THE SUCCESSFUL FACTORS OF GFMIS IN JORDAN: MODERATING ROLES OF TRAINING AND USER INVOLVEMENT

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ABSTRACT

The Government Financial Management Information System (GFMIS) was initiated by the Government of Jordan (GoJ) in 2010, to replace the 'closed' financial management system that was previously used by various government agencies. Despite its potential to enhance efficiency and effectiveness of the government's financial management, GFMIS has encountered several user-related issues that might affect user behaviour, intention to use, continuous usage, system users satisfaction, and ultimately, the success of GFMIS. Despite extensive efforts to understand these phenomena, documented studies on the success of GFMIS are not altogether consistent. Hence, this study developed a research model utilising DeLone and McLean's information systems (IS) success model to identify the determinants of successful GFMIS implementation among the Jordanian public employees. A total of 654 questionnaires were self-administrated to GFMIS users in 52 Jordanian government organisations. Data analysis on 257 usable responses was carried out using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results indicate that 13 out of 15 hypothesised relationships are significantly supported. The results suggest that information quality and service quality have a positive impact on GFMIS use/user satisfaction, while system quality has only a significant effect on GFMIS use. GFMIS use also has a positive effect on user satisfaction. Both use and user satisfaction are significant in predicting net benefits. Moreover, the results prove that user resistance is the determinant of GFMIS use and user satisfaction. The results further support the moderating role of user involvement, while partially support the moderating role of training. This study offers both theoretical and practical contributions. Theoretically, this study tests the IS success model on a new e-government system and extends the IS success model by incorporating user resistance, training, and user involvement. Practically, this study provides relevant authorities with insightful evidence in successfully managing e-government project.

Keywords: DeLone and McLean's IS success model, e-Government, GFMIS, IS success, Jordan.

ABSTRAK

Sistem Pengurusan Kewangan Krajaan (GFMIS) telah dilaksanakan oleh kerajaan Jordan (GoJ) pada tahun 2010 bagi menggantikan sistem pengurusan kewangan tertutup yang diguna pakai sebelum ini oleh pelbagai agensi kerajaan. Walaupun berpotensi untuk meningkatkan kecekapan dan keberkesanan pengurusan kewangan kerajaan, GFMIS menghadapi beberapa isu berkenaan pengguna yang boleh memberi kesan terhadap tingkah laku penggunaan, niat untuk menggunakan, penggunaan berterusan, tahap kepuasan pengguna sistem, dan akhir sekali kejayaan GFMIS itu sendiri. Walaupun terdapat usaha yang meluas untuk memahami fenomena ini, namun, hasil kajian lepas tentang keberjayaan sistem GFMIS adalah tidak konsisten. Justeru, kajian ini membangunkan model penyelidikan menggunakan model kejayaan sistem maklumat *DeLone and McLean* untuk mengenal pasti penentu kejayaan pelaksanaan GFMIS dalam kalangan kakitangan awam di Jordan. Sebanyak 654 soal selidik tadbir kendiri diedarkan kepada pengguna GFMIS di 52 buah organisasi kerajaan di Jordan. Data analisis terhadap 257 maklum balas yang boleh diguna pakai dilaksanakan menggunakan Pemodelan Persamaan Berstruktur – Kuasa Dua Terkecil Separa (PLS-SEM). Dapatan kajian mendapati 13 daripada 15 hubungan hipotesis disokong secara signifikan. Hasil menunjukkan kualiti maklumat dan kualiti perkhidmatan mempunyai kesan positif kepada penggunaan GFMIS/kepuasan pengguna, manakala kualiti sistem hanya mempunyai kesan signifikan terhadap pengunaan GFMIS. Penggunaan GFMIS turut mempunyai kesan positif kepada kepuasan pengguna. Penggunaan dan kepuasan pengguna turut signifikan dalam meramal manfaat bersih *(net benefits)*. Hasil kajian juga membuktikan bahawa rintangan pengguna *(user resistance)* merupakan penentu kepada penggunaan GFMIS dan kepuasan pengguna. Hasil kajian ini selanjutnya menyokong peranan penyederhanaan keterlibatan pengguna *(user involvement)*, dan hanya menyokong sebahagian peranan penyederhanaan latihan. Kajian ini memberikan sumbangan secara teori serta praktikal. Secara teorinya, kajian ini menguji model kejayaan sistem maklumat pada sistem e-kerajaan yang baharu serta memperkemaskan model kejayaan sistem maklumat dengan menggabungkan rintangan pengguna *(user resistance)*, latihan *(training)*, dan keterlibatan pengguna ke dalam model sedia ada. Secara praktikal, kajian ini turut menyediakan bukti berguna kepada pihak berkuasa berkaitan dalam memastikan kejayaan menguruskan projek e-kerajaan.

Kata kunci: Model kejayaan Sistem Maklumat DeLone dan McLean, e-kerajaan, GFMIS, kejayaan sistem maklumat, Jordan.

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CSFs	Critical success factors
DUR	Drug Utilisation Review system
e-Government	Electronic government
ERP	Enterprise Resources Planning
FMIS	Financial Management Information System
FRP II	Second Fiscal Reform Project
GoJ	Government of Jordan
G2B	Government to Business
G2C	Government to Citizens
G2E	Government to Employees
GFMIS	Government financial management information system
G2G	Government-to-Government
HRMIS	Human resources management information system
ICT	Information and communication technology
IMF	International Monetary Fund
IQ	Information quality
IS	Information systems
ISTD	Income and Sales Tax Department
IT	Information technology
LR	Literature Review
KMS	Knowledge management system
MDAs	Ministries, departments and government agencies
MoF	Ministry of Finance

MoHE	Ministry of Higher Education
MoICT	Ministry of Information and Communications Technology
MoPIC	Ministry of Planning and International Cooperation
MIS	Management Information System
NB	Net benefits
OECD	Organisation for economic co-operation and development
OGP	Open Government Partnership
PFM	Public Financial Management
PLS	Partial Least Squares
PLS-SEM	Partial Least Squares-Structural Equation Modeling
SEQ	Service quality
SPSS	Statistical Package for Social Science
SYQ	System quality
T	Training
TAM	Technology acceptance model
U	Use
UI	User involvement
UR	User resistance
US	User satisfaction
USAID	United States Agency for International Development
WB	World Bank

CHAPTER 1

INTRODUCTION

1.1 Background of the Study

Developing countries have been facing many challenges, for example, financial distortions, defective resource allocation, corrupt practices, and budgetary deficits (Diamond & Khemani, 2006; Shah, 2007). These challenges have adversely affected business operations, economic growth, and society at large (Shah, 2007). As part of the measures to counter these challenges, developing countries are encouraged to improve their public financial management (PFM) (Khan & Pessoa, 2010).

PFM reforms have been recognised as a driving force that can help in raising, managing, and spending public resources in an effective and transparent way (Kahari, Gathogo, & Wanyoike, 2015). PFM could enable efficient public service delivery, create wealth and employment, and improve economic growth and development (Dener, Watkins, & Dorotinsky, 2011; Mburu & Ngahu, 2016). Effective PFM expedites decision-making on financial policies by supplying relevant, accurate, and reliable information, and improves transparency and accountability of public financial reporting (International Budget Partnership, 2015; Khan & Pessoa, 2010; Transparency International, 2016).

Diamond and Khemani (2006) revealed that budget execution and accounting processes, in most developing countries, were or are either manual or supported by archaic and ineffective software applications. The use of manual or archaic methods would have a detrimental impact on the functioning of PFM systems and the reliability, timely processing of information for budget planning and reporting. Moreover, an old and archaic budgeting process has negatively affected budget management and resulted in a poorly controlled commitment of government resources, and misallocation of resources (Diamond & Khemani, 2006). Consequently, governments are facing difficulties in providing accurate, complete, and transparent reporting of their financial positions, while the shortage of information has hindered transparency and the accountability in the governments (Diamond & Khemani, 2006; United States Agency for International Development [USAID], 2008).

In light of these abnormal situations, the World Bank asserted that e-Government is a vital mechanism to improve PFM and to extend transparency of the decision-making process by enabling access to more relevant information (World Bank, 2015). The e-Government system, known as Government Financial Management Information System (GFMIS), assists in more effective and efficient dissemination of the governments proceedings, as well as accelerates the preparation of governments budgets. Specifically, GFMIS is a computer-based system that potentially improves PFM of the government by enhancing financial control, budget management, and reporting (USAID, 2014a; World Bank, 2015). Diamond and Khemani (2006) characterised GFMIS as relevant, accurate, up-to-date, sufficient, and reliable to meet the information demands of the users. The establishment of a GFMIS has consequently become a precondition for a more effective PFM (USAID, 2008; Youssef & Alsharari, 2017).

Jordan, as one of the developing countries, is also facing a myriad of challenges in managing its public finances. These challenges are as a result of limited budget information, corrupt practices, financial distortions, and budgetary deficits (Ministry of Planning and International Cooperation [MoPIC], 2015; MoPIC, 2005). Over the last decade, the government has been offering limited budget-related information to the public (International Budget Partnership, 2015). Furthermore, corrupt practices are reported as one of the challenges facing the country (Transparency International, 2016). Notwithstanding the fact that the government has made progress in transforming its PFM, there are many opportunities to further reduce the fiscal deficit, which needs far-reaching reforms to improve budget performance and increase government efficiency, transparency, and accountability (MoPIC, 2005).

As a result, the Government of Jordan (GoJ) launched the second Fiscal Reform Project II (FRP II) in 2009, one of the USAID projects to meet the objectives of Jordan's bold National Agenda (USAID, 2011a). One of the objectives of setting up the FRP II is to deliver its obligations to the public sector by enhancing PFM (USAID, 2014a). This is in line with the fundamental objectives of the FRP II, which include: (i) to improve the efficiency of public resources through robust PFM strategies; (ii) to implement an initiative to have a results-oriented government; (iii) to expand revenue administration; (iv) to open up better frontiers for greater revenue collection; (vi) to implement resource-saving reforms by ensuring thorough policy analysis by the Ministry of Finance (MoF); and (vii) to boost cross-border trading activities (USAID, 2013; Youssef & Alsharari, 2017). Thus, to meet these objectives, FRP II has six strategic components, namely, Tax Revenue Mobilisation, PFM, MoF's Capacity and Organisation, Customs Administration and Trade Facilitation, Results-Oriented Government, and GFMIS (USAID, 2011b). This indicates that GFMIS is considered as one of the crucial aspects of the extensive PFM reforms.

GFMIS assists the government to enhance the efficiency and effectiveness of PFM by enhancing fiscal performance, budgeting, transparency, coordination, and public accountability (Alsharari & Abougamos, 2017; Intrasoft International, 2012; Open Government Partnership [OGP], 2013). The GFMIS is an integrated IS that replaces a 'closed' system that was previously used by the government and its agencies (GFMIS, 2016). The system consolidates accounting and financial information from all Ministries, Departments, and Government Agencies (MDAs) under one network (server) controlled and managed by the MoF (Intrasoft International, 2012; USAID, 2014a; Youssef & Alsharari, 2017). Given this, the GoJ implemented GFMIS to replace outdated financial management systems (Youssef & Alsharari, 2017). The system is designed to automate the whole life-cycle process of budget preparation, budget execution, and financial reporting (Alsharari, 2013; Dener et al., 2011; Dener & Min, 2013; Shannak, 2015; USAID, 2012a). Therefore, it represents a consolidated accounting system used by all budget institutions (i.e., integrated system in the e-Government infrastructure) to implement their individual budgets, and to unify all public accounting procedures (Alsharari, 2013; Sawalha & Abu-Shanab, 2015; Youssef & Alsharari, 2017).

On the other hand, information systems (IS), such as GFMIS, if executed effectively, will be of benefit to the users (DeLone & McLean, 2016). The effectiveness of IS may be reflected in terms of time saving, improved job performance, and increased employee productivity; IS also makes the jobs easier (Shannak, 2015; USAID, 2012a; Urbach, Smolnik, & Riempp, 2010). Effective use of IS also facilitates the extraction of specific information required to perform different functions and tasks (Ibrahim & Dauda, 2014).

Although GFMIS offers extensive advantages that improve the government's financial functions and employees' performance, the expected benefits of the system, have, however, not often been fully accomplished (Combaz, 2015; USAID, 2012b). Hendriks (2012), for instance, reported that in some circumstances, there was an inability to make good use of the new system and the difficulty to benefit from its interoperability with other e-Government systems. This has resulted in losing opportunities that could strengthen fiscal transparency and accountability regarding the use of GFMIS (Una & Pimenta, 2015).

While focusing on the post-completion stage of GFMIS Project, Dener et al. (2011) and Khan and Pessoa (2010) observed that a number of factors potentially can lead to failure after the completion stage. These include weak project planning and preparation, inadequate training, inadequate technological infrastructure, institutional or organisational resistance, users' resistance, low users' involvement, organisational structure that does not fit well with the system, poor leadership commitment, and lack of adequate skills by the project team.

In the context of Jordan, several issues may affect the success of GFMIS during the implementation stage. The intention was to implement GFMIS in Jordan in March 2008. Unfortunately, the process was delayed until November 2010 due to communication breakdown (USAID, 2013; USAID, 2012a), and pre-implementation resistance among the users (USAID, 2013). Having said that, there is a growing need to educate and to effectively communicate the benefits of GFMIS to the managers and prospective users (USAID, 2011a).

Although GFMIS is perceived as an effective service-delivery tool for the government, its implementation in Jordan faced several operational challenges. First, Jordanian ministries and departments do not have strong leadership that can initiate and put in place a well-functioning system, such as GFMIS (Biggs, 2012; USAID, 2014a). This must have been occasioned by the lack of support from relevant agencies, which are responsible for managing the processes. Second, the increased number of government offices that are using GFMIS against the original estimated number when it was launched (USAID, 2014a; USAID, 2013). This caused system overburden during its implementation.

