriers and benefits in the adoption of e-government", International journal of public sector management, vol. 17, no. 45, pp. 296-301. Retrieved November 22, 2018 from Science Direct.

Gil-Garcia, J. R. and Martinez-Moyano, I. J. (2007). Understanding the evolution of e-government: the influence of systems of rules on public sector dynamics. Government Information Quarterly, vol. 24, pp. 266–290. Retrieved November 20, 2018 from Science Direct.

Gorla, N., Somers, T. M., and Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. Journal of Strategic Information Systems, vol. 19, no.3, pp. 207-228. Retrieved January 20, 2019 from Research Gate.

Gorla, N., Somers, T. M., and Wong, B. (2010). Organizational impact of system quality, information quality, and service quality. Journal of Strategic Information Systems, vol. 19, no.3, pp. 207-228. Retrieved December 18, 2018 from Jstor.

Groves, R. M. and Singer, E. (2004), Survey Methodology, A telescope on society: survey research and social science at the University of Michigan, pp. 21-64. Retrieved January 20, 2019 from Research Gate.

Hair, J. F., Babin, B., Money, A. H., and Samouel, P. (2003), Essentials of Business Research Methods, John Wiley and Sons Inc.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., and Tatham, R. L. (2006), Multivariate Data Analysis, 6th ed., Prentice-Hall International.

Hair, J. F., Babin, B., Money, A. H., and Samouel, P., (2007), Essentials of Business Research Methods, John Wiley and Sons, Inc.

Hair, J. F., Black, W. C., Babin, B. J., and Anderson, R. (2010), Multivariate Data Analysis: A Global Perspective, 7th ed., Pearson Education.

Hair, J. F., Ringle, C. M., & Sarstedt, M. (2011). PLS-SEM: Indeed a silver bullet. Journal of Marketing Theory and Practice, 19, 139–151.

Hair, J. (2014). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Thousand Oaks: SAGE Publications. Second edition.

Haque, M. (2010), "Sampling Methods in Social Research", Global Research Methodology Journal, Retrieved January 10, 2019 from http://grmgrlaranya.com/Journals/sampling%20methods%20in%20social%20research.

Hartwick, J.H., and Barki, H. Explaining the Role of User Participation in Information System Use, Management Science (40) 1994, pp 440-465. Retrieved December 18, 2018 from Research Gate.

Heeks, R. and Bailur, S. (2007). Analysing e-government research: Perspectives, philosophies, theories, methods and practice. Government Information Quarterly, vol. 24, pp. 243-261. Retrieved January 18, 2019 from Science Direct.

Heeks, R. and Bailur, S. (2007). Analysing e-government research: Perspectives, philosophies, theories, methods and practice. Government Information Quarterly, vol. 24, pp. 243-261. Retrieved December 18, 2018 from Research Gate.

Heeks, R.B. (2006), Implementing and Managing E-Government: An International Text, Sage Publications, London. Retrieved November 18, 2018 from Science Direct.

Henseler, J. (2010). On the convergence of the partial least squares path modeling algorithm. Computational Statistics, 25, 107–120.

Hien, N. M. (2014). A Study on Evaluation of E-Government Service Quality. International Journal of Social, Management, Economics and Business Engineering, vol. 8, no. 1, pp. 16-19. Retrieved December 18, 2018 from Research Gate.

Hu, Y., Xiao, J. H., Pang, J. F., and Xie, K. (2005). A Research on the Appraisal framework of E-Government Project Success. Proceedings of the 7th International Conference on Electronic Commerce (ICEC‟05) (15-17 August 2005), ACM International Conference Proceeding Series, Xi'an, China,vol. 113, pp. 532-538. Retrieved November 7, 2018 from ACM Digital Library.

Igbaria, M., Parasuraman, S., and Baroudi, J., 1996. A Motivational Model of Microcomputer Usage, Journal of Management Information Systems 13(1) pp 127-143. Retrieved December 18, 2018 from Taylor and Francis Online.

J. Etezadi-Amoli, A.F. Farhoomand. A structural model of end user computing satisfaction and user performance Information and Management, 30 (2) (1996), pp. 65-73. Retrieved November 8, 2018 from Science Direct.

J. Floropoulos et al. / International Journal of Information Management 30 (2010) 47–56. Retrieved November 8, 2018 from Science Direct.

J. Heo, I. HanPerformance measure of information systems (IS) in evolving computing environments: An empirical investigation Information and Management, 40 (4) (2003), pp. 243-256. Retrieved November 8, 2018 from Science Direct.

Jaeger, P.T. (2003). The endless wire: E-government as global phenomenon. Government Information Quarterly 20 (2003) 323–331. Retrieved November 28, 2018 from http://ejournalpasca.binadarma.ac.id/upload/The%20endless%20wire%20E-government%20as%20global%20phenomenon.pdf.

Jain, V. and Kesar, S. (2011). E-government implementation challenges at local level: a comparative study of government and citizens' perspectives. Electronic Government, an International Journal, vol. 8, no. 2/3, pp. 208-225. Retrieved November 10, 2018 from Inder Science Online.

Janssens, W., Wijnen, K., Pelsmacker, P. D., and Kenhove, P. V. (2008), Marketing Research with SPSS, Prentice Hall.

Joe F. Hair Jr, Marko Sarstedt, Lucas Hopkins, Volker G. Kuppelwieser, (2014) "Partial least squares structural equation modeling (PLS-SEM): An emerging tool in business research", European Business Review, Vol. 26 Issue: 2, pp.106-121. Retrieved October 12, 2018 from https://doi.org/10.1108/EBR-10-2013-0128

Karunasena, K., Deng, H., and Singh, M. (2011). Measuring the public value of egovernment: a case study from Sri Lanka. Transforming Government: People, Process and Policy, vol. 5, no. 1, pp. 81-99. Retrieved November 12, 2018 from Research Gate.

Kasubien, L. and Vanagas, P. (2007). Assumptions of e-government services quality evaluation. Engineering Economics, vol. 5, no. 55, pp. 68–74. Retrieved November 12, 2018 from Research Gate.

Khayun, V. and Ractham, P. (2011). Measuring e-Excise Tax Success Factors: Applying the DeLone & McLean Information Systems Success Model. Proceedings of the 44th Hawaii International Conference on System Sciences, IEEE, pp. 1-10.

Kithandi, L., Ambale, W., (2017). A review of citizen-centric models for evaluating e-government services: A Kenyan perspective. Retrieved January 4, 2019 from Research Gate.

Kline, R. B. (2011), Principles and Practice of Structural Equation Modeling, 3rd ed., The Guilford Press, New York.

Kunstelj, M., and Vintar, M. (2004). Evaluating the progress of e-Government development: A critical analysis. Information Polity, vol. 9, no. 3-4, pp. 131-148. Retrieved November 4, 2018 from Research Gate.

Li, Y. N., Tan, K. C. & Xie, M. (2002). Measuring web-based service quality, Total Quality Management, 13(5), pp. 685- 700. Retrieved November 4, 2018 from Taylor and Francis Online.

Lihua, W. and Zheng, Q. (2005), "Internet use and e-government performance: a conceptual model", Proceedings of Ninth Pacific Asia Conference on Information Systems, PACIS 2005, Bangkok, Thailand. Retrieved January 4, 2019 from www.pacisnet.org/file/2005/139.pdf.