Third, as noted by OGP (2013), several issues related to the use of GFMIS involves non-provision of adequate information on the use of the GFMIS by the implementers (to the heads of the MDAs). Fourth, the GoJ has an inadequate number of experts and trainers to train users (USAID, 2014b). Due to a growing number of GFMIS users, more MoF trainers and longer training periods must be made available. In addition, the report also reveals outdated hardware to run the GFMIS as another area of concern (USAID, 2014b).

Fifth, a survey by FRP II evaluation team on GFMIS users has demonstrated that the system is not user-friendly and even slower than the legacy system (USAID, 2014a). Some respondents complained that the system is slow, as it has many windows which give rise to work duplication (USAID, 2014a), and that the system does not provide accurate outputs and results. There is also work delay due to frequent breakdowns which cause problems in service delivery. The users also complained that the maintenance team is less responsive to users' complaints and reports on the issues related to the system (USAID, 2014a). In a similar vein, some of the respondents opined that the GFMIS makes their work less efficient and burdensome in performing their routine jobs as well as difficulty in handling the system. USAID (2014a) also reported that approximately half of the respondents expressed their dissatisfaction with the number of training courses received. Likewise, one-third of the respondents were discontented with the quality of GFMIS-related training, while a group of users was not satisfied with the overall performance of GFMIS.

Sixth, in examining the adoption status of GFMIS in Jordan, Shannak (2015) also identified the issues that hindered its proper implementation, including the end users' opposition to the new system, their poor commitment to attending the necessary training courses, and their infrequent usage of the system. In studying employee acceptance of GFMIS, Sawalha and Abu-Shanab (2015) indicated that GFMIS is not well-developed enough to manage public financial transactions. Meanwhile, reports by the World Bank suggest that the GFMIS has yet to demonstrate substantial benefits for MDA employees (World Bank, 2015; World Bank, 2016a).

Seventh, reports by the World Bank (2016a, 2016b) suggest that the functions of GFMIS have not met all the budgetary requirements during both preparation and execution phases. Hence, GFMIS provides very little functionality for certain tasks. The reports of several agencies, such as AECOM (2017) and USAID (2018), indicate that in certain cases, GFMIS offers inadequate user information and unsuitable user content.

Finally, USAID (2017) reported about the underutilisation of GFMIS and its inability to function according to the needs of the MDAs. As such, the implementers, USAID and the GoJ need to further improve the operationalisation of GFMIS (USAID, 2017). Although GFMIS has been implemented in all MDAs complete with employee training on its usage, several MDAs continue to use older systems together with GFMIS, thus causing the latter to be underutilised and the MDA employees to be unsatisfied with the new system due to lack of insights into its benefits (USAID, 2018).

Although the benefits and prominence of GFMIS have been well-documented, the success of its implementation has been hindered by several issues (e.g., AECOM, 2017; Biggs, 2012; OGP, 2013; Shannak, 2015; Sawalha & Abu-Shanab, 2015; USAID, 2012a, 2013, 2014a, 2014b, 2017, 2018; World Bank, 2015, 2016a, 2016b), which in turn, has affected the full realisation of its benefits. Specifically, those agencies and studies have reported various issues pertaining to its successful implementation from users' perspective; in other words, several studies and reports have highlighted a particular concern with the users that have hindered the potential success of GFMIS. Thus, without its successful implementation, the net benefits of GFMIS would not be realised.

Therefore, governments play a significant role in ensuring the successful implementation of GFMIS so that the intended benefits can be attained. The success of GFMIS implementation is determined by the employees' level of acceptance, satisfaction, usage, attainment of benefits and perceived usefulness of the system (Sawalha & Abu-Shanab, 2015; USAID, 2018). Hence, studies on the success factors of GFMIS implementation are valuable research efforts in view of the growing number of governments adopting GFMIS. The findings are significant for improving the success rate of e-Government systems.

As this study examines the success of GFMIS implementation from the users' perspective, thus, following the arguments of Delone and McLean (2003), and Petter, DeLone, and McLean (2013; 2008), this study adopts six variables or components of IS success: system quality, information quality, service quality, use, user satisfaction, and net benefits. However, these six variables are not independent variables to measure success, but are interdependent variables. Accordingly, in the context of this study, it is important to investigate the GFMIS quality-related factors that subsequently contribute to its usage and user satisfaction, and in turn, net benefits. Towards this end, the widely popular IS success model by Delone and McLean (2003) is used as the theoretical foundation for explaining IS success based on the above-mentioned success measures (see sections 2.5 and 3.2.1). In short, the IS success model measures IS success from the perspective of the users using the abovementioned factors (Petter et al., 2008; Legner, Urbach, & Nolte, 2016).

This model is highly suitable for examining the identified research problem and is compatible with the study context and objectives. It is also a prominent model that has been widely used for explaining IS success (Petter et al., 2008; Petter & McLean, 2009). IS success has been examined across numerous contexts, including mobile banking systems (Tam & Oliveira, 2016); employee portals (Al-Debei et al., 2013); e-Government systems (Floropoulos et al., 2010); and e-learning systems (Kurt, 2018). In essence, the model has been employed as a fundamental theory, refined to suit the context of each study.

Despite being a highly-regarded framework for understanding the main dimensions of success and their interrelations, the IS success model has received numerous criticisms due to its disregard of a number of potential IS success factors (e.g., Aldholay, Abdullah, Ramayah, Isaac, & Mutahar, 2018; Sabherwal et al., 2006; Tam & Oliveira, 2016). The IS success model can be combined with other possible success factors which would allow studies on success in various contexts (Petter, DeLone, & McLean, 2013). Hence, this study addresses this issue by adding another three variables to the original IS success model that would facilitate a better explanation of GFMIS success in Jordan.

Based on the literature review, a number of past studies have used the IS success model to investigate the implementation of e-government systems (e.g., Floropoulos et al., 2010; Stefanovic et al., 2016). Not only have studies regarding the success of the GFMIS been scarce, but there has also been a lack of analysis of the impact of users' resistance to its success. As discussed earlier, several studies have reported that GFMIS is very complex, and this has led to an increase in the time required to perform the financial and accounting operations (e.g., Shannak, 2015; USAID, 2014a). This complicated work should be observed to help in improving the process of budget preparation and execution and financial reporting. However, although employees recognise its usefulness, they may consider it as a laborious task in their daily work. Thus, the process may invoke employees' resistance even if they use it under compulsion. Accordingly, this study focuses on the success of the GFMIS based on the augmented IS success model, and uses employee resistance as a socio-technological measure.

A number of studies using the IS success model have suggested a direct and positive correlation between IS usage/user satisfaction and its net benefits (e.g., Chang, 2014; Hou, 2012; Namisango, Kafuko, & Byomire, 2017). Others have indicated the insignificant or negative impact of increased IS usage/user satisfaction on employee performance (e.g., Gaardboe et al., 2017; Grise & Gallupe, 2000; Ramayah et al., 2012; Roky & Al Meriouh, 2015; Stratopoulos & Dehning, 2000; Vancauter et al., 2017). In the case of this study, it posits that the benefits of GFMIS are not realisable solely via system usage/user satisfaction. This means that there are other factors that contribute to the realisation of the system's net benefits.

Burton-Jones and Grange (2013) assumed that to achieve maximum benefits of using IS, the system must be used effectively. Ahearnea et al. (2005) argued further that technology might improve user effectiveness in theory; however, it will not do so if users have not received proper training. Norfazlina et al. (2016) suggested that training programmes should be provided by the organisation to mitigate the problems associated with the complexity of IS and high-task demands that exceed the users' attention, so that it would not adversely affect users' satisfaction and the consequent net benefits.

User involvement is another key factor that affects the correlation between IS usage/user satisfaction and the achievement of the net benefits (Ghobakhloo & Tang, 2015; Sappri & Baharudin, 2016; Sappri et al., 2016). According to Ghobakhloo and Tang (2015), user involvement has a positive effect on IS usage via the maximisation of cognitive skills when interacting with IS, which in turn, would improve overall user satisfaction and other net benefits. In addition, users involved in IS activities post-implementation would attain satisfaction from using the system. This would in turn, increase GFMIS usage and ultimately lead to the realisation of the anticipated net benefits (Sappri & Baharudin, 2016; Sappri et al., 2016). Accordingly, Sappri et al. (2016) recommended for the variable to be retained as a key construct in the IS success model because public sector employees prefer to be involved in the IS that they are currently using. Other studies have suggested that GFMIS usage/usage satisfaction can improve employee performance provided that there are proper user training and involvement (Combaz, 2015; Khan & Pessoa, 2010).

According to Sekaran and Bougie (2016), when the correlation between the independent and dependent variables becomes contingent upon another variable, the third variable is considered to have a moderating effect on the aforementioned relationship (Dawson, 2014; Sekaran & Bougie, 2016).

Based on the previous discussions, the present study examines the effect of GFMIS usage/user satisfaction on the attainment of the net benefits of GFMIS from the users' perspective. It has been suggested that a number of other factors could be significant in affecting the aforementioned relationship. This study suggests that the factors of training and user involvement play a moderating role in the studied relationship.

In a nutshell, GFMIS has several user-related issues that need to be addressed. These issues, if not being attended properly, will ultimately affect GFMIS extent of use, level of satisfaction with the system, and the net benefits from it (Petter, DeLone, & McLean, 2008, 2012, 2013). Peterson (2006) identified that failure and under-performance of the GFMIS systems are factors that predict failure to meet user requirements. Based on the literature review, research conducted on the e-Government system in Jordan, specifically on the success or failure of the GFMIS implementation, is scanty. The present study, therefore, investigates the factors that affect the success of GFMIS from the public employees' perspective.

1.2 Problem Statement

e-Government has continuously become a significant aspect in public sector organisations. Although its significance has been well-documented and numerous managerial insights on this topic are available, the success rate of the e-Government projects in the developing countries is rather low (Aladwani, 2016; Dwivedi et al., 2015; Twizeyimana & Andersson, 2019). The failure of e-Government projects is also rather common and continues to increase in most countries. As a result, e-Government failures cost governments millions of dollars each year and often prevent key objectives from being met (Dwivedi et al., 2015).

The successful implementation of e-Government has been fraught with challenges. Specifically, e-Government projects have encountered various challenges in its preparation as well as execution phases (Müller & Skau, 2015; United Nations, 2018). Although several countries have been encountering varying types of challenges and issues, there is no clear answer as to why those problems have occurred or are occurring.

In the context of Jordan, the government has initiated and implemented e-Government projects since 2001 (Hammouri & Abu Shanab, 2017). Nonetheless, despite the expectations of the GoJ, the e-Government Development Index, “which represents the degree of e-Government development for countries of United Nations”, indicates that the ranking of Jordan’s e-Government has dropped over the past 12 years as shown in Figure 1.1 (United Nations, 2020, 2018, 2016, 2014, 2012, 2010, 2008).

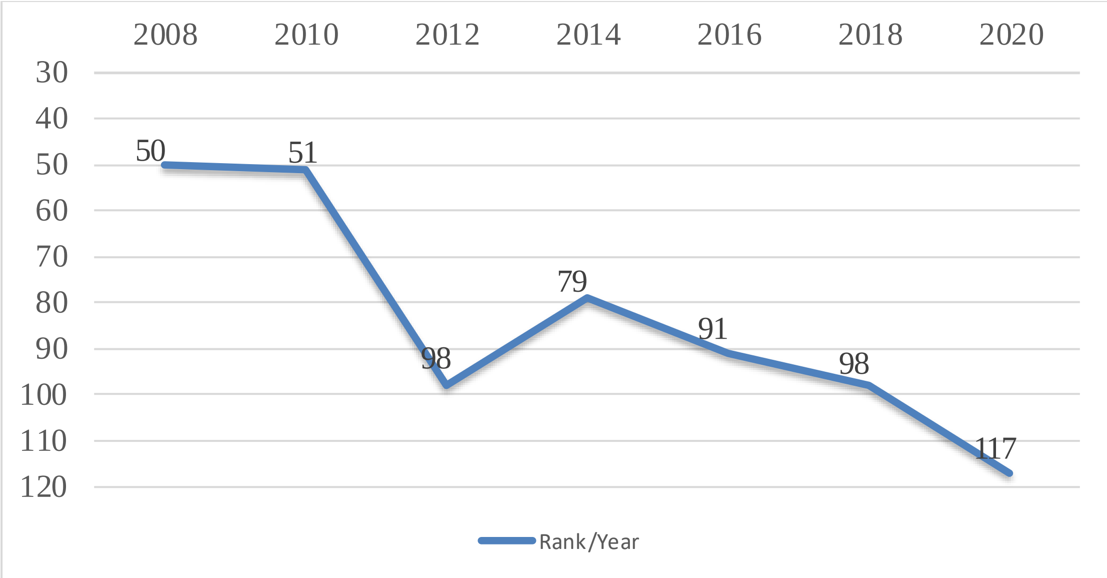


Figure 1.1 Jordanian e-Government Rank

Figure 1.1 depicts Jordan's ranking out of the 193 United Nations member countries between 2008 and 2020; the survey was carried out once every two years. Jordan's ranking dropped significantly in 2012 as compared to 2010 when the country was ranked 51st. Following a slight improvement in 2014, its ranking declined again in 2016 before dropping further to the 98th place in 2018. In 2020, Jordan is ranked 117th out of the 193 member countries.

In addition, the implementation of e-government in Jordan has been reported to be somewhat lagging relative to other countries in the Middle Eastern region (Al-Rawahna, Chen, & Hung, 2018; Al-Smady, 2017; MoPIC, 2015). A number of studies have also revealed the failure of a majority of e-government initiatives, thus indicating problems in the development and implementation phases (Al-Rawahna et al., 2018; Tbaishat & Khasawneh, 2015). As a consequence, the benefits and potential of the e-Government initiatives in Jordan have yet to be fully realised.