Liu, C., Marchewka, J., Lu, J., and Yu, C. S. (2005). Beyond concern a privacy-trust behavioral intention model of electronic commerce. Information & management, vol. 42, no. 2, pp. 289-304. Retrieved November 4, 2018 from Research Gate.

Luarn, P & Lin, H. (2003), A customer loyalty model for e-service context, Journal of Electronic Commerce Research, Vol. 4, No. 4. Retrieved November 4, 2018 from Science Direct.

McKinney, V., Yoon, K., and Zahedi, F. M., (2002). The Measurement of Web- Customer Satisfaction: An expectation and Disconfirmation Approach. Information System Research, vol. 13, no. 3, pp. 296-315. Retrieved November 4, 2018 from Research Gate.

Metaxiotis, K. and Psarras, J. (2004). E-government: new concept, big challenge, success stories. Electronic Government, an International Journal, vol. 1, no. 2, pp. 141-151. Retrieved November 9, 2018 from Research Gate.

Molla, A. and Licker, P. S. (2001). E-commerce systems success: an attempt to extend and respecify the DeLone and McLean model of IS success. Journal of Electronic Commerce Research, vol. 2, no. 4, pp. 131-141. Retrieved January 17, 2019 from Science Direct.

Myers, B. L., Kappelman, L. A., and Prybutok, V. R. (1997). A comprehensive model for assessing the quality and productivity of the information systems function: toward a theory for information systems assessment. Information Resources Management Journal, vol. 10, no. 2, pp. 6. Retrieved January 17, 2019 from Science Direct.

Myers, M. and Avison, D. (2002). Qualitative Research in Information Systems: A Reader, Sage Publications, London, UK.

Ndou, V. (2004). E-government for developing countries: Opportunities and challenges. Electronic Journal of Information Systems in Developing Countries, vol. 18, no. 1, pp. 1-24. Retrieved January 15, 2019 from Research Gate.

Neuman, L. (2003), Social Research Methods: Qualitative and Quantitative Approaches, 5th ed., Pearson, Boston, MA.

Oates B. (2006), Researching information systems and computing. Sage publications.

OECD (2003). The Case for E-Government: Excerpts from the OECD Report: The E- Government Imperative. OECD Journal on Budgeting, vol. 3, no. 1, Retrieved December 17, 2018 from https://www.oecd.org/gov/budgeting/43496369.pdf

Oliver, R. L. (1980) A Cognitive Model of the Antecedents and Consequences of Satisfaction Decisions, Journal of Marketing Research, Vol. 17, No. 4, pp. 460-469. Retrieved November 28, 2018 from Science Direct.

Oliver, Richard L. 1997. Satisfaction: A Behavioral Perspective on the Consumer. New York: McGraw-Hill. Retrieved January 17, 2019 from Research Gate.

Orlikowski, W., and Baroud, J. (1991) Studying Information Technology in Organizations: Research Approaches and Assumptions. Information Systems Research, No. 2, pp. 1-28. Retrieved February 7, 2019 from Science Direct.

Osman, Ibrahim H. ; Anouze, Latef, A ; Irani, Zahir ; Al-Ayoubi, Baydaa ; Lee, Habin ; Balcı, Asım ; Medeni, Tunç D. ; Weerakkody, Vishanth. COBRA framework to evaluate e-government services: A citizen-centric perspective. Government Information Quarterly, April 2014, Vol.31(2), pp.243-256. Retrieved January 4, 2019 from ScienceDirect.

Osman, Ibrahim H. ; Lee, H., (2011). A new cobras framework to evaluate e-government services: a citizen centric perspective. Retrieved January 4, 2019 from Research Gate.

Oyomno, G. (2004). Towards a framework for assessing the maturity of government capabilities for e-government", The Southern African Journal of Information and Communication, vol. 4, pp. 77-97. Retrieved November 28, 2018 from SabiNet.

Papadomichelaki, X. and Mentzas, G. (2009). A Multiple-Item Scale for Assessing E- Government Service Quality. In EGOV 2009, LNCS Springer, vol. 5693, pp. 163- 175. Retrieved November 28, 2018 from Science Direct.

Parasuraman, A., Zeithaml, V.A., Berry, L.L. (1983). A Conceptual Model of Service Quality and its Implication for Future Research (SERVQUAL). Retrieved January 15, 2018 from Research Gate.

Parasuraman, A., Zeithaml, V. A. and Malhotra, A. (2005), E-S-QUAL: A Multiple-Item Scale for Assessing Electronic Service Quality, Journal of Service Research, 7(3), pp.213-233. Retrieved February 2, 2019 from Science Direct.

Pérez-Mira, Begoña, "Validity of DeLone and McLean's Model of Information Systems success at the web site level of analysis" (2010). *LSU Doctoral Dissertations*. 3531. Retrieved January 5, 2019 from https://digitalcommons.lsu.edu/gradschool_dissertations/3531.

Peters, R. M., Janssen, M., and Van Engers, T. M. (2004), “Measuring e-Government Impact: Existing practices and shortcomings”, Proceeding of sixth International Conference on Electronic Commerce, ICEC‟04, pp. 480-489. Retrieved November 28, 2018 from http://dl.acm.org.

Petter, S; DeLone, W; McLean, E. Measuring information systems success: models, dimensions, measures, and interrelationships. Retrieved December 5, 2018 from Taylor and Francis Online.

Petter, S., DeLone, W., and McLean, E. (2008) ―Measuring information systems success: models, dimensions, measures, and interrelationships‖, European Journal of Information Systems 17, pp 236-263.

Pitt, L. F., Watson, R. T., and Kavan, C. B. (1995). Service quality: A measure of information systems effectiveness. MIS Quarterly, vol. 19, no. 2, pp. 173-187. Retrieved November 2, 2018 from Science Direct.

Prattipati, S. N. (2003). Adoption of eGovernment: Differences between countries in the use of online government service. Journal of American Academy of Business, 3(1/2), 386−391. Retrieved December 6, 2018 from Research Gate.

Regeringen/ KL / Danske Regioner (2016). Den fællesoffentlige digitaliseringsstrategi 2016-2020. Digitaliseringsstyrelsen. Retrieved 15 December 2018 from https://digst.dk/media/12810/faellesoffentlige-digitaliseringsstrategi-2016-2020-dobbeltopsl.pdf.

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. International Journal of Research in Marketing, 26, 332–344. Retrieved November 4, 2018 from Science Direct.

Rigsarkivet (2018). Retrieved January 20, 2019 from https://www.sa.dk/da/moed-danmarks-historie/historier-fra-arkivet/skattevaesenet-klarer-skatten-dig/.

Roca, C. J., Chao-Min Chiu & Martinez, F. J. (2006), Understanding e-learning continuance intention: An extension of the Technology Acceptance Model, International Journal of Human Computer Studies 64 (2006) 683–696. An empirical comparison of the efficacy of covariance-based and variance-based SEM. Retrieved February 5, 2019 from Research Gate.

Roy, J. (2003). Special Issue on e-Government. Social Science Computer Review, vol. 21, no. 1, pp. 3-5. Retrieved January 5, 2019 from Research Gate.

Rust, R.T., Kannan, P.K., (2003). E-service: A new paradigm for business in the electronic environment. Retrieved January 15, 2019 from Research Gate.

Saha, P., Nath A., and Sangari E. S., (2010). Success of Government E-Service Delivery: Does Satisfaction Matter? Springer Link Lecture Notes in Computer Science, vol. 6228, pp. 204-215. Retrieved January 15, 2018 from https://hal.inria.fr/hal-01059177/PDF/camera_copy_final_success_of_government_e-service_delivery.pdf.