Researchers have identified the problems that can be caused by political, organisational, financial, social, technological, and human nature factors (Dos Santos & Reinhard, 2012; Sulehat & Taib, 2016). The GoJ has identified several factors related to the end-users, including insufficient incentives, inadequate support, resistance to change, language and digital divide, poor awareness, low education level, and lack of system training (Al-Rawahna et al., 2018; Al-Smady, 2017; Hammouri & Abu Shanab, 2017; Hammouri & Abu Shanab, 2017; Tadros & Alzubi, 2015; Tbaishat & Khasawneh, 2015). These challenges ultimately affect use and user satisfaction with the e-government system. This corresponds to the claim that use and user satisfaction remain the two most important criteria that determine the success of IS in an organisation (DeLone & McLean, 2003). As Alryalat, Dwivedi, and Williams (2013) further emphasised, an organisation's IS will not produce positive outcomes unless the end-users accept, adopt, and ultimately, use the system. In addition, earlier works on e-Government systems have demonstrated IS use and user satisfaction as among the most successful critical factors of its implementation (Al-Smady, 2017; Hammouri & Abu Shanab, 2017; Sulehat & Taib, 2016).

In 2010, the GoJ launched a new e-Government system, GFMIS, which replaced the outdated financial management systems (Alsharari, 2013; USAID, 2011a). The system aims to improve the government's performance by saving time, reducing corruption, improving service delivery efficiency, and increasing transparency and accountability, as well as facilitating better communications between governments and businesses. Besides, GFMIS was introduced to improve employees' performance by saving time and effort, reducing mistakes, increasing work efficiency, improving job performance, increasing productivity, and making jobs easier.

Despite the fact that the adoption of GFMIS has greatly improved the government's and employees' performance, owing to various difficulties encountered, a considerable number of international agencies and studies have critically evaluated the status of GFMIS implementation in Jordan (e.g., AECOM, 2017; Biggs, 2012; OGP, 2013; Sawalha & Abu-Shanab, 2015; Shannak, 2015; USAID, 2012a, 2013, 2014a, 2014b, 2017, 2018; World Bank, 2015, 2016a, 2016b). While those agencies have reported various issues pertaining to its implementation, some agencies have highlighted a particular concern with the users of the system that potentially has hindered the success of GFMIS (refer to section 1.1). Without its successful implementation, the net benefits of GFMIS cannot be realised.

Specifically, it appears that the success of GFMIS implementation from the users' perspective in Jordan has faced several challenges, which can be categorised into three broad characteristics: GFMIS overall quality-related factors, GFMIS user-related factors, and GFMIS organisational-related factors.

In terms of quality-related factors, GFMIS has been reported to be non-user-friendly, having slow access, and complicated. These issues in turn, have caused work redundancies, inefficiencies and increased burden in conducting routine jobs. Several reports have underlined issues related to the system's performance, accuracy of reporting, information content, and service or support quality by the maintenance team (AECOM, 2017; OGP, 2013; Sawalha & Abu-Shanab, 2015; Shannak, 2015; USAID, 2014a, 2018). The World Bank has also reported that the employees of MDAs do not receive the full benefits of GFMIS when performing their daily tasks (World Bank, 2015, 2016a).

In terms of user-related factors, a number of studies have highlighted issues regarding usage and user satisfaction levels. The reports by USAID (2017, 2018) have revealed the underutilisation of GFMIS in many MDAs. Several MDAs are reportedly still utilising their legacy systems along with GFMIS, indicating their non-satisfaction with the latter or a lack of perceived usefulness from using the new system (USAID, 2018). Several studies have highlighted the end users' resistance to the system, lack of commitment to training, and refusal to regularly use the system (Shannak, 2015; USAID, 2014a, 2018).

In terms of organisational-related factors, the reported issues on GFMIS are related to user training and user involvement. According to Shannak (2015), the end-users demonstrate a lack of commitment to attending GFMIS training courses. USAID (2014a, 2014b) has highlighted the dissatisfaction of some end-users with the training they have received. Some users are dissatisfied with the quality of GFMIS training, whilst some others are dissatisfied with their engagement level.

Based on the discussions above, the successful implementation of GFMIS from the perspective of Jordanian users appears to be facing a number of obstacles that can be broadly categorised into overall quality-related factors, user-related factors and organisational-related factors. Figure 1.2 summarises these challenges.

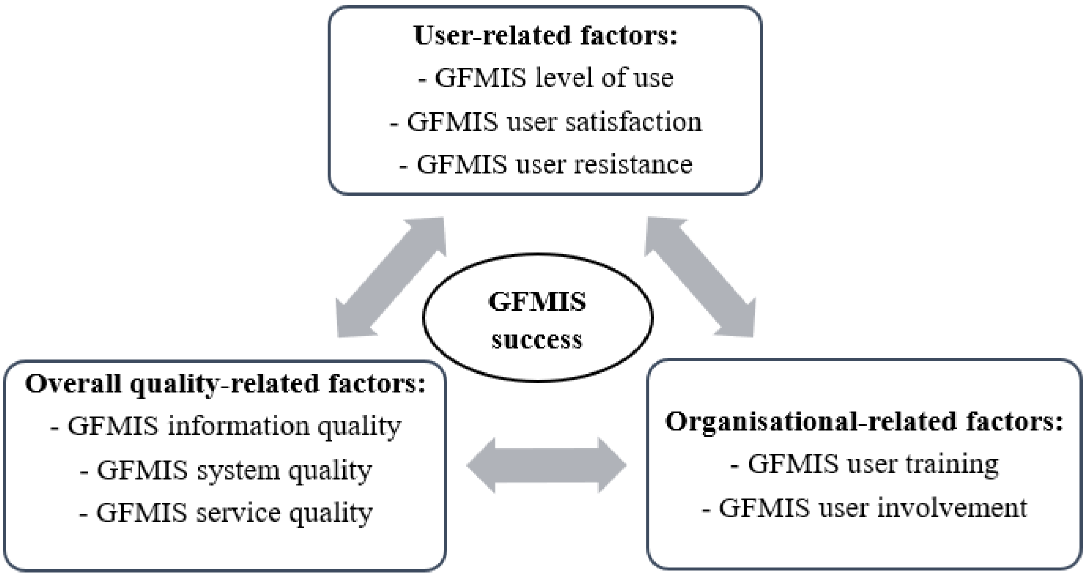


Figure 1.2. Diagrammatic Representation of GFMIS-related issues

Responding to the above discussion and mixed results reported in earlier works on GFMIS (e.g., Sawalha & Abu-Shanab, 2015; Shannak, 2015; Youssef & Alsharari, 2017), scholars have been exploring and verifying factors that potentially explain the GFMIS success from the perspective of the end-users (Harelimana, 2017; Odolo & Gekara, 2015). Yet, very few studies have examined GFMIS success from the perspective of users (see section 2.4.3). As such, it is pertinent to utilise the related theory(s) to examine the factors that drive GFMIS success from the perspective of Jordanian users.

Evidence suggest that IS users can contribute to the successful implementation of IS. According to DeLone and McLean (2003), usage and user satisfaction are the two key criteria that determine successful IS implementation. For an IS to generate positive outcomes, the end-users must accept, adopt as well as use the system (Alryalat et al., 2013). Positive IS usage experience can improve user satisfaction and the expected net benefits and vice versa (DeLone & McLean, 2003).

Therefore, poor employee usage and satisfaction could be indications of the non-materialisation of the projected benefits of GFMIS. Low employee usage/satisfaction of GFMIS is an indication of poor system acceptance which can negatively affect employee performance. Meanwhile, if users perceive the GFMIS quality to be high, their usage and satisfaction levels with the system can improve the expected net benefits. In short, greater employee usage/satisfaction can improve employee performance, thus leading to successful system implementation. A successfully implemented GFMIS can serve as an effective mechanism for reforming PFM in Jordan, and therefore increasing transparency, improving the GoJ's efficiency, and enhancing the well-being of the people and businesses, in particular, and the country, in general.

Therefore, to extend the existing literature, the present study examines the success of GFMIS from the users' perspectives. The present study fills this gap by examining the interrelationship between the overall quality or technology-related factors, user-related factors, and organisational-related factors and the successful implementation of the system.

An efficient theoretical framework can identify and define the key variables related to the research problem, and thus describe and explain the relationship between the identified variables (Sekaran & Bougie, 2016). The IS success model introduced by Delone and McLean (2003) is the most prominent model for explaining IS success from the end-users' perspective, entailing the overall quality-related factors, user-related factors, and expected net benefits (Balaban, Mub, & Divjak, 2013; Dwivedi et al., 2015; Tam & Oliveira, 2016). The model has attracted extensive revisions and extensions ever since it was created (DeLone & McLean, 2016; Kurt, 2018; Martins et al., 2018). In view of its proposition and incorporated constructs, the IS success model is compatible with the context and objectives of this study, and is most applicable to examine the research problem raised in the present study (refer to section 1.1), as the dependent variables of the model are highly related to the practical issues discussed in the earlier section, that is, related to the end users of the system (Stefanovic, Marjanovic, Delić, Culibrk, & Lalic, 2016; Urbach et al., 2010).

Since comprehensive research is lacking on the variables that influence IS success (Petter et al., 2013), researchers have identified numerous opportunities for future research with respect to the current IS success model (Delone & McLean, 2016). This finding is in line with the literature review in this study (refer to section 2.7). Most of the reviewed empirical studies in the last decade have adapted the IS success model without the inclusion of additional success factor(s) that can potentially enhance the existing model (refer to section 2.7.7). Hence, DeLone and McLean, who created the model, have called for further development, validation, and investigation of the model by incorporating other relevant factors (Delone & McLean, 2016; Petter et al., 2012, 2013). Thus, it is imperative to conduct a study on the success of various IS, particularly in the developing nations, by adopting and expanding the IS success model. The possible extension would include an investigation of how the model helps to explain the different levels of end-user utilisation, end-user satisfaction, attained net benefits, and the general success of GFMIS in the context of Jordan. To the best of the researcher's knowledge, few studies have adapted the IS success model to investigate the success of GFMIS (refer to section 2.4.3). Thus, to address this gap and to better explain GFMIS success in the context of Jordan, this study extends the IS success model by adding three new variables.

First, based on the literature review, only a few studies in the area of GFMIS and the IS success model have considered training, either as a moderating or independent variable, while examining IS success at an individual level. Having considered this gap and the fact that training is viewed as among the critical success factors (CSFs) for an IS implementation (Hwang, 2014; Hwang, Lin, & Lin, 2012), this study integrates training as a viable moderator to explain the relationship between GFMIS use/user satisfaction and net benefits.

Secondly, to expand the model further, this study proposes user involvement as a moderating factor between GFMIS use/user satisfaction and net benefits. According to Sappri and Baharudin (2016), users of IS have a positive attitude and perception of its usefulness, thereby increasing their satisfaction towards the system. Hence, the involvement of IS users at various stages of IS implementation is important (Ghobakhloo & Tang, 2015; Sappri et al., 2016).

Finally, in view that resistance to use the IS might cause underutilisation of the system which may affect the level of use and user satisfaction (Adeleke, 2016; Haddara & Moen, 2017; Zhang, Lee, Huang, Zhang, & Huang, 2005), the present study examines the direct relationship between user resistance and GFMIS use/user satisfaction.

In conclusion, this study investigates the factors that affect the success of GFMIS from the public employees' perspective. Thus, by combining the IS success model (2003) and three related factors from previous studies, this research identifies the drivers that affect GFMIS use and user satisfaction with the moderating effects of training/user involvement and its influence on GFMIS net benefits.

1.3 Research Questions

Going by the issues highlighted above, the following research questions are developed for this study:

1. What are the effects of information quality, system quality, service quality, and user resistance on GFMIS use in the Jordanian public sector?
2. What are the effects of information quality, system quality, service quality, and user resistance on GFMIS user satisfaction in the Jordanian public sector?
3. What is the effect of GFMIS use on user satisfaction in the Jordanian public sector?
4. What are the effects of GFMIS use and user satisfaction on the net benefits of GFMIS in the Jordanian public sector?
5. Does training moderate the relationship between GFMIS use/user satisfaction and net benefits of GFMIS in the Jordanian public sector?
6. Does user involvement moderate the relationship between use/user satisfaction and net benefits of GFMIS in the Jordanian public sector?

1.4 Research Objectives

The main objective of the present study is to investigate factors affecting the success of GFMIS implementation from the perspective of public employees in Jordan. The specific objectives of the study are as follows:

1. To examine the effects of information quality, system quality, service quality, and user resistance on GFMIS use in the Jordanian public sector.
2. To examine the effects of information quality, system quality, service quality, and user resistance on user satisfaction of GFMIS in the Jordanian public sector.
3. To examine the effect of GFMIS use on user satisfaction of GFMIS in the Jordanian public sector.
4. To examine the effects of GFMIS use and user satisfaction on the net benefits of GFMIS in the Jordanian public sector.
5. To examine the moderating effect of training on the relationship between GFMIS use/user satisfaction and net benefits of GFMIS in the Jordanian public sector.
6. To examine the moderating effect of user involvement on the relationship between GFMIS use/user satisfaction and net benefits of GFMIS in the Jordanian public sector.

1.5 Significance of the Research

At the global level, the success rate of IS in the private sector is greater than the success rate recorded in the public sector. Meanwhile, the success rate of government projects is lower in developing nations (Aladwani, 2016; Kiarie & Wanyoike, 2016; Müller & Skau, 2015; Twizeyimana & Andersson, 2019). However, there is a shortage of research on e-Government systems and how to overcome the challenges militating the introduction of new technology by the GoJ (Al-Smady, 2017; Tbaishat & Khasawneh, 2015). Therefore, studies on e-Government system implementation success can prove to be beneficial (Aladwani, 2016; Alryalat et al., 2013; Dwivedi et al., 2015).