Saha, P. (2008). Government e-Service Delivery: Identification of Success Factors from Citizens Perspective. Doctoral Thesis edn, Luleå University of Technology, Sweden, Retrieved January 10, 2019 from http://epubl.ltu.se/1402-1544/2008/70/LTU-DT-0870-SE.pdf

Saunders, M., Lewis, P. and Thornhill, A. (2007), Research Methods for Business Students, 4th ed., Prentice Hall.

Scholl, H. J. (2003), E-government: a special of ICT enabled business process change, proceeding of 36th Hawaii international conference on system sciences, IEEE.

Scott, M., DeLone, W. H., and Golden, W. (2010), "IT quality and e-government net benefits: a citizen perspective", Proceeding of the Thirty First International Conference on Information Systems (ICIS 2010), St. Louis. Retrieved January 10, 2019 from http://www.american.edu/kogod/citge/upload/Murray_DeLone_Egovernment_WP_Jun e2010.pdf

Seddon, P.B., Kiew, M., (1994). A partial test and development of DeLone and McLean's model of IS success. Retrieved November 15, 2018 from Research Gate.

Seddon, P. B. (1997), "A Respecification and Extension of the DeLone and Mclean Model of IS Success", Information System Research, vol. 8, no. 3, pp. 240-253. Retrieved November 15, 2018 from Research Gate.

Seddon, P. B. and Kiew, M. Y. (1996), "A partial test and development of DeLone and McLean's model of IS success", Australian Journal of Information system (AJIS), vol. 4, no. 2, pp. 90-109. Retrieved November 15, 2018 from Research Gate.

Sedera D, Gable G and Chan T. (2004). A factor and structural equation analysis of the enterprise systems success measurement model. In Proceedings of the Twenty-Fifth International Conference on Information Systems (APPELGATE L, GALLIERS R and DEGROSS JI, Eds), p 449, Association for Information Systems, Washington, DC, USA. Retrieved October 7, 2018 from Research Gate.

Seifert, J. W. (2008). A primer on e-government: Sectors, stages, opportunities, and challenges of online governance. E-Government in High Gear, 99, Service Research, vol. 8, no. 3, pp. 260-275. Retrieved November 28, 2018 from Science Direct.

Seifert, J. W. and Relyea, H. C. (2004), "Considering eGovernment from the U.S. Federal Perspective: An Evolving Concept, A Developing Practice", Journal of e- Government, vol. 1, no. 1, pp. 7-15. Retrieved January 10, 2019 from http://www.haworthpress.com/store/SampleText/J399.pdf

Sekaran, U. and Bougie, R. (2010), Research Methods for Business: A Skill Building Approach, John Wiley and Sons.

Shannon, C. E., & Weaver, W. (1949). The mathematical theory of communication. Urbana, IL: University of Illinois Press. Retrieved November 5, 2018 from http://math.harvard.edu/~ctm/home/text/others/shannon/entropy/entropy.pdf

Shareef, M. A., Kumar, U., Kumar, V., and Dwivedi, Y. K. (2009). Identifying critical factors for adoption of e-government. Electronic Government, an International Journal, vol. 6, pp. 70-96. Retrieved November 4, 2018 from Science Direct.

Sharma, S.K. (2014). Adoption of e-government services: The role of service quality dimensions and demographic variables. Retrieved December 4, 2018 from Emerald Insight.

Siau, K., & Long, Y. (2005). Synthesizing e-Government stage models—A meta syn-thesis based on meta-ethnography approach. *Industrial Management and DataSystems*, *105*(4), 443–458. Skatteministeriet, (2018). Fra en til syv. Retrieved November 20, 2018 from https://www.fra1til7.dk/

Straub, D., Gefen, D., and Boudreau, M. C. (2005), Quantitative Research,In Research in Information Systems, A Handbook for Research Supervisors and Their Students, Avison, D. and Pries-Heje, J. ed., Elsevier, Amsterdam. Retrieved November 4, 2018 from Science Direct.

Teddlie, C. and Yu, F. (2007). Mixed Methods Sampling: A Typology With Examples. Journal of Mixed Methods Research, vol. 1, no. 1, pp. 77-100. Retrieved November 4, 2018 from SagePub.

Teo, T., and Wong, P. 1998. An Empirical Study of the Performance Impact of Computerization in the Retail Industry. Omega (26:5), pp 611-621. Retrieved November 4, 2018 from Research Gate.

Teo T. S. H., Srivastava, S. C., and Jiang, Li. (2008). Trust and Electronic Government Success: An Empirical Study. Journal of Management Information Systems, vol. 25, no. 3, pp. 99-131. Retrieved december 4, 2018 from ScienceDirect.

Torkzadeh, G. and Doll, WJ. (1994). The development of a tool for measuring the perceived impact of information technology on work. Omega 27(3), 327–339. Retrieved January, 2019 from Research Gate.

UN E-government Knowledgebase (2018). United Nations E-government survey 2018. Retrieved 10 december 2018 from https://publicadministration.un.org/egovkb/Portals/egovkb/Documents/un/2018-Survey/E-Government%20Survey%202018_FINAL%20for%20web.pdf

United Nations/American Society for Public Administration (UN/ASPA). (2002). Benchmarking e-government: A global perspective. UN/ASPA: New York. Retrieved November 9, 2018 from ScienceDirect.

Urbach, Nils & Mueller, Benjamin. (2011). The Updated DeLone and McLean Model of Information Systems Success. 10.1007/978-1-4419-6108-2_1.

W.J. Doll, G. Torkzadeh. The measurement of end-user computing satisfaction MIS Quarterly, 12 (2) (1988), pp. 259-274. Retrieved January 4, 2019 from Research Gate.

Wang, Y, Liao, Y, (2008). Assessing eGovernment systems success: A validation of the DeLone and McLean model of information systems success. Government Information Quarterly, 2008, Vol.25(4), pp.717-733. Retrieved december 4, 2018 from ScienceDirect.

Wang, Y. S. and Liao, Y. W. (2008). Assessing e-Government systems success: a validation of the DeLone and McLean model of information systems success. Government Information Quarterly, vol. 25, no. 4, pp. 717-733. Retrieved October 8, 2018 from ScienceDirect.

Wangpipatwong, S. and Chutimaskul, W. (2005). e-Government Web Quality Assessment: A Citizen-Centric Approach. Proceedings of the 9th IASTED International Conference on Internet and Multimedia Systems and Applications. USA pp. 65-68. Retrieved december 4, 2018 from http://ijcim.th.org/SpecialEditions/v13nSP3/pdf/p14-1-7-Factors%20Influencing.pdf.

Wang Y. S, Wang, H. Y & Shee, D.Y (2007). Measuring e-learning systems success in an organizational context: Scale development and validation, Computers in Human Behavior, 23, pp. 1792–1808. Retrieved January 20, 2019 from Science Direct.

WASEDA, (2018). The 14th waseda - IAC International Digital Government Rankings 2018 Report. Retrieved January 20, 2019 from http://www.e-gov.waseda.ac.jp/pdf/The_2018_Waseda-IAC_Digital_Government_Rankings_Report.pdf.

Weill, P., and Vitale, M. 1999. Assessing the Health of an Information Systems Applications Portfolio: An Example from Process Manufacturing. Mis Quarterly (23:4), pp 601- 624. Retrieved January 20, 2019 from Science Direct.

Weston, R., (2006). A Brief Guide to Structural Equation Modeling. Retrieved January 20, 2019 from Sage Journals.

Willcocks, L. (1992). Evaluating information technology investments: Research findings and reappraisal. Journal of Information Systems, 2(3), 243–268.

Wilson, J. (2010), Essentials of Business Research: A Guide to Doing your Research Project, Sage Publications.

World Bank (2010), Definition of E-Government. Retrieved October 20, 2018 from http://go.worldbank.org/M1JHE0Z280

Wu, J.-H., and Wang, S.-C., 2005. What Drives Mobile Commerce? An Empirical Evaluation of the Revised Technology Acceptance Model, Information & Management, 42(5). Retrieved December 20, 2018 from Science Direct.

Y.-S. Wang, T.-I. Tang. Assessing customer perceptions of Websites service quality in digital marketing environments Journal of End User Computing, 15 (3) (2003), pp. 14-31. Retrieved November 10, 2018 from Research Gate.

Yen, D.C., Evans, D., (2006). E-Government: Evolving relationship of citizens and government, domestic, and international development. Retrieved November 10, 2018 from Research Gate.

Yildiz, M. (2007). E-government research: Reviewing the literature, limitations, and ways forward. Government Information Quarterly, vol. 24, pp. 646-665. Retrieved November 28, 2018 from Research Gate.

Yin, R. K., (2003) Applications of case study research, Newbury Park, CA, Sage Publications.

Young-Jin, S. and Seang-Tae, K. (2007). E-Government concepts, measures and best practices. in extend and respecify the DeLone and McLean model of IS success. Journal of Electronic Commerce Research, vol. 2, no. 4, pp. 131-141. Retrieved January 4, 2019 from Research Gate.

Yuthas, K., Young, S.T., (1998). Material matters: Assessing the effectiveness of materials management IS. Retrieved November 10, 2018 from Science Direct.

Zaidi, S.F.H., (2017). E-Government Services Effectiveness Evaluation Framework (E-GEEF) A Case Study of Indian E-tax Service. Retrieved February 16, 2019 from http://repository.londonmet.ac.uk/1254/1/Syed-Faizan%20-%20Final%20-%20PhD%20Thesis.pdf?fbclid=IwAR3eS51_7eVLItTsWxhsnorrNMTgMfPBX47pA1uBaXFsmCfmqj0IRrh9d6s.

Appendix A. Survey used in this study

This is the questionnaire, which is used in this study in screenshots taken from Survey Monkey.

Businesses use of Skat.dk

Based on your experience with skat.dk tast-selv erhverv, the questions below will ask you to indicate to what extent you agree or disagree with the following statements. This is regarding the general use of the system. Remember that even if you had limited experience with the system, ran into problems or otherwise, any reflections on the questions is appreciated.

1. Age

- ◯ 18-25
- ◯ 26-35
- ◯ 36-45
- ◯ 45-

2. Gender

- ◯ Male
- ◯ Female

3. Skat.dk tast-selv is user friendly

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

4. The e-government system (Skat.dk tast-selv) is easy to navigate in

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

5. Using skat.dk tast-selv I have the information I need in time

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

6. Skat.dk provides the exact information I need to complete filing information on tast-selv.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

7. On Skat.dk I can easily find the precise information whenever I need.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

8. Skat.dk provides up-to-date information

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

9. Skat.dk key-yourself service given you individual attention

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

10. You feel safe in your transactions with the e-government system service.

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

11. Skat.dk is available and running at all times

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

12. I frequently use skat.dk

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

13. I am dependent on using Skat.dk tast-selv

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

14. I am satisfied with skat.dk tast-selv

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

15. Skat.dk tast-selv meets all my expectations

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

16. Skat.dk provides a service that is exactly what I need

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

17. Skat.dk makes it easier for me to providing them with the information I need to

- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

18. Skat.dk saves me time in filing information

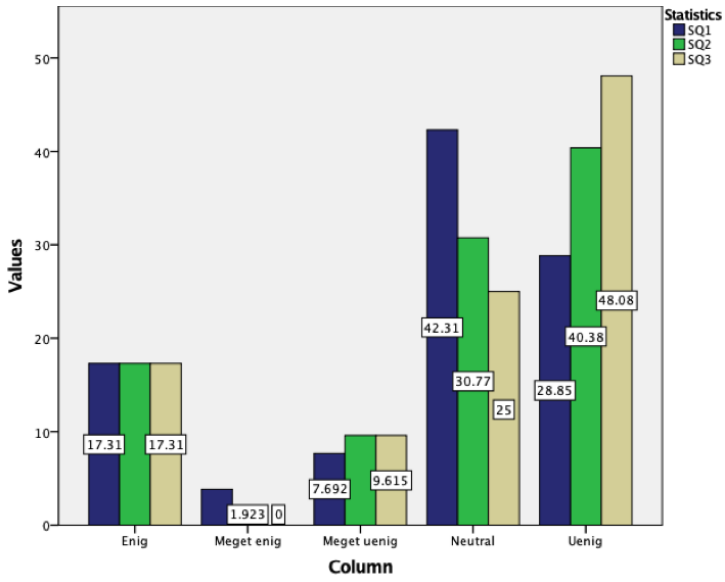
- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly disagree

19. Skat.dk tast-selv saves me money (that I might have used on an accountant or other help)

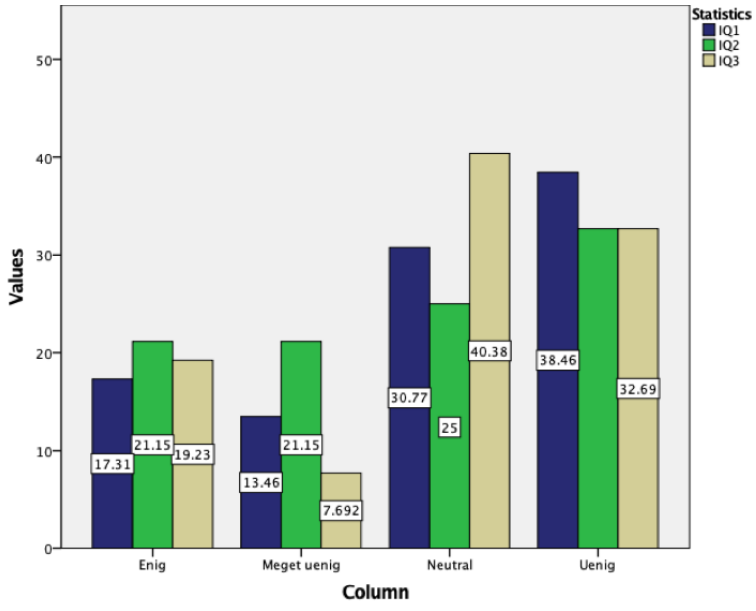
- ◯ Strongly agree
- ◯ Agree
- ◯ Neutral
- ◯ Disagree
- ◯ Strongly agree