Although GFMIS represents one of the e-Government initiatives, the success of this system implementation globally has not been fully assured (Dener et al., 2011; Khan & Pessoa, 2010). Despite the fact that advantages of the successful implementation of the GFMIS and related projects are well noted and documented and the seeming success of the GFMIS is observed when it was rolled out, world experience has shown that these projects might fail in their later stages (Combaz, 2015; USAID, 2012b). This is partly because entrenching consistency across all sectors of the government can be a long-standing process. As GFMIS is relatively broader in size and scope, it is more susceptible to collapse or failure during its implementation process (USAID, 2008). In addition, GFMIS is a highly complicated and risky project, in which some of the risks go far beyond the failure of technology and functionality (Biggs, 2012; Combaz, 2015). Therefore, research to understand the successful implementation of GFMIS by employing related theories is very much needed.

The present study aims to determine the factors affecting the successful implementation of GFMIS by adapting the IS success model. The results of the present study provide two critical significances: (1) theoretical significance to IS success literature and theory; and (2) practical significance to practitioners in the area of e-government. The following subsections deliberate on the significances further.

1.5.1 Theoretical Significance

Generally, there is a need to employ some theories to examine the factors that affect IS users in the Middle-East area (Faaeq, Ismail, Osman, Al-Swidi, & Faieq, 2013). Considering that the present study examines the success of GFMIS from the users' perspective, the IS success model (2003) is regarded as the most cited model to explain

IS success. Given this fact, a number of scholars have called for further development, validation, and investigation of IS success model by using different factors (Delone & McLean, 2016; Petter et al., 2012, 2013). Therefore, from the theoretical point of view, this study enriches the extant body of work on IS success model by testing it on a new e-government initiative. Nonetheless, the implementation of GFMIS has yet to be investigated using the IS success model. Therefore, the results of this study add significant value to the current body of knowledge concerning this theoretical model.

Prior research has identified a number of factors related to IS success, while a few studies have expanded the IS success model (refer to section 2.7.7). The present study expands the IS success model by incorporating three variables: training (i.e., organisation characteristic), user involvement (i.e., project characteristic), and user resistance (i.e., user characteristic). Based on literature review, organisation characteristics, project characteristics, and user characteristics are appropriate for expanding the IS success model.

1.5.2 Practical Significance

In the Jordanian context, GFMIS has not been fully implemented until now. As the government seems not to have progressed beyond the first stage, success has yet to be achieved. In fact, the government is still struggling to complete the first stage related to implementing this system across all the government institutions. The World Bank (2016a) hinted that the second stage of the implementation, that is, to implement GFMIS in independent public government institutions is expected to commence in 2018. However, the second stage has yet to commence.

Looking from a practical point of view, conducting a study to understand successful implementation of GFMIS in Jordan is very much needed. As known, use and user satisfaction are undoubtedly among the indicators for successful deployment of any e-Government IS in Jordan (Alawneh et al., 2013; Jordanian e-Government, 2013). This is particularly more critical for Jordanian ministries because they are facing a myriad of challenges in e-Government systems usage (Tadros & Alzubi, 2015; Tbaishat & Khasawneh, 2015) (refer to section 2.3).

Furthermore, studies to understand the factors that determine user behaviour and user satisfaction, especially from the individual level perspective, are needed to provide more empirical evidence to the policymakers and decision-makers in the GoJ about the success of GFMIS. The findings of this study offer several recommendations to the policymakers in their decision to introduce a new system, such as the human resources management information system (HRMIS), e-procurement, inventory management system, or any other e-Government initiatives in Jordan.

Moreover, the findings of this study would be useful in encouraging employees to adopt any new system introduced by the government. In addition, the outcomes of the study can assist managers of government institutions to better understand their employees' interaction with the e-Government system, in general, and GFMIS, in particular, as they are expected to use those systems in response to the changes in information technology (IT).

Finally, to make GFMIS more successful, the results of the study would be beneficial for the implementing company (e.g., IntraCom Middle East and Africa), which is responsible for developing and implementing the system in other developing countries.

In short, this study provides the GoJ and software developers with insightful information to better understand user behaviour on any IS project apart from promoting more effective adoption of the system amongst government agencies.

1.6 Scope of the Study

At present, most of the public sector institutions in Jordan, involving 24 ministries and 28 agencies, are using GFMIS to carry out operational services (GFMIS, n.d.; Bilal Abdallat, Hamzeh Aljazzazi, Mohammad Aloqaily, personal communication, December, 2017; August, 2018). In Jordan, e-Government initiatives are categorised into Government to Business (G2B), Government to Government (G2G), Government to Citizens (G2C), and Government to Employees (G2E). The first two integrates government-organisational relationship, while the last two incorporates government-individual engagement and cooperation. GFMIS falls within the G2E and G2G systems in Jordan (Jordanian e-Government, 2013), hence, the present study focuses on these contexts (see section 2.2 for details).

As the present study aims to investigate factors affecting the success of GFMIS implementation from the perspective of public employees in Jordan, data obtained from its users are important. Hence, the data used to test the research model of the study were collected from employees in the financial and administrative affairs directorate of the ministries and the institutions using the GFMIS system. Since the target respondents are the end users of GFMIS, the unit of analysis of this study is therefore, the individual.

1.7 Definition of Key Terms

The key terms used in this study are defined as follows:

e-Government	:	Usage of information and communication technology (ICT) for enhancing the access to and provision of government information and service to the people, business associates, workers, and MDAs (Layne & Lee, 2001).
GFMIS	:	An integrated IS which connects all financial and accounting operations of various MDAs with the MoF (Intrasoft International, 2012; GFMIS, n.d.).
Information quality	:	The characteristics of the system output desirable by the public employees who are GFMIS users in Jordan (Petter et al., 2008; Stefanovic et al., 2016).
IS success	:	The extent to which an IS is achieving the goals that have been established for an undertaking (Petter et al., 2013).
IS success model	:	An IS model initially developed by William H. DeLone and Ephraim R. McLean in 1992, and then revised in 2003. This model determines and explains the correlation between the six IS success determinants, namely, information quality, system quality, service quality, system use/usage intentions, user satisfaction, and net system benefits.
Net benefits	:	The perceived individual benefits and the successful performance that employees gain through the use of GFMIS (Stefanovic et al., 2016; Urbach et al., 2010).

System quality	:	The level of attaining expected characteristics of the technical aspects of GFMIS by the public employees who are users of this system in Jordan (Petter et al., 2013; Wu & Wang, 2006).
Service quality	:	The quality of support received by the public employees (who are GFMIS users in Jordan) in using the system as given by the IT support staff and/or the IT department (Petter et al., 2013; 2008; Roky & Al Meriouh, 2015).
Training	:	The employees' perception of their GFMIS training in terms of usefulness, relevance, adequacy, and acquisition of skills (Wei, Teo, Chan, & Tan, 2011).
Use	:	The extent of using GFMIS in performing the task (Almutairi & Subramanian, 2005; Wang & Wang, 2009; Wu & Wang, 2006).
User involvement	:	The participation from GFMIS users during the post-implementation process (Sappri et al., 2016).
User resistance	:	The employees' perception of GFMIS process issues, which represent the problems faced by the users resulting from the changed processes synonymous with GFMIS implementation (Choi, Yun, Kim, & Park, 2014).
User satisfaction	:	Employees' feelings of pleasure regarding GFMIS (Wu & Wang, 2006).

1.8 Organisation of the Thesis

This thesis is made up of six chapters, of which chapter one is an introductory part. Chapter one comprises eight subsections. The first subsection discusses the background of the study and the second subsection focuses on the problem statement. The other subsections are research questions, research objectives, significance and scope of the study, the definition of key terms, while the thesis structure concludes the chapter.

The second chapter discusses a literature review of the major aspects of the research, namely, an overview of e-Government in Jordan, prior studies on e-government in Jordan, an overview of GFMIS, prior studies of GFMIS, an overview of IS success model, the examination of prior studies adapting IS success model and its constructs, other variables used in this study, as well as the summary of the chapter.

Chapter three presents a discussion on the research framework and hypotheses development. Hypotheses development involves discussion of all relationships in the present study. The chapter concludes with a summary of the chapter. The fourth chapter provides a discussion on the methodology adopted in this study. This involves research design, unit of analysis, population, sample size, sampling technique, measurement of the variables, instrumentation, translation process, questionnaire design and structure, data collection procedure, and data analysis plan. It ends with a summary of the chapter.

Chapter five elaborates further on the application of Statistical Package for Social Science (SPSS) and Partial Least Squares-Structural Equation Modeling (PLS-SEM, using Smart PLS 3) to achieve the research objectives and to test the framework. First, chapter five starts by providing the results of the response rate, data screening, and preliminary analysis. After that, the results of the descriptive statistics for the respondents' information and questionnaire constructs are presented. Furthermore, this chapter highlights the measurement model results, followed by the results of the structural model. Lastly, the moderating effects for training and user involvement on the structural model are offered.

Finally, chapter six provides an extensive discussion of the study results, underlines the theoretical and practical implications of the study, specifies research limitations, and outlines future research directions that could extend the present study. The chapter ends with the conclusion of the study.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter reviews existing literature on the research area. The first two sections deal with an overview of e-Government as well as prior studies on e-Government in Jordan. The next section focuses on the background of GFMIS, involving its definition, its benefits, GFMIS in Jordan, and review of relevant prior studies. Subsequent sections describe the conceptual background of the IS success model, its development, the constructs tested in the present study, examination of prior studies using it, and other variables used in this study. The last section summarises the chapter.

2.2 Overview of e-Government in Jordan

At the dawn of the twenty-first century, the Arab world and the Hashemite Kingdom of Jordan, specifically, have experienced a rapid and comprehensive IT revolution (Al Nagi & Hamdan, 2009; Hammouri & Abu Shanab, 2017). Due to this revolution, governments would need to respond to the changes with different innovative mechanisms and continuous improvements that are necessary in the present world (Alawneh, Al-Refai, & Batiha, 2013).

E-government offers a promising platform for Jordan to strive ahead in the twenty-first century to bridge the gap between Jordan and other developing countries within the region (AL-Naimat, Abdullah, & Ahmad, 2013; Obeidat & Abu-Shanab, 2010). The benefits include improved services, greater convenience, information sharing, increased transparency, reduced corruption, increasing revenue and effectiveness as well as efficiency in the public sector (Al Nagi & Hamdan, 2009; Alshehri & Drew, 2011; Gil-Garcı´ & Pardo, 2005; Moon, Lee, & Roh, 2014).

E-government in Jordan is not a policy standing in isolation; it is an essential element of the Kingdom's National Agenda. Therefore, the success of the e-government is a part of its national vision because it must be aligned with larger national priorities for socio-economic growth and government transformation (Jordanian e-Government, 2013; MoPIC, 2015).

As part of the efforts to transform its society, economy, and government, Jordan developed a national e-Government strategy (2014-2016) aimed at delivering high-quality services, improving government performance, enhancing the country's competitiveness, ensuring transparency and accountability, reducing cost of services, and increasing the ease with which to communicate with the government (Alawneh et al., 2013; Almarabeh & Adwan, 2013; Al-Shboul, Rababah, Ghnemat, & Al-Saqqa, 2014). In order to accomplish these, Jordan categorised e-Government initiatives into four (Alawneh et al., 2013; Al-Jaghoub, Al-Yaseen, & Al-Hourani, 2010; Al Nagi & Hamdan, 2009; Ndou, 2004), namely, G2B, G2C, G2G, and G2E. G2C and G2E encompass interaction and cooperation between government and individuals, while G2B and G2G involve the relationship between the government and organisations. GFMIS is seen as one of the G2G and G2E systems in Jordan (Jordanian e-Government, 2013). Hence, the present study focuses on the G2G and G2E contexts.

2.3 Prior Studies on e-Government in Jordan

As a developing country, Jordan faces certain major challenges and barriers that would lead to failure of e-Government implementation (AL-Naimat et al., 2013). In view of this, information managers of government entities must be aware of the several challenges they face in e-Government projects (Gil-Garcı´ & Pardo, 2005). These challenges are not limited to planning, financial and political objectives, and lack of citizens' acceptance and/or interest (Anthopoulos et al., 2015; Evans & Yen, 2005).

Numerous studies on e-Government have examined the problems associated with the adoption and implementation of IS in the public sector. This section focuses on prior studies on e-Government in the context of Jordan, as a basis for the present study.

With the aim of identifying the literature gap with regards to e-Government in the context of Jordan over the last nine years (2010-2018), the researcher used "e-Government" and "Jordan" as keywords while searching for the related articles for this study. Google Scholar was used for searching purposes. A total of 18 empirical studies were identified as relevant through a structured search of the academic literature on e-Government in Jordan (see Appendix A).

The selection of the reviewed studies is based on their suitability to the nature of this study. The selected studies have focused on e-Government categories, namely, G2E and G2G in the public sector. Some of the studies have used employees in the public sector as their respondents, while some have examined issues and challenges facing internal e-Government projects adoption, implementation, or usage from the employees' perspective. However, studies on e-Government systems in the contexts of

G2C (e.g., Abu-Shanab & Haider, 2015; Aljarrah, Elrehail, & Aababneh, 2016) and G2B (e.g., Al-Zoubi & Altaany, 2013; Thi, Lim, & Al-Zoubi, 2014), were excluded. Some studies, for example by Sarayreh and Al-Laham (2012), were deselected because the researcher did not have access to these articles.