Appendix B. Descriptive analysis of each questionnaire item

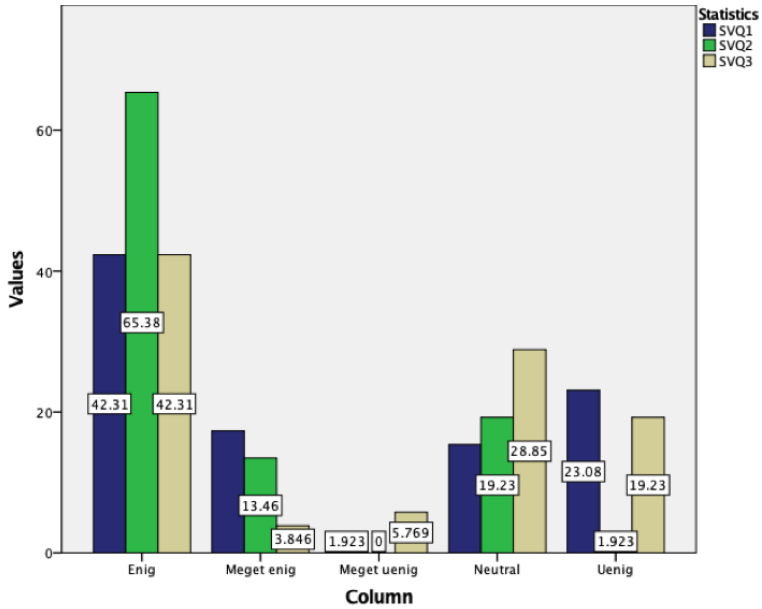
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
SQ1	3.8%	17.3%	42.3%	28.8%	7.7%
SQ2	1.9%	17.3%	30.8%	40.4%	9.6%
SQ3	0.0%	17.3%	25.0%	48.1%	9.6%



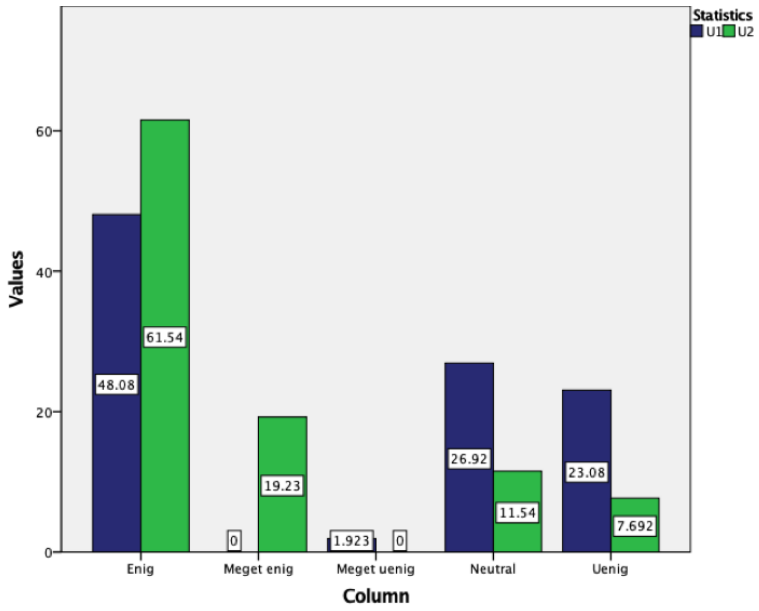
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
IQ1	0.0%	17.3%	30.8%	38.5%	13.5%
IQ2	0.0%	21.2%	25.0%	32.7%	21.2%
IQ3	0.0%	19.2%	40.4%	32.7%	7.7%



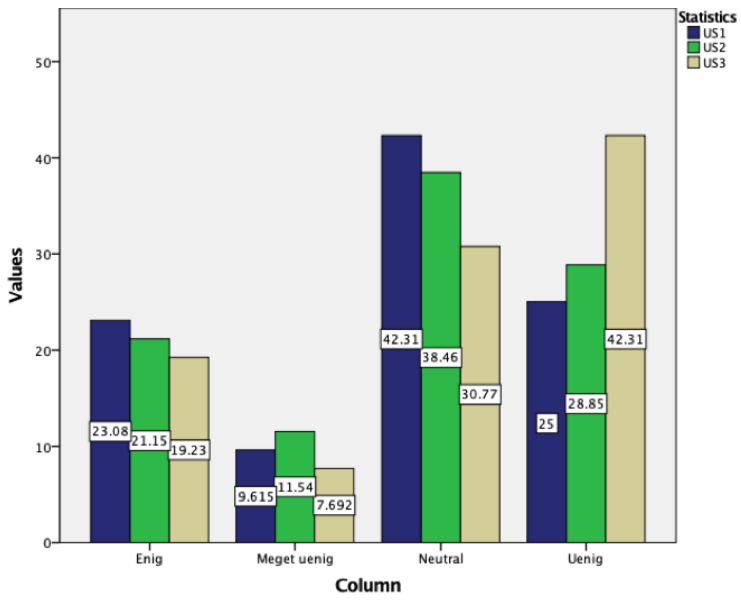
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
SVQ1	17.3%	42.3%	15.4%	23.1%	1.9%
SVQ2	13.5%	65.4%	19.2%	1.9%	0.0%
SVQ3	3.8%	42.3%	28.8%	19.2%	5.8%



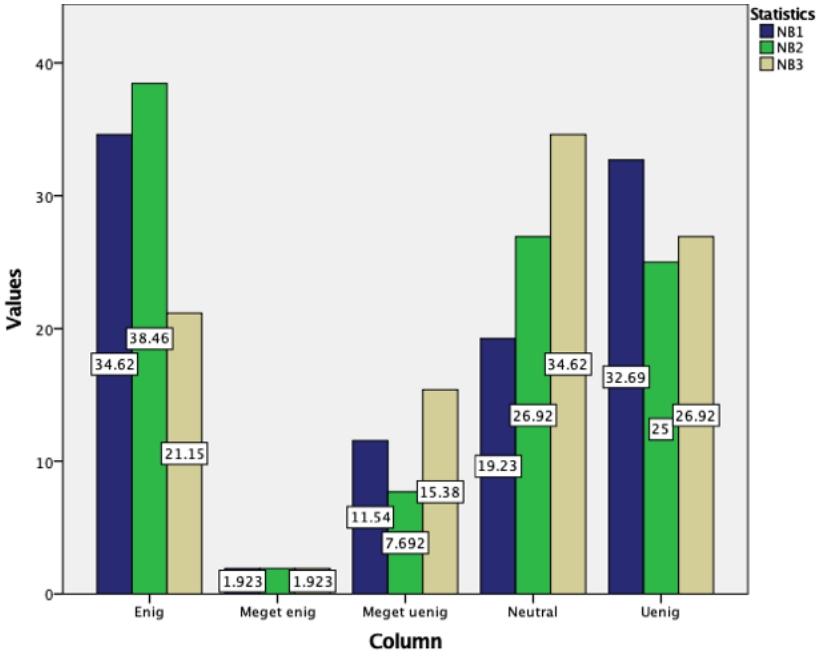
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
U1	0.0%	48.1%	26.9%	23.1%	1.9%
U2	19.2%	61.5%	11.5%	7.7%	0.0%



	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
US1	0.0%	23.1%	42.3%	25.0%	9.6%
US2	0.0%	21.2%	38.5%	28.8%	11.5%
US3	0.0%	19.2%	30.8%	42.3%	7.7%