A total of 18 articles, which were published from 2010 to 2018, were then selected for the review. All these articles have focused on challenges "or CSFs" of e-Government implementation and the effects of e-Government on other outcomes (e.g., income tax collection). Following this, the researcher extracted necessary information from the published articles and tabulated the information for the ease of synthesising them.

The reviewed studies have diverse foci (refer to Appendix A). Several studies have focused on the successful implementation (e.g., AL-Naimat et al., 2013; Al-Rawahna, Chen, & Hung, 2018; Alrawabdeh, 2014; Sulehat & Taib, 2016). Other studies have focused on the challenges of e-Government implementation (see, for example, Alkhaleefah, Alkhawaldeh, Venkatraman, & Alazab, 2010; Al-Shboul et al., 2014; Kanaan & Kanaan, 2013; Tadros & Alzubi, 2015); the impact of e-Government (see, for example, AL-Gharaibeh & Malkawi, 2013; Qtish & Qatawneh, 2012); user perception of e-Government (see, for example, Tbaishat & Khasawneh, 2015); user satisfaction (Alawneh et al., 2013; Al-Smady, 2017; Hammouri & Abu Shanab, 2017); and the evaluation of e-Government websites (Abu-Doush, Bany-Mohammed, & Al-Betar, 2013). Fourteen studies have focused on the public sector, specifically ministries in Jordan. One study (Alawneh et al., 2013) has concentrated on independent government institutions (e.g., public university) and another three studies (Alkhaleefah et al., 2010; Sulehat & Taib, 2016) have reviewed the literature on e-Government strategies in Jordan.

The majority of the studies have used a quantitative approach for research design. Ten studies have used questionnaire (e.g., Alrawabdeh, 2014; Tbaishat & Khasawneh, 2015), while three studies (e.g., Abu-Doush et al., 2013; Al-Shboul et al., 2014), have employed a qualitative approach to elicit data from the respondents. Another two studies have used a mixed-method approach, and three studies have reviewed the literature on e-Government in Jordan. In addition, most of the studies that have used cross-sectional design have employed the questionnaire (e.g., Tadros & Alzubi, 2015; Tbaishat & Khasawneh, 2015) as a tool for data collection. The wide usage of cross-sectional design, may perhaps, be as a result of its usefulness in examining the perception of a wide range of people.

Appendix B shows the main CSFs/challenges of e-Government projects based on the reviewed literature. It can be discerned from this table that e-government projects in Jordan are facing numerous challenges, involving resistance to change, lack of training, user involvement, and insufficient local skilled human resources, among others. This indicates that the GoJ is not doing enough to resolve the challenges of e-government systems.

Generally, a review of literature in this section shows that very few research works have been conducted in Jordan, and the predictors of e-Government in Jordan have not been adequately explored. The review also establishes that the commonly used research methodology is the cross-sectional design. A number of variables, namely, training and user resistance, are found to be mostly affecting e-government implementation. Hence, the review signifies that there is a need to explore more on the e-Government research field, and this is consistent with some scholars (e.g., Tbaishat & Khasawneh, 2015) who have recommended further research in this area.

Alryalat et al. (2013) claimed that no study in Jordan has discussed any aspect of the benefits of e-government initiatives. This motivated the inclusion of net benefits of e-government systems in the research model of the study. Given the stakeholders of the GFMIS are users, the net benefits of the system are, therefore, measured at the individual level.

In the recent research conducted by Hammouri and Abu Shanab (2017), factors that influence employee satisfaction toward using e-tax systems in Jordan were identified, but it was mentioned that there is a shortage of the detailed information about the factors influencing user satisfaction toward the use of e-tax system from the employees' point of view. Thus, it has been suggested by the researchers that further research should be carried out on the satisfaction levels of other e-services currently being provided by the GoJ.

2.4 Overview of GFMIS

2.4.1 Definition of GFMIS

There is no universally accepted definition of the GFMIS (Khan & Pessoa, 2010; Shannak, 2015). The system is given different names in different countries. For example, financial management information system (FMIS) (e.g., Uganda); integrated FMIS (e.g., Malawi, Kenya, Tanzania, Nigeria, Ghana); or GFMIS (e.g., Jordan, Egypt, Iraq) (Dener et al., 2011; Diamond & Khemani, 2006; USAID, 2008). The different use of the terminology in different countries is attributed to the differences in the functionalities of each of the systems (Youssef & Alsharari, 2017). Overall, all of the aforementioned systems are almost the same. GFMIS is used in the present study.

Peterson (2006) defined GFMIS as an application of a computer programme that integrates the key financial functions of accounts and budgets to promote security and efficiency of data management for comprehensive financial reporting. Intrasoft International (2012) explained GFMIS as an integrated computerised system connecting all financial and accounting operations of various ministries, financial centres, government departments, and budget institutions with the MoF to ensure transparency and accountability in allocating, using, controlling the available financial resources of all ministries and government departments. Dener et al. (2011) and Khan and Pessoa (2010) noted that GFMIS involves a network of computerised systems that deals with PFM functions of the government.

Arising from the different definitions given by the scholars, it is clear that the angle or perspective from which each one approaches the concept of GFMIS differs. However, most of the definitions are skewed towards computerisation of government accounting and financial functions. In this study, the definition GFMIS given by the GoJ is considered appropriate. The GoJ describes GFMIS as an integrated IS which connects all financial and accounting operations of various MDAs with the MoF (GFMIS, n.d.). This could also mean that GFMIS denotes automation of the government's financial system, whereby the financial outflows of government to other parties (e.g., citizens, businesses) and the financial inflows accruable to the government from the other parties and government activities, are electronically and safely managed to the satisfaction of the intended users.

GFMIS allows proper accountability, control, and management of public sector transactions by the government in accordance with relevant laws and regulations (Chêne, 2009; Shannak, 2015; USAID, 2011a; Youssef & Alsharari, 2017). This indicates that GFMIS is considered as an integrated system adopted by government institutions, including federal, state, and local governments (Selfano, Peninah, & Sarah, 2014). For governments, GFMIS indicates an essential part of PFM. According to Alsharari and Abougamos (2017) and Simpson (2012), the specific objective of the GFMIS project in Jordan is to support the role of PFM.

2.4.2 GFMIS Implementation in Jordan

Jordan, like other developing countries, is facing challenges of corruption, distortions, and deficits in its PFM efforts (Kanaan & Kanaan, 2013; Transparency International, 2016). Notwithstanding that efforts are being made to improve its fiscal performance, there is an exigent need to reduce the fiscal deficit, which entails radical reforms targeted towards improving budget performance and increasing government efficiency (MoPIC, 2015; MoPIC, 2005). For decades, King Abdullah II has been constantly encouraging and challenging the successive government on the need to focus on socio-economic as well as political reforms. In order to meet these challenges, the GoJ has for long been working closely with the United Nations agencies, such as the World Bank and the International Monetary Fund (IMF), which assist in trade promotion and oversight of the global financial system (Khasawneh-Jalghoum, 2011).

The MoF's desire to upgrade public fund devices, has increased the level of services provided by the budget institutions, and getting approval from the GoJ to implement GFMIS has been granted. The recommendations of the IMF and World Bank in their joint report in 2004 on Jordan's financial management further espouse the need to implement the GFMIS owing to its important role in ensuring that correct and comprehensive information is obtained as and when due (GFMIS, 2017a). Subsequently, the GoJ commenced the implementation of its FRP II in 2009, which is an offshoot of the USAID project. This initiative comprises six components, one of these is the GFMIS.

In 2010, the GoJ launched a new e-Government system, GFMIS, which replaced the outdated financial management systems (Alsharari, 2013; USAID, 2011a). The system aims to improve the government's and employees' performance. The GFMIS is one of the most strategic PFM projects for the GoJ. This system consolidates the accounting and financial information from all MDAs under one centralised network, controlled and managed by the MoF (Intrasoft International, 2012; USAID, 2014a; Youssef & Alsharari, 2017). The implementation of this project was awarded to INTRASOFT International (IntraCom IT) in 2008, and the actual implementation of GFMIS started in 2010 (USAID, 2011a).

The GFMIS improves the PFM of the government by enhancing financial control, management, and reporting (USAID, 2014a). Specifically, GFMIS helps the government and users to generate more accurate, comprehensive, reliable, and timely financial information, thus directly contributing to improvements in accountability, transparency, and PFM efficiency (GFMIS, n.d.). In addition, GFMIS can exchange financial information easily and quickly between users, enable the financial control functions by the MoF and the management of MDAs, and support the users in decision-making at the appropriate time.

In Jordan, GFMIS covers seven major functions: Budget preparation and implementation; Project management; Procurement management; Cash management; Receivables and revenue management; Payment management; and Financial and Accounting Processes/General Ledger.

2.4.3 Prior Studies on GFMIS

This section focuses on prior studies on GFMIS, as a basis for the present study. The authors, the study's design, population, variables, and its measures, and findings of the selected articles are identified and explained (refer to Appendix C). The researcher used "financial management information system" as a key phrase while searching for relevant related articles. The researcher used Google Scholar to search for articles, especially those published in the last nine years (i.e., from 2010 to 2018). As a screening criterion, the researcher considered the exclusion of studies published in Arabic, Chinese, Indonesian, Spanish, Thai and Ukrainian languages (e.g., Al-Hunyti & Al-Najdawi, 2015; Chandra & Rajab, 2017; Kovaliv, 2017; Shi-Qiong & Pei-Ran, 2012). Therefore, only the articles written in the English language were used. Besides, the researcher excluded all unpublished theses.

Based on the literature mapping in Appendix C, it is discerned that most reviewed studies encompassing the 2012-2017 period were conducted in the African context. Specifically, two studies were done in Nigeria, and one was done in Rwanda, and another one in Tanzania, while the remaining studies were carried out in different sectors in Kenya. Many of these studies have focused on GFMIS adoption and implementation in the public sector (e.g., ministries, counties, departments, and government agencies), while only one study so far has concentrated in the context of independent government institutions in the public sector.

A number of studies have used the cross-sectional research method; seven articles (e.g., Karanja & Ng'ang'a, 2014; Lundu & Shale, 2015; Odolo & Gekara, 2015) have used quantitative method, one study has used qualitative, while the remaining studies have employed the mixed-method research approach (Njonde & Kimanzi, 2014; Selfano et al., 2014; Wangari & Ambrose, 2015). The rationale behind the use of the cross-sectional approach is due to the fact that the approach saves time, money, and enables a researcher to enhance feedback through close communication with the participants, as well as through an organised set of survey questions.

From the review of previous studies, it seems that researchers have studied GFMIS from different perspectives, and most of them have focused on the GFMIS impact (e.g., Harelimana, 2017; Ibrahim & Dauda, 2014; Lundu & Shale, 2015; Mburu & Ngahu, 2016; Minani, 2012; Mugwe & Ngugi, 2017; Njonde & Kimanzi, 2014; Oyinlola et al., 2017; Selfano et al., 2014; Wangari & Ambrose, 2015). Several researchers have focused on the successful implementation of GFMIS (e.g., Kahari et al., 2015; Kiarie & Wanyoike, 2016). Karanja and Ng'ang's (2014), and others, on the other hand, have focused on the challenges of GFMIS implementation. Another stream of studies has focused on GFMIS in terms of user skills (Odolo & Gekara, 2015); performance determinants (Njihia & Makori, 2015); and effective implementation (Cherotich &

Bichanga, 2016). Therefore, the overall quality factors (i.e., information quality, system quality, and service quality) affecting GFMIS implementation and effect of behaviour on usage and satisfaction have yet to be studied. This study, therefore, examines the success of GFMIS implementation from the users' perspective. Table 2.1 below shows the main factors based on the reviewed studies.

Table 2.1. *GFMIS CSFs/Challenges*

CSFs/Challenges	Sources
Government policy	Lundu and Shale (2015); Njihia and Makori (2015)
IT infrastructure	Cherotich and Bichanga (2016); Harelimana (2017); Kahari et al. (2015); Lundu and Shale (2015); Njihia and Makori (2015)
Adequate funding	Cherotich and Bichanga (2016); Karanja and Ng'ang'a (2014); Kiarie and Wanyoike (2016); Laizer and Suomi (2016)
Training	Cherotich and Bichanga (2016); Harelimana (2017); Ibrahim and Dauda (2014); Kiarie and Wanyoike (2016); Lundu and Shale (2015); Minani (2012); Selfano et al. (2014); Wangari and Ambrose (2015)
Employee skills	Kahari et al. (2015); Lundu and Shale (2015); Odolo and Gekara (2015); Wangari and Ambrose (2015)
Management support	Harelimana (2017); Karanja and Ng'ang'a (2014); Lundu and Shale (2015); Mburu and Ngahu (2016); Odolo and Gekara (2015)
User resistance	Harelimana (2017); Kahari et al. (2015); Odolo and Gekara (2015)
Organisational commitment	Karanja and Ng'ang'a (2014); Laizer and Suomi (2016)

It can be discerned from Table 2.1 above that such factors can also be the determinants of users' understanding of GFMIS with respect to its effective and successful implementation, and its positive impact on the government and employees. A large number of the reviewed studies have focused on factors affecting GFMIS adoption. For example, Kahari et al. (2015) indicated a strong, positive relationship between capacity and skills of GFMIS users and its implementation. Technological infrastructure, adequate training, management commitment, and human resource development, have been considered positive predictors of GFMIS adoption and performance (Cherotich & Bichanga, 2016; Karanja & Ng'ang'a, 2014). Factors, such as corruption, workers' resistance to change, and shortage of skills and knowledge, have all been considered as barriers to effective GFMIS implementation (Ibrahim & Dauda, 2014; Kahari et al., 2015).