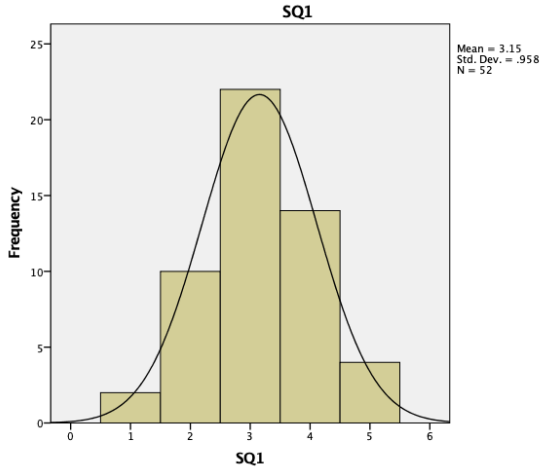
	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
NB1	1.9%	34.6%	19.2%	32.7%	11.5%
NB2	1.9%	38.5%	26.9%	25.0%	7.7%
NB3	1.9%	21.2%	34.6%	26.9%	15.4%

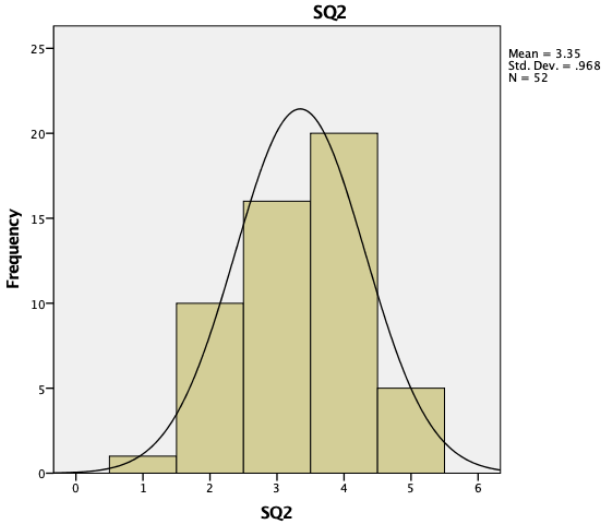


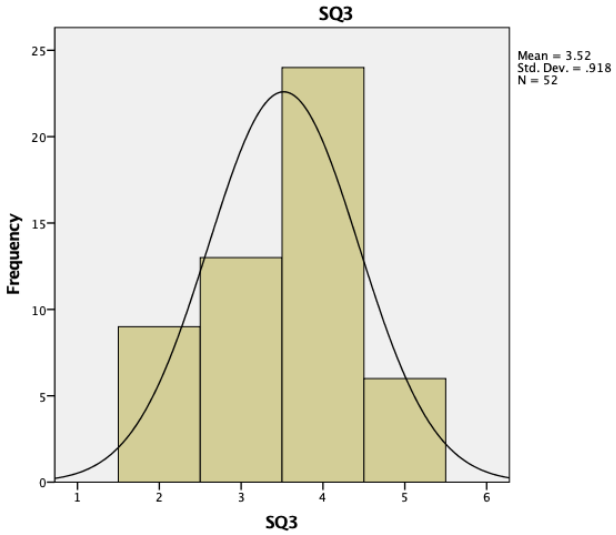
Appendix C. Distribution analysis of each questionnaire item

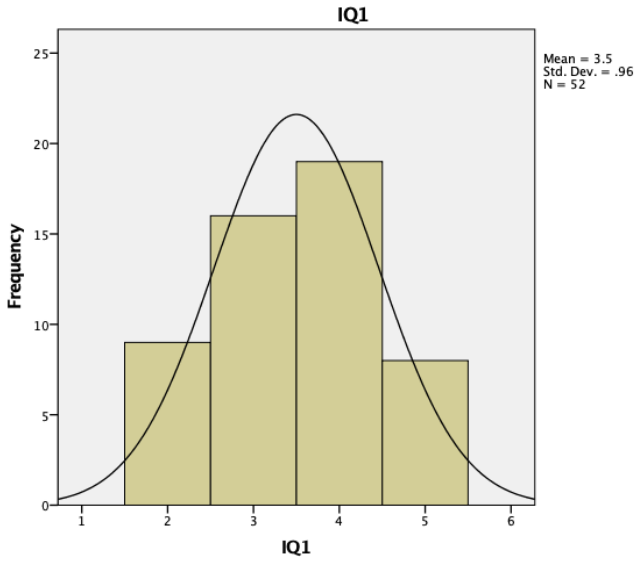
Statistics									
	SQ1	SQ2	SQ3	IQ1	IQ2	IQ3	SVQ1	SVQ2	SVQ 3
N	52	52	52	52	52	52	52	52	52
Mean	3.15	3.35	3.52	3.50	3.54	3.31	2.52	2.10	2.85
Std. Deviation	.958	.968	.918	.960	1.056	.875	1.075	.634	.998
Skewness	-.041	-.220	-.296	-.069	-.105	.073	.391	.402	.444
Kurtosis	-.184	-.559	-.731	-.893	-1.172	-.692	-.871	.892	-.557

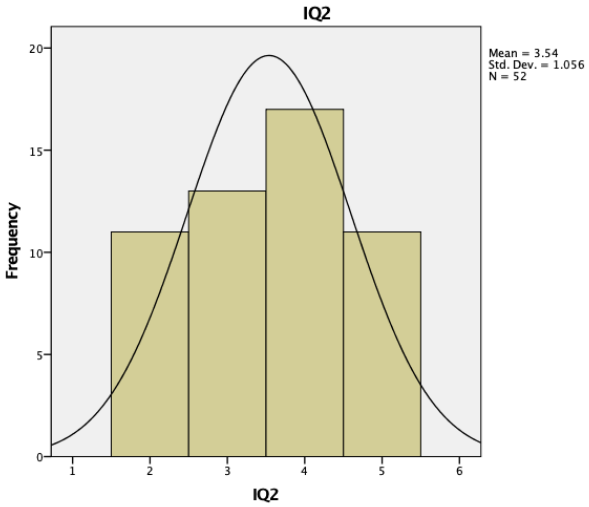
Statistics								
	U1	U2	US1	US2	US3	NB1	NB2	NB3
N	52	52	52	52	52	52	52	52
Mean	2.83	2.13	3.17	3.31	3.40	3.23	3.02	3.35
Std. Deviation	.879	.886	.923	.940	.891	1.113	1.019	1.046
Skewness	.532	1.134	.420	.218	-.216	.053	.307	-.001
Kurtosis	-1.040	1.670	-.572	-.785	-.805	-1.200	-.903	-.801