A number of the reviewed studies have looked into GFMIS adoption or implementation as a process or a determinant of an organisational outcome. Mburu and Ngahu (2016) indicated that GFMIS adoption predicts fiscal prudence and enhanced financial reporting can be achieved through effective implementation of GFMIS. Several studies which have examined GFMIS as an outcome, have suggested training as an important factor in the implementation of GFMIS. However, it is noteworthy that a substantial number of these studies have failed to examine the impact of training on GFMIS adoption effectiveness or performance, despite the call for it by previous researchers.

Additionally, some studies have recommended training and employee motivation for effective and successful GFMIS implementation (Ibrahim & Dauda, 2014; Kiarie & Wanyoike, 2016; Lundu & Shale, 2015; Minani, 2012; Odolo & Gekara, 2015; Selfano et al., 2014). Other studies (Karanja & Ng'ang'a, 2014; Lundu & Shale, 2015; Odolo & Gekara, 2015) have recommended the need to study the impact of management support for the effective and successful implementation of GFMIS. Nonetheless, none has underscored the importance of investigating the relationship between training and user satisfaction, and GFMIS implementation, or user involvement and user satisfaction, and GFMIS implementation. Therefore, research on the relationship between GFMIS implementation and user satisfaction is needed, given that the success or failure of GFMIS implementation hinges on its users (Khan & Pessoa, 2010). The reason is that the system cannot operate itself; it is the employees who will operate the system (Peterson, 2006). If users are unhappy and not motivated to use the system, the system will not work effectively.

Furthermore, to ensure a comprehensive literature review, it was considered necessary to carry out a synthetical and critical literature survey, which would focus on GFMIS implementation studies in Jordan. The process of synthetical and critical review involves the extraction of authors' names, study design, study population, variables, measures of variables, and the study's findings (refer to Appendix C). It also involves the search for the researched literature conducted in the context of Jordan.

In the context of Jordan, three studies (i.e., Sawalha & Abu-Shanab, 2015; Shannak, 2015; Youssef & Alsharari, 2017) covering Jordan were published from 2015-2017 (see Appendix C). Other studies (i.e., Al Murtada & Hamdan, 2016; Hamdan, 2017) are excluded from this review because they contain many avoidable errors. Studies by Al-Hunyti and Al-Najdawi (2015) and Jebril (2014) were also excluded since they were published in the Arabic language. In Jordan, it seems that the first study conducted on GFMIS was in 2014, and this is due to the fact that the GoJ started the implementation in November 2010 in six ministries and departments (USAID, 2012a). This indicates that the system is still new, and thus, research in this area is scant.

Of the three studies, one study (Sawalha & Abu-Shanab, 2015) has used cross-sectional research design while the remaining two (Shannak, 2015; Youssef & Alsharari, 2017) have employed the qualitative research and case study approaches, respectively. According to Sawalha and Abu-Shanab (2015), social influence and perceived usefulness influence Jordanian public employees' intention to use GFMIS. Shannak (2015) reported that the implementation of GFMIS could make all procedures faster, more transparent, and closely monitored, and elevate the level of security in all financial transactions, as it automates all transactions related to financial management. Youssef and Alsharari (2017) stated the contribution of GFMIS towards effective PFM.

Shannak (2015) focused on GFMIS adoption, the exact status of GFMIS, and the stages it has gone through as well as the obstacles and challenges that have delayed the implementation of GFMIS. Sawalha and Abu-Shanab (2015) examined the factors that affect employees' acceptance of GFMIS. Youssef and Alsharari (2017), on the other hand, examined the impact of GFMIS implementation in the GoJ. None of the studies, however, has investigated the success of GFMIS from the users' perspective, despite the fact that the success or failure of GFMIS implementation hinges on users. In addition, no study in the context of Jordan has examined this system from the technological aspect of the system and the consequent effect of technology-based factors on use and user satisfaction of the system.

In terms of the population used by the previous studies in Jordan, none of the studies so far has considered all the MDAs as the population. For instance, three government institutions (MoF, General Budget Department, and Audit Bureau) and the implementing company were selected by Shannak (2015). Similarly, Sawalha and Abu-Shanab (2015) drew their sample from three government institutions: Ministry of Education, MoF, and General Budget Department. Lastly, Youssef and Alsharari (2017) focused on the Jordanian customs organisation. Hence, by taking into consideration all the government institutions, the present study fills this gap.

Hammouri and Abu Shanab (2017) mentioned that further research should be done on the employees' satisfaction levels with e-government systems. With regards to the GFMIS research field, numerous researchers (Harelimana, 2017; Sawalha & Abu-Shanab, 2015; Shannak, 2015; Simpson, 2012) have suggested more detailed research on challenges faced by the users of GFMIS in different institutions, improvement opportunities of the system, and how the end-users could utilise the system to achieve operational excellence. In addition, Sawalha and Abu-Shanab (2015) and Shannak (2015) advocated for a more robust empirical investigation on factors influencing user behaviour toward the system, increasing the sample size, as well as involving many other MDAs that are using the GFMIS.

2.5 Overview of Related Theory

Nowadays, information is widely available, universal, and more accessible by all. The relationships between corporations and consumers, and between citizens and their governments have changed (DeLone & McLean, 2016). The success of IS has become difficult and complex to measure, while at its core, it is still simple (Petter et al., 2008; Sabherwal, Jeyaraj, & Chowa, 2006). Specifically, this complexity becomes obvious when the IT system is to be evaluated soon after it is implemented. This is because the employees who will make use of the IT system and the work practices of the organisation will be in a state of change, and the new IT system deployed may be subject to modification (Bossen, Jensen, & Udsen, 2013). This section discusses the development of the IS success model in relation to the successful implementation of IS and measurement of the use and user satisfaction.

The IS success model, which was developed by DeLone and McLean in 1992, was introduced to provide a comprehensive, extended definition of IS success. Chiu, Chao, Kao, Pu, and Huang. (2016) and Urbach and Müller (2012) posited that this phenomenon was invoked from 1981-1987, which led to the creation of IS success model by DeLone and McLean (1992). Although different models have been developed for measuring IS success, however, the IS success model (1992) is regarded as one of the preferred models. Specifically, the model is unique because it provides a well-established guideline and comprehensive framework (Bossen et al., 2013).

According to Petter et al. (2008), IS success has been ill-defined as a result of its multi-dimensionality, complexity, and interdependency. In order to solve the problem of IS success definition, DeLone and McLean (1992) came up with six categories or major dimensions of IS success: system and information quality, use and user satisfaction, and individual and organisational impact.

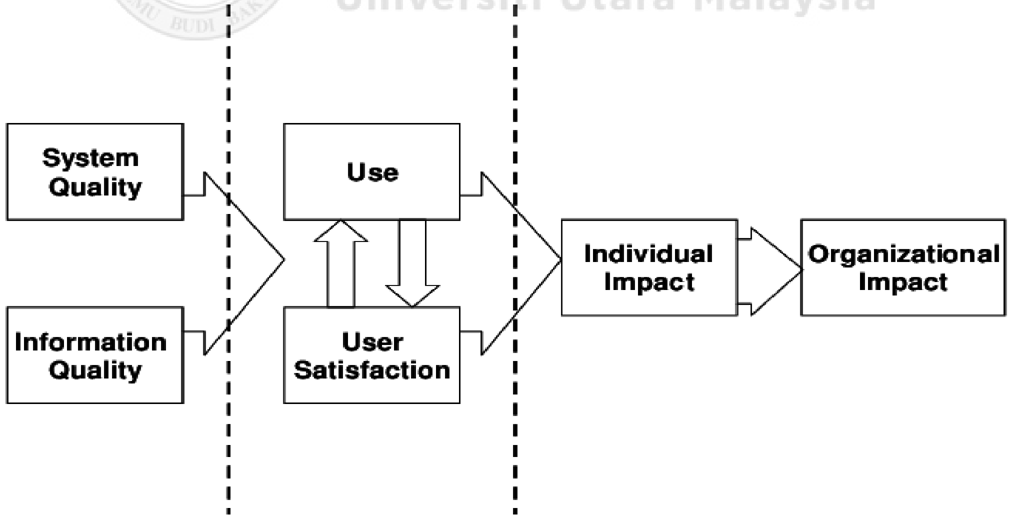


Figure 2.1. Original IS Success Model (DeLone & McLean, 1992)

Figure 2.1 presents the original IS success model. System and information quality jointly and separately influence both use and the satisfaction of the user. Furthermore, the level of use can influence the extent of user satisfaction and vice-versa. The antecedent impact of an individual refers to the use and user satisfaction. Finally, the influence of IS on the performance of individual should invariably translate to some level of organisational impact (DeLone & McLean, 1992). This general theory of IS, as mentioned by Tam and Oliveira (2016), posits that the correlation between system quality and information quality may have a positive influence on performance if the end-user is satisfied and makes use of the system. Thus, the model, in general, gives a widely acceptable taxonomy for measuring IS success determinants.

Given that the model (developed by DeLone & McLean, 1992), as revealed by Seddon (1997), has some limitations, the re-specified model of IS success (1997) was then developed. Specifically, the previous model did not take cognizance of the fact that various stakeholders in an organisation may have different views and conclusions about the success of the same IS (Seddon, Staples, Patnayakuni, & Bowtell, 1999).

Seddon (1997) criticised the earlier model. He practically examined the application of IS success model and claimed that the original model has caused confusion. Seddon (1997) argued that the combination of the process model and causal model was the basis of confusion of the DeLone and McLean model of 1992. IS 'use', for instance, could be a starting point of a process that may firstly generate 'user satisfaction', followed by 'individual impact,' and lastly the 'organisational impact.' On the other hand, the model may be read as causal simply because the application of the system is germane to its success. The assumption is that the usage of a system is dependent on the level of success or failure. Then, the re-specified and extended model of Seddon, which eliminated the process part of the original model, was presented. The causal part of the model is categorised into two, comprising behavioural and IS success models. The two models are integrated through the ‘consequences of IS use.’ Seddon believed that the model would give a better theoretical foundation, which will provide the basis for exploring the interrelationships between many IS success variables.

There are three categories of variables identified in Seddon’s IS success model (Hu & Wu, 2016; Xinli, 2015). The first variable is the information and system quality measures. The second variable is the general perceptual measures of the net benefits of the IS success model. The last variable is the measures of the net benefits of IS use. In the first and the second variables, Seddon postulated that IS use is just a behaviour, and not really a success measure. He then used “perceived usefulness” rather than “use”. With regards to the third variable, Seddon proposed three constituencies consisting of society, organisations, and individuals as net benefits of the IS.

DeLone and McLean (2003) later updated their initial IS success model. The updated model came about a decade after the first model was developed. DeLone and McLean (2003) revised and modified their original IS success model through the identification of the strengths and weaknesses of the earlier model. The new model of DeLone and McLean (2003) was as a result of the criticism in prior literature (e.g., Kettinger & Lee, 1994; Pitt, Watson, & Kavan, 1995; Seddon, 1997; Seddon et al., 1999).

For example, Pitt et al. (1995) observed that the assessment tools used to evaluate the effectiveness of an IS mainly have focused on the product by neglecting the functions of IS services. Consequently, it is anticipated that researchers in IS will not be able to measure the performance of IS with accuracy when the tool of evaluating the service quality is not built into the package of overall measurement. Many scholars have agreed with this line of thought, thus emphasising the need to incorporate the variable of service quality within the IS success model (Kettinger & Lee, 1994; Pitt et al., 1995).

These formed the bases of DeLone and McLean's (2003) response to the previous criticisms. Thereafter, service quality and its measurement were incorporated into the original model. The addition of service quality as an additional aspect of IS success became necessary because of the dynamic nature of IS that requires departments concerned to assess service quality when measuring IS success (Petter & McLean, 2009).

Furthermore, individual and organisational impacts from the original model were removed and replaced with a new dimension, known as "net benefits". The addition of this feature is in tandem with the proposition of other researchers and scholars, such as Seddon (1997). With the additional feature of net benefits, the model remains simple and parsimonious (DeLone & McLean, 2003). Hence, the removal of both individual and organisational impacts and the introduction of net benefits were done in response to the criticism that a modification of the IS success model is necessary (Petter & McLean, 2009).

Furthermore, 'intention to use' is used as an alternative to 'use.' 'Use,' as a variable, can be adopted, if the system is mandatory, but 'intention to use' is held to be appropriate in some contexts, for example, where adoption of IS is voluntary (Delone & McLean, 2003). Figure 2.2 shows the updated IS Success model.

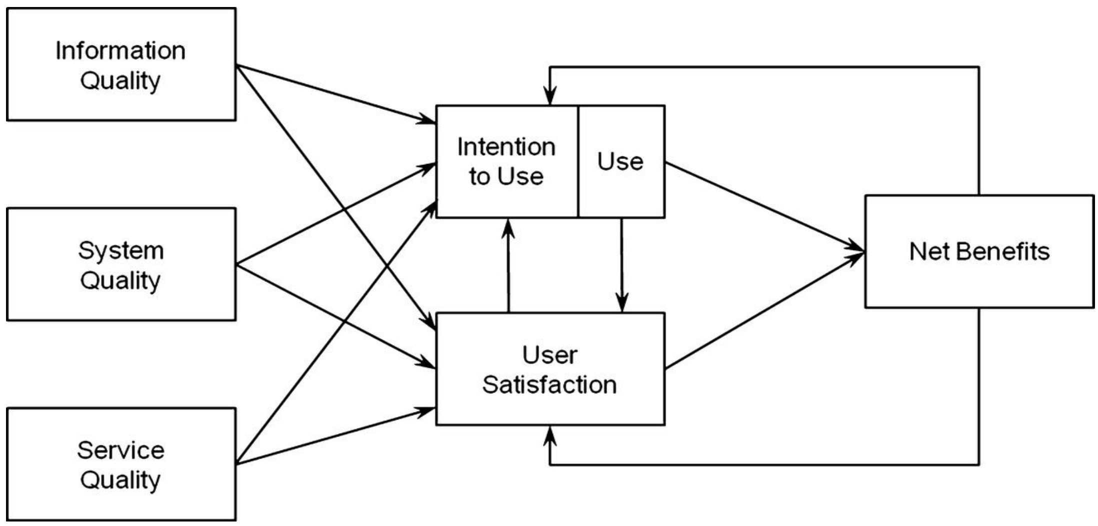


Figure 2.2. Updated IS Success Model (DeLone & McLean, 2003)

Therefore, the primary difference between the original and the updated models is the addition of service quality, which represents the significance of service and support in a given successful IS (Urbach & Müller, 2012). Likewise, intention to use was included to measure use, while individual impact and organisational impact were collapsed into a more parsimonious net benefits construct.