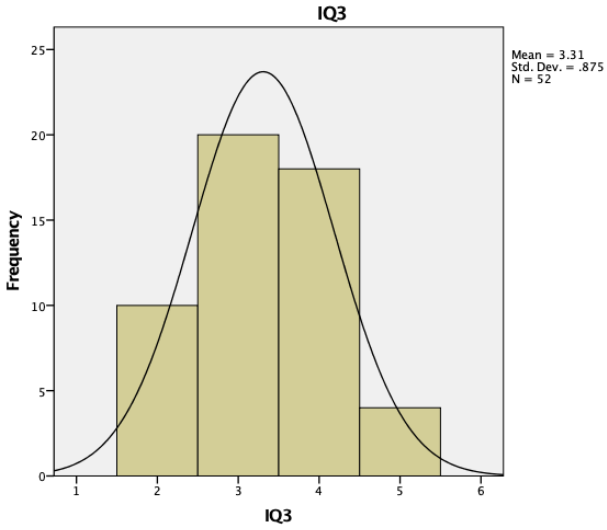


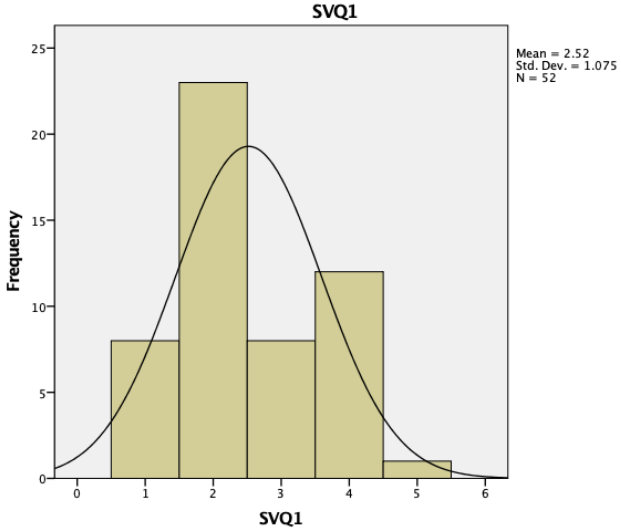

SQ2
Mean = 3.35
Std. Dev. = .968
N = 52
Frequency
SQ2

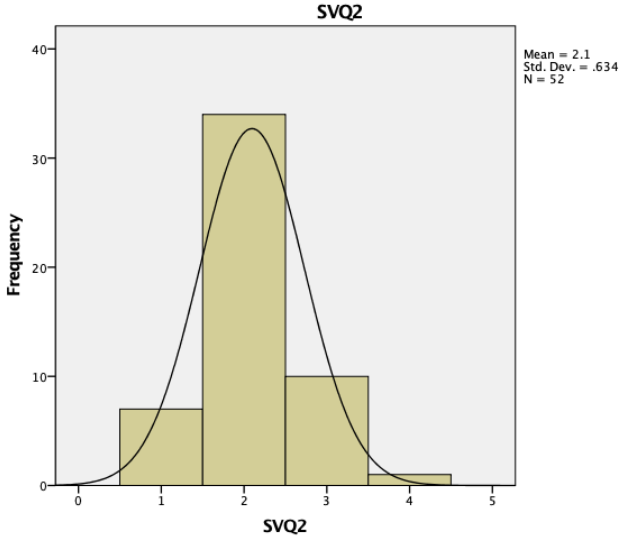

SQ3
Mean = 3.52
Std. Dev. = .918
N = 52
Frequency
SQ3

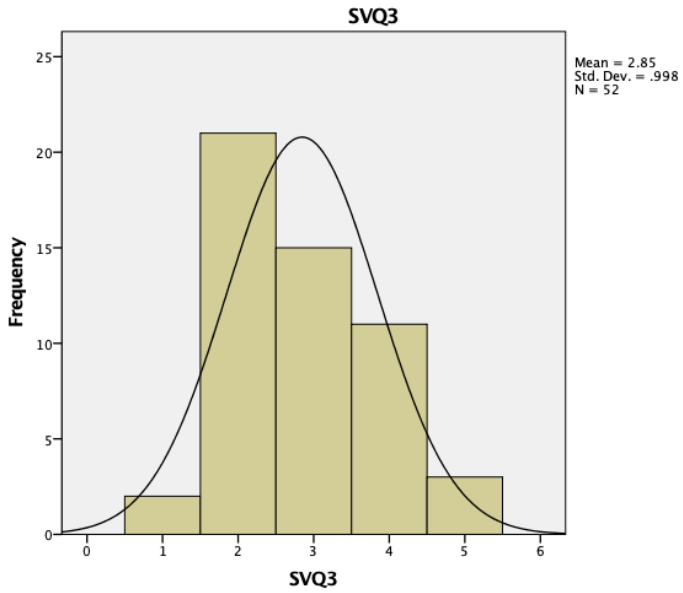

IQ1
Mean = 3.5
Std. Dev. = .96
N = 52
Frequency
IQ1

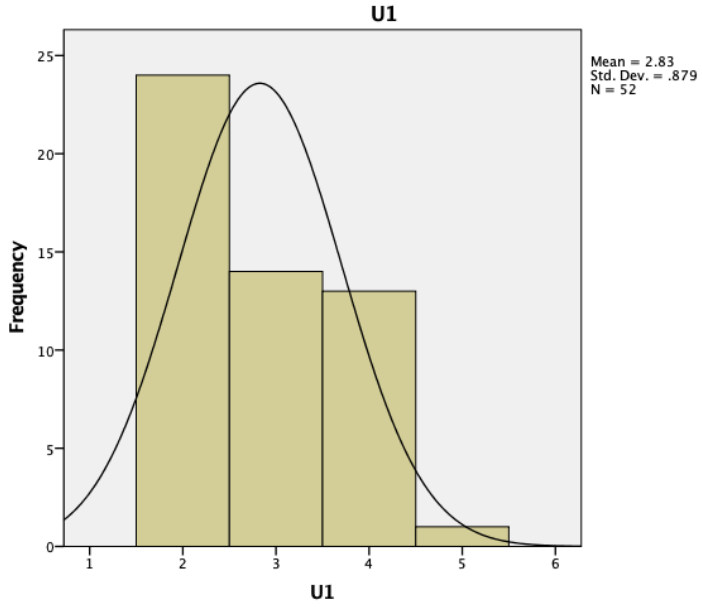

IQ2
Mean = 3.54
Std. Dev. = 1.056
N = 52
Frequency
IQ2

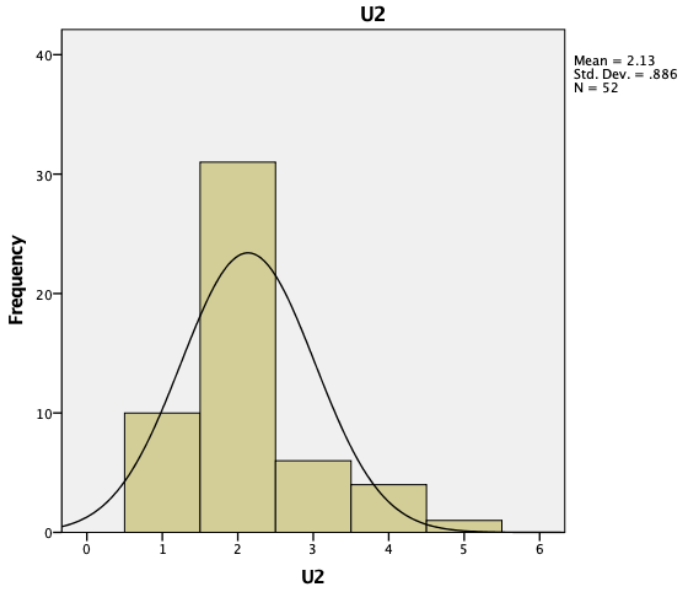

IQ3
Mean = 3.31
Std. Dev. = .875
N = 52
Frequency
IQ3

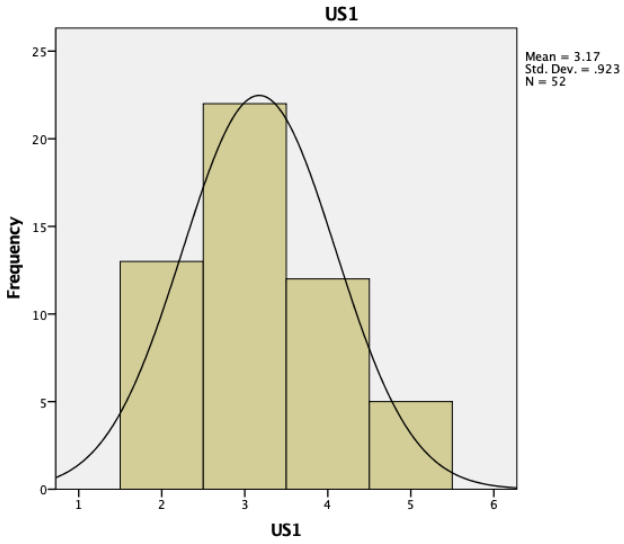

SVQ1
Mean = 2.52
Std. Dev. = 1.075
N = 52
Frequency
SVQ1

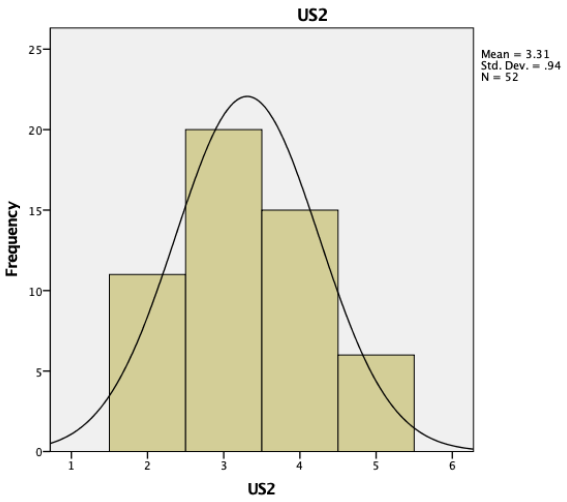

SVQ2
Mean = 2.1
Std. Dev. = .634