The studies on IS success have been largely influenced by the IS Success Model (Agbabiaka & Ugaddan, 2016; Urbach et al., 2010). The model primarily provides an all-encompassing framework and solid guidelines that allow further success studies to be carried out (Bossen et al., 2013; DeLone & McLean, 2016; Ghobakhloo & Tang, 2015; Petter et al., 2013). This is because it takes into consideration prior findings of several studies on IS (DeLone & McLean, 2016). Apart from that, it further helps to explain the benefits of IS usage by individuals and organisations (Wang et al., 2018).

As thousands of scholarly articles have cited the IS success model (2003) to date, this model is therefore known to be among the most influential theories in modern IS research. Despite this evident impact, several researchers have either reviewed or surveyed the IS success model's performance, or explored the results, limitations, and possible future directions of this model. For example, Petter and McLean (2009) conducted a comprehensive meta-analysis by reviewing 52 empirical researches on the different associations of IS success model analysis at the individual level. Later, Petter et al. (2013) carried out a literature review, covering a 15-year period from 1992 to 2007. The review focused on IS success-based studies. They developed a taxonomy of IS success, given the need for a process that can guarantee an understanding of IS success and its impacts. As a result, Petter et al. (2013) identified 15 success factors, the factors cover user characteristics (i.e., enjoyment, trust, user expectations, attitude toward technology, organisational role); organisational characteristics (i.e., extrinsic motivation, IT infrastructure, management support, management processes, and organisational competence); task characteristics (i.e., task difficulty, and task compatibility); and project characteristics (i.e., domain expert knowledge, relationship with developers, and user involvement). More recently, Nguyen, Nguyen, and Cao (2015) employed a multi-dimensional approach to analyse IS success studies. A review of 45 research papers published between 1992 and 2005, indicates that "success" is denoted in the form of individual benefits and IS success model (2003) is the most widely used by prior studies.

Numerous empirical studies (e.g., Floropoulos et al., 2010; Seyal & Abd-Rahman, 2015; Stefanovic et al., 2016) have focused on the model to examine use, user satisfaction, and the success of IS, which are related to the e-Government context, specifically from the internal users' perspective. Floropoulos et al. (2010), for instance, examined the success of Greek taxation IS from the employees' perspective. Seyal and

Abd-Rahman (2015) tested the model to measure one of the e-Government systems, which was financial and accounting IS in Bruneian, also based on employees' perspective. Stefanovic et al. (2016) used the IS success model to measure the success of e-Government IS in Serbia from employees' perspective.

Following Floropoulos et al. (2010) and Stefanovic et al. (2016), and since the aim of this research is to investigate the success of GFMIS, which is one of the offshoots of the e-Government system, the IS success model (2003) is considered the most appropriate model for this study. It is imperative to conduct a study on the success of various IS in the developing nations, like Jordan, by adopting and expanding the IS success model, and by determining how the model can help explain the variations in end-user satisfaction and success towards using GFMIS in the context of Jordan.

2.6 IS Success Model Constructs

Sections 2.6.1 to 2.6.6 discuss in detail net benefits, user satisfaction, use, information quality, system quality, and service quality. The following sections elaborate on the IS success model constructs tested in the present study.

2.6.1 Net Benefits

The central motivation behind the development of IS is value creation for stakeholders (Seddon et al., 1999). With respect to IS success, one of the most elusive aspects is the definition and measurement of value created. DeLone and McLean (2016) stated the most significant measures of success for managers, designers, and users, are the measures that capture the crucial outcomes of deployment and use of the system. Out of all the constructs in the IS success model, net benefits are indicated as a key construct in influencing the success of e-government systems (Stefanovic et al., 2016).

Terminologically, net benefits or net impacts indicate the level at which IS contributes (or does not contribute) to the successful performance of individuals, organisations, industries, and nations (Gable, Sedera, & Chan, 2008; Petter et al., 2008). Examples could be in the form of improved employees' productivity, improved decision-making, cost reductions, improved profits, increased sales, consumer welfare, and economic development (Petter et al., 2013; Seddon, 1997).

In the context of GFMIS, this system improves the PFM of the government by enhancing financial control, management, and reporting (USAID, 2014a). Specifically, GFMIS helps GoJ employees to generate more accurate, comprehensive, reliable, and timely financial information, thus directly contributing to improvements in accountability, transparency, and PFM efficiency (GFMIS, n.d.). In addition, GFMIS can exchange financial information easily and quickly between employees, and support them in decision-making at the appropriate time (Sawalha & Abu-Shanab, 2015; Shannak, 2015).

2.6.2 User Satisfaction

IS use is necessary but not sufficient to create system benefits (Wu & Wang, 2006). Hence, user satisfaction is a common indicator of the success of IS and has acted mostly as a proxy measure for other success dimensions (Bokhari, 2005; DeLone & McLean, 2016).

User satisfaction entails the user's sense of fulfilment as a result of his/her usage experience; in short, it entails the difference between the projected and actual outcomes (Chiu et al., 2016). A small difference (i.e., when the actual outcome exceeds the expected outcome) will boost user satisfaction, and hence, positively affect the perception of usage benefits and usage intention. Therefore, the factors influencing user satisfaction are the overall IS quality factors, system use, and actual benefits.

Seyal and Abd Rahman (2015) revealed a strong and positive relationship between information quality and user satisfaction. This finding is corroborated by further support of other prior literature (e.g., Kim-Soon, Ibrahim, Razzaly, Ahmad, & Sirisa, 2017; Laumer, Maier, & Weitzel, 2017; Tam & Oliveira, 2016; Wang & Yang, 2016). However, some scholars (e.g., Chiu et al., 2016; Hsu, Yen, & Chung, 2015; Lee & Lee, 2012) have not found a significant relationship. Petter et al. (2008), in their meta-analysis, discovered that the majority of the studies (15 out of 16 studies) have found strong support between these two variables. Of the 10 studies, nine have shown a moderate relationship, while three out of the six studies have shown a mixed relationship.

2.6.3 Use

Positive outcomes cannot be derived from IS without the system's acceptance, adoption, and usage by the end-users (Alryalat et al., 2013). System use refers to the manner and degree to which customers and employees utilise the capabilities of an IS (DeLone & McLean, 2016; Petter et al., 2008). Various proxies have been used to measure use as a concept in Management Information System (MIS) discourse. DeLone and McLean (2003) measured the "usage" of MIS by incorporating everything from clicking on a website to navigating it, retrieving information, and performing transactions.

Gable et al. (2008) and Seddon (1997) maintained that the variable, "use", needs to be removed from the IS success model as usage is completely mandatory and "use" is an antecedent (and consequence) of IS impact and not a dimension. Several empirical studies (e.g., Choi et al., 2014; Sappri & Baharudin, 2016; Sappri et al., 2016), have proven that their study's frameworks are the same as that of the IS success model, but the main difference is that the variable, "use", has been excluded due to it not being statistically significant for mandatory systems. However, DeLone and McLean (2016) and Petter et al. (2008) mentioned that this is flawed, given that when "use" is required, there is variability in the intensity and quality of use, which is likely to have a significant effect on the achievement of the benefits expected from the system. They also argued that certain users will utilise only a few features of the system (extent), which could lead to a lower-than-ideal outcome; whereas, others will not explore in-depth the factors that may impact or modify the decision of users (thoroughness).

Additionally, there is no system where its "use" is absolutely compulsory. For instance, at certain stages of the organisation, the management or executive committee may decide to implement an MIS and mandate employees on its usage. Accordingly, while the usage of a system may be obligatory at one level, the continuous adoption and use of the system itself could be exclusively voluntary in line with the judgment of management at the top level (DeLone & McLean, 2016).

Moreover, a number of previous studies have adopted the "use" construct in the area of mandatory IS (Almutairi & Subramanian, 2005), and specifically, mandatory e-

Government IS (Seyal & Abd Rahman, 2015; Stefanovic et al., 2016). Hence, use considered an appropriate measure for GFMIS success, if it captures the extent, nature and richness of use (DeLone & McLean, 2003; Doll & Torkzadeh, 1988; Wu & Wang, 2006). Thus, this study adopts the "use" construct.

Several previous studies have documented a significant relationship between system use and net benefits at the individual level (e.g., Edrees & Mahmood, 2014; Hsu et al., 2015; Xinli, 2015); while others reportedly have found an insignificant relationship between system use and net benefits (Cho et al., 2015; Manchanda & Mukherjee, 2014; Marjanovic, Delić, & Lalic, 2015).

In the context of GFMIS, effective use of GFMIS facilitates extraction of specific information that is required to perform different functions, while at the same time, helping to save time and effort (Ibrahim & Dauda, 2014; Shannak, 2015). Therefore, when employees perceive that they have achieved a high level of benefits from using GFMIS, they users will be more inclined to utilise and extend their use of GFMIS functions (Hsu et al., 2015; Shannak, 2015; Urbach & Müller, 2012; Youssef & Alsharari, 2017).

The use of GFMIS covers seven major functions: Budget preparation and implementation; Project management; Procurement management; Cash management; Receivables and revenue management; Payment management; and Financial and Accounting Processes/General Ledger. Therefore, this study adopt use to measure the extent of using GFMIS in performing these tasks.

2.6.4 Information Quality

IS manages information and provides employees with the needed information to accomplish their daily tasks (Petter et al., 2012). Therefore, information quality must be considered as one of the key factors of a system's success (Wu & Wang, 2006). Moreover, it is also a crucial factor influencing user satisfaction and information relevance (DeLone & McLean, 2016).

Information quality refers to the desirable characteristics of the system's outputs, for example, relevance, understandability, and accuracy (Petter et al., 2008). Some extant studies have indicated a strong relationship exists between information quality and user satisfaction, for example, Fan and Yang (2015), Wang and Yang (2016) and Weerakkody, Irani, Lee, Hindi, and Osman (2016).

Generally, the basis of an IS entails the management of information and the provision of essential information for government staff (Petter et al., 2012). Specifically, Diamond and Khemani (2006), and Youssef and Alsharari (2017) characterised GFMIS as relevant, accurate, up-to-date, sufficient, and reliable. Therefore, to increase the net benefits of the GFMIS; thus, governments and IS designers need to develop GFMIS with better information quality that will subsequently affect employees' usage behaviour and the evaluation of satisfaction (Alsharari & Abougamos, 2017; Urbach & Müller, 2012; Youssef & Alsharari, 2017).

2.6.5 System Quality

According to Stefanovic et al. (2016), in order to improve the success of an e-Government system, authorities involved need to develop the system in a way that it would have better usability and user-friendliness, as well as be easy to use. Studies have defined system quality as the extent of attaining expected characteristics, or the technical aspects of an IS (Lai & Yang, 2009; Petter et al., 2008; Wu & Wang, 2006). Such expectation is in the form of ease of use, reliability, and system flexibility (Petter et al., 2013). In other words, it represents a measure of IS performance based on technical and design perspectives (Gable et al., 2008).

Globally, these constructs have been measured using various methods that have yielded varying results (Petter et al., 2008). At the individual level, most studies have indicated a significant relationship between system quality and user satisfaction (Agbabiaka & Ugaddan, 2016; Laumer et al., 2017; Tam & Oliveira, 2016; Weerakkody et al., 2016). In addition, Petter et al. (2008) discovered a significant relationship between system quality and user satisfaction in all of the 21 studies they covered. In contrast, several other studies have not found a significant correlation, including Choi et al. (2014) and Floropoulos et al. (2010).

2.6.6 Service Quality

The ability of the IT department to support users, has emerged as an important dimension of IS success (Seddon, 1997). Service quality is represented by the quality of support which users of system can obtain from the IS/IT department staff (Petter et al., 2013; 2008; Roky & Al Meriouh, 2015). DeLone and McLean (2003) claimed that modern advances in IS justify the inclusion of service quality as a separate dimension of the variable owing to its key role in avoiding more complications of the model. DeLone and McLean likewise aggregated the impact measures into a sole net benefits variable (Urbach & Müller, 2012). In addition, failure to take into consideration service quality as a dimension, along with the dimensions of "system quality" and "information quality" in assessing IS success, may lead to confusing results, where lower-than-successful outcomes (i.e., unfavourable "net impacts") may be the outcome of poor service quality even when there is satisfaction with the other two quality dimensions (DeLone & McLean, 2016).

Prior studies that have examined the relationship between service quality and user satisfaction have reported mixed findings. Some extant studies (e.g., Chiu et al., 2016; Hollmann, Lee, Zo, & Ciganek, 2013; Marjanovic et al., 2015; Subiyakto, Ahlan, Kartiwi, & Sukmana, 2015) have documented a positive relationship. Consistent with Petter et al. (2008), they indicated that creating awareness and providing support would instantly affect user satisfaction. On the contrary, other studies (e.g., Al-Debei et al., 2013; Laumer et al., 2017; Poelmans, Reijers, & Recker, 2013; Stefanovic et al., 2016), at the individual level, have reported no relationship between the variables.

2.7 Prior Studies Using IS Success Model

IS success model is utilised in numerous IS fields, including electronic commerce (Chen, Jubilado, Capistrano, & Yen, 2015; Tam & Oliveira, 2016); e-healthcare (Hossain, 2015; Hsiao, Mai, Loc, & Lee, 2015); e-tourism (Samsi, Jamaluddin, Noor, Mohd, & Abdullah, 2016); and e-Government (Stefanovic et al., 2016). Furthermore, a number of other studies have evaluated the whole model (e.g., Al-Debei et al., 2013;

Balaban et al., 2013; Chiu et al., 2016; Eom, 2012; Lwoga, 2013; Soegoto & Luckyardi, 2018; VanCauter, Verlet, Snoeck, & Crompvoets, 2017; Wang & Liao, 2008).

Weerakkody et al. (2016) adopted the IS success model to examine the impact of system quality, information quality, trust, and cost on the United Kingdom (UK) citizens' satisfaction with e-Government services. A total of 1,518 responses from e-Government services users were received. The study found that information, system quality, and trust, are significant to citizens' satisfaction, while cost has a negative relationship with citizens' satisfaction. Laumer et al. (2017) expanded the IS success model in the context of the Enterprise Content Management (ECM) System by adding the workaround construct. They discovered that workaround is negatively related to individual benefits, while overall quality factors have a positive relationship with user satisfaction.

To date, empirical studies on IS success on e-government have rarely considered the developing nations. Some researchers, such as Hu and Wu (2016), Manandhar, Kim, and Hwang (2015), Rana, Dwivedi, and Williams (2015) and Srefanovic et al. (2016), have considered China, Nepal, India, and Serbia, respectively. However, studies which have considered Jordan are limited. Moreover, Rana et al. (2015) argued that despite the considerable attention given by researchers to IS success models, there is a lack of research on the successful implementation of e-Government systems. Consequently, this study adapts the IS success model due to its proven effectiveness and aptness for developing the conceptual model proposed in this study. Several success variables are integrated into the IS success model to facilitate a more comprehensive approach in addressing the research problem.

Having identified a practical or context gap in the application of IS in the PFM or public sector in Jordan, this review, therefore, examines the literature gap with a view to determining whether or not the practical gap has been addressed by studies, especially in the Jordanian context. In order to achieve this, the current section provides a comprehensive literature review of prior works that have utilised the IS success model as the theoretical foundation.

The researcher extracted necessary information from the published articles and tabulated the information for the ease of synthesising it (refer to Appendix D). The next section elaborates the research methodology used. The section specifically gives an outline of the searching and selection criteria of relevant studies. Following that, the present study presents results and discussion, specifically on the demographic characteristics, the topics of focus, models or theories frequently applied with IS success model, IS success model constructs analysis, and other constructs integrated into the IS success model.

2.7.1 Methodology

2.7.1.1 Searching and Selection Criteria of Relevant Studies

Summarising existing literature is a difficult task in every field of research (Cronin, Ryan, & Coughlan, 2008). According to Webster and Watson (2002), an ideal literature review provides fundamentals to advance the existing knowledge, unveils the gaps and problems of existing research, provides theoretical foundations for model development, and highlights the areas with sufficient or insufficient research. However, due to the limitations of human data processing, the literature review suffers from the human inability to handle large volumes of research articles (Mortenson & Vidgen, 2016).

Hence, the first step of conducting literature review analysis is to locate the research publications covering the specific topic of interest (Cronin et al., 2008). The main concern of the present section is to review past literature on IS success that is available in online databases. The next paragraphs highlight how this study collected and refined the number of relevant manuscripts to ensure sufficient samples of work.

The literature review analysis started with locating the articles related to IS success. To achieve a high percentage of relevant articles while narrowing down the search outcomes, the researcher limited the number of online databases, document types, and research areas. Webster and Watson (2002) stated that major contributions on a given topic of interest are commonly published in high ranked journals. Therefore, the present study considered Scopus databases, as it points out the top journals on IS.

According to Cronin et al. (2008), the use of keywords is the most common method in literature search. The use of keywords helps researchers to obtain the title of papers that are related to a specific field or topic (Ramdhani, Ramdhani, & Amin, 2014). Since the words that are directly related to the theme of this study, "IS success model", produced limited results, following Cronin et al.'s (2008) suggestion, this study chose alternative keywords with similar meanings to elicit further information. Hence, the researcher combined "DeLone and McLean" with "IS success model". By using Scopus databases, the search strategy specified the terms, "IS success model" and/or "DeLone * McLean" occurring in the article title, abstract, or keywords of the article. Other selection criteria included articles published in the 2010-2018 timeframe, written in English, empirical in nature, employed quantitative approach and focused on the individual as the unit of analysis. As a result, this study targeted all the quantitative studies that used the DeLone and McLean's IS success model (2003) as a theoretical foundation. Of 436 articles, only 93 articles were retained for analysis after a series of filtering stages described in Figure 2.3.

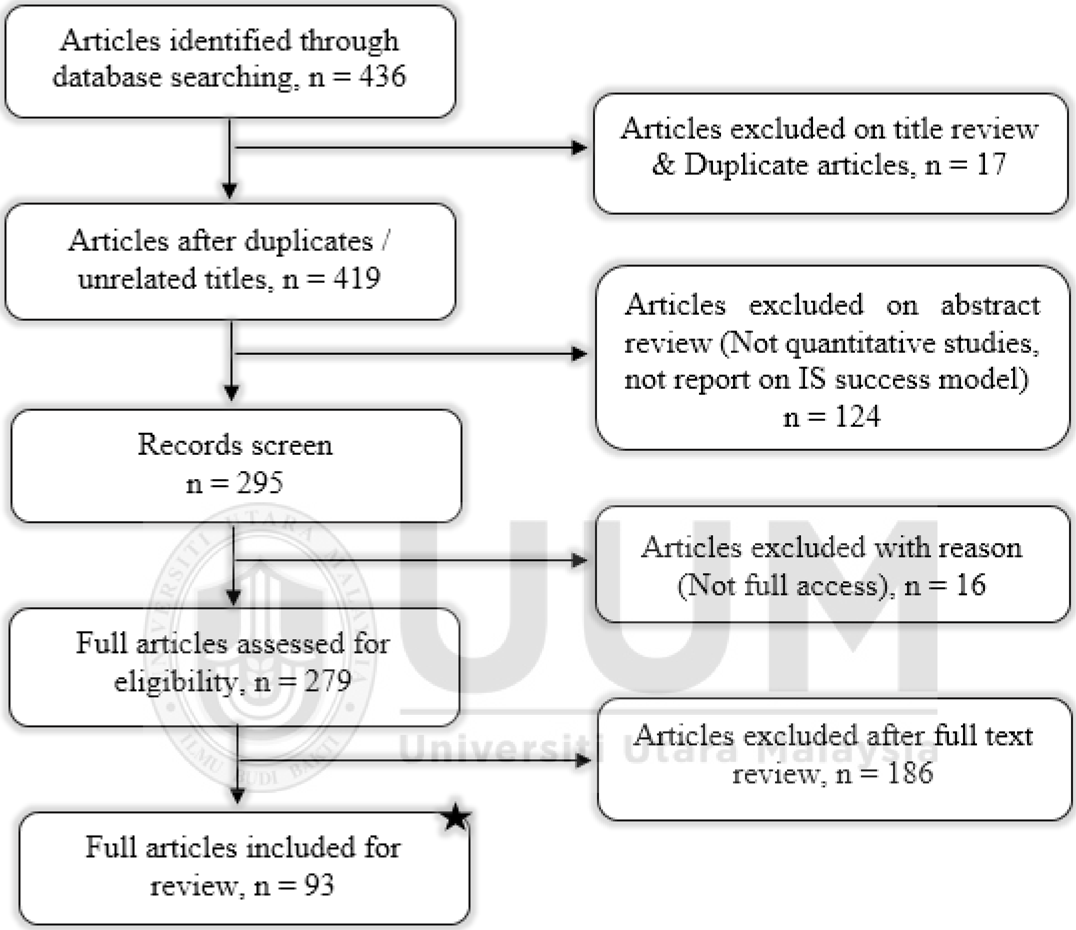


Figure 2.3. Literature Review Information Flow Diagram
**By using the Scopus databases*

2.7.1.2 Data Extraction and Synthesis

Researchers have used numerous tools to synthesise, analyse, and summarise the literature, and among all these tools, Microsoft Excel is widely used and accepted by researchers (Bandara, Furtmueller, Gorbacheva, Miskon, & Beekhuyzen, 2015). Using such a table in the present study, the researcher extracted necessary information from the published articles and tabulated the information for the ease of synthesising it. Specifically, the name(s) of the author(s); the title of the study; the year of publication; keywords; the topic of the research; the country where the research was conducted; the objectives of the study; methodology adopted; the independent and dependent variables examined; key findings and recommendations; and any needed information for this review. This review is ultimately categorised into several parts comprising the continental concentration of the previous studies, for example, the major research objectives, the major variables examined, and the results of the prior literature. These data were analysed in several different ways, as reviewed in the following sections.

2.7.2 Review Based on Continent/Country

The reviewed articles deal with studies conducted in five continents, comprising Asia, Europe, North America, Africa, and South America. The studies are allocated in this section according to geographic distribution, "Sources of primary data." As contained in Table 2.2, the highest number of researches conducted in the field of IS success model during the period under review emanated from Asia. Specifically, 66 articles (e.g., Chen, Rungruengsamrit, Rajkumar, & Yen, 2013; Cho et al., 2015; Kim-Soon et al., 2017), representing 67% of the studies, are from the Asian continent.

Table 2.2. *Articles from Continents*

Continent	Number of Articles*	Percentage
Asia	66	67.3
Europe	21	21.4
North America	5	5.1
Africa	5	5.1
South America	1	1
Total	**98**	**100**

*Comparative studies considered 2/3 separate studies

The lowest number of articles come from South America. Also, the reviewed articles from Europe, North America, and Africa account for 21%, 5%, and 5%, respectively. The highest percentage of studies in IS emanating from Asia, may be a result of many countries in Asia, being developing countries with medium or high levels of adoption of IS with a low level of technological advancement. On the other hand, the low level of research in the advanced continents, such as Europe, North and South America, may perhaps be as a result of a high level of IS adoption with a high level of technological advancement that does not pose a problem to the countries.

Studies have been carried out in 39 countries across these continents. When categorised by ranking, Indonesia is ranked top with 18 studies (18%). Taiwan comes second with 11 studies (11%), and lagging behind, is Malaysia with five studies (5%). Table 2.3 presents the allocation of the studies according to geographic distribution. Comparative surveys on the IS success factors have also been carried out involving two or three different countries. In such cases, the researcher considered those as two or three separate studies (see, for example, Chen et al., 2013; Wie & Widjaja, 2017) as the survey outcomes were not contingent upon one another.

Table 2.3. *Review Based on the Country*

Country*	**No.**
Indonesia	18
Taiwan	11
Malaysia	5
South Korea	5
India	5
Portugal	4
USA	4
Germany	4
UK	4

* Only countries with more than three occurrences are presented

From Table 2.3 and the results of this analysis (refer to Appendix D), it seems that developing countries contribute by more than 70% from the previous studies, while in the Jordanian context, the concentration of research on IS is very low. Out of the 66 articles from Asia, only two (Al-Debei et al., 2013; Al-Nassar, 2017) studies are on Jordan. However, these studies have concentrated on the educational sector, particularly in the university setting. Hence, it appears that the empirical studies in the field of IS, especially in relation to the government sector in Jordan, are scarce.

2.7.3 Review Based on the Systems Examined

Several scholars have developed IS models to measure the success of IS. These models must be valid and in accordance with the needs and characteristics of the IS to be measured (Surya & Gaol, 2018). The IS success model is an indicator model suggested by DeLone and McLean in 2003 to evaluate IS success and performance. This model might be applicable in order to study the impact of IS on individuals or the organisations, and the effects of these on performance (Chiu et al., 2016). To date, this model has been employed from various perspectives on IS (Baabdullah, Alalwan, Rana, Kizgin, & Patil, 2019; Motiwalla, Albashrawi, & Kartal, 2019; Rana & Dwivedi, 2018; Widjaja, Chen, & Gonchig, 2018).

Several studies have used and supported the validity of the DeLone and Mclean model in different IS, such as enterprise resources planning (ERP) (Chen et al., 2016); e-health (Choi et al., 2014); e-learning systems (Aldholay, Isaac, Abdullah, Abdulsalam, & Al-Shibami, 2018a); knowledge management systems (KMS) (Wang & Yang, 2016); e-commerce (Rouibah, Lowry, & Almutairi, 2015); and e-government systems (Stefanovic et al., 2016). Results from this analysis show that 83 IS have been tested by the researchers. To facilitate analysis, this study grouped these systems under common characteristics. Table 2.4 lists the most popular IS in the current analysis.

Table 2.4. *Review Based on IS*

Type of IS	**No.**	**Type of IS**	**No.**
e-Government systems	16	e-library	3
e-learning	15	m-learning	3
ERP	9	Social network sites (SNS)	2
e-Commerce	6	Radio Frequency Identification	2
e-Banking	4	e-Insurance	2
e-Health	4	Academic IS	1
Websites portal	4	KMS	1
Business Intelligence System	3	Others	5
m-commerce	3		

e-Government systems have been most frequently examined (e.g., Al-Sulami & Hashim, 2018; Al Athmay, Fantazy, & Kumar, 2016); followed by e-learning systems (e.g., Wirawan, Wail, Adhiatma, Prabowo, Gutandjala, & Suroso, 2018). A number of systems have been just examined once, such as e-Prosata, Billing and Revenue Management Systems, e-Cargo; and e-Tourism (e.g., Surya & Gaol, 2018; Tangsuwan & Mason, 2018; Monika & Goal, 2017; Samsi et al., 