N = 52
Frequency
SVQ2

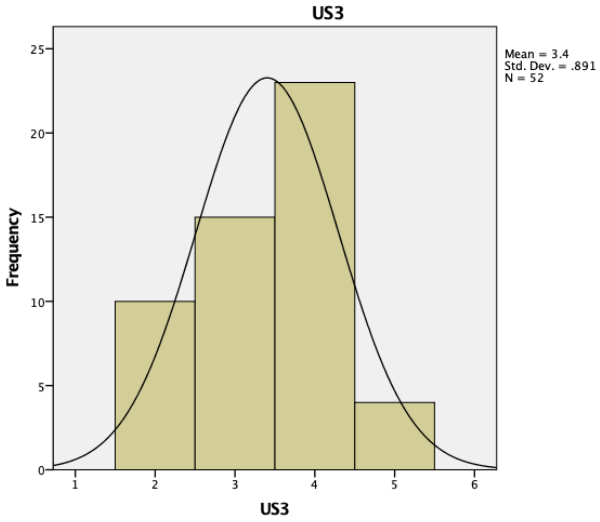

SVQ3
Mean = 2.85
Std. Dev. = .998
N = 52
Frequency
SVQ3

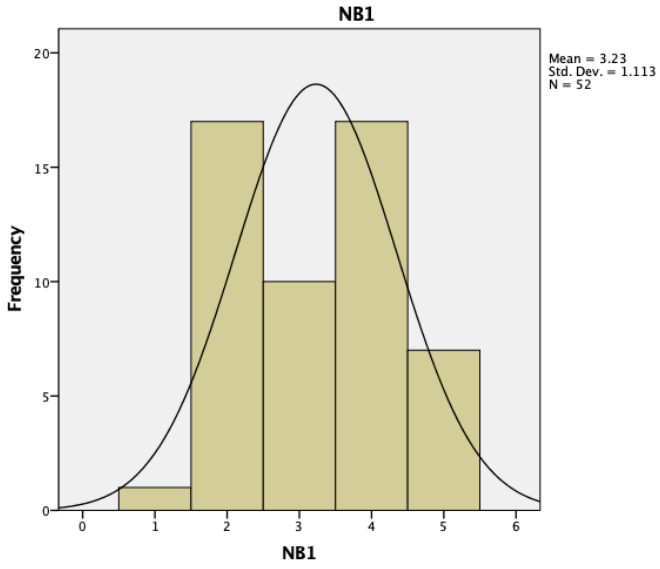

U1
Mean = 2.83
Std. Dev. = .879
N = 52
Frequency
U1

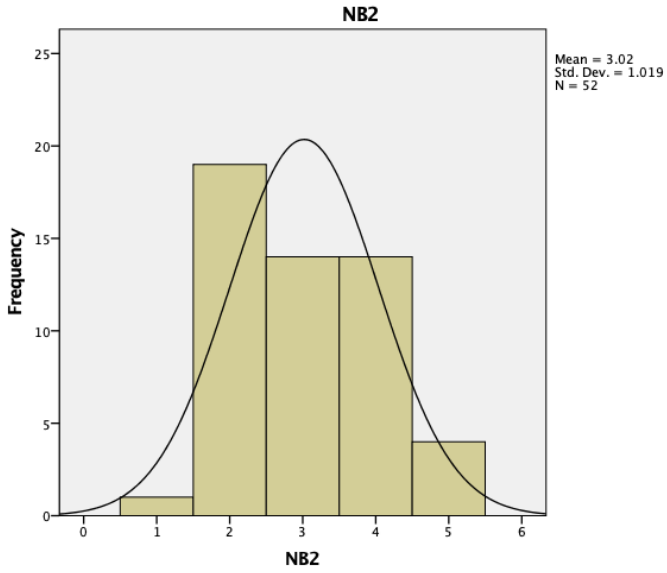

U2
Mean = 2.13
Std. Dev. = .886
N = 52
Frequency
U2

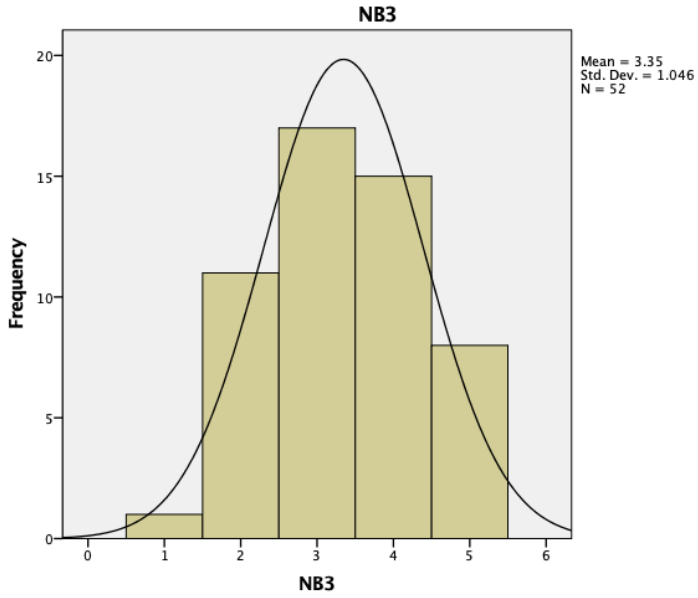

US1
Mean = 3.17
Std. Dev. = .923
N = 52
Frequency
US1


US2
Mean = 3.31
Std. Dev. = .94
N = 52
Frequency
US2


US3
Mean = 3.4
Std. Dev. = .891
N = 52
Frequency
US3


NB1
Mean = 3.23
Std. Dev. = 1.113
N = 52
Frequency
NB1


NB2
Mean = 3.02
Std. Dev. = 1.019
N = 52
Frequency
NB2


NB3
Mean = 3.35
Std. Dev. = 1.046
N = 52
Frequency
NB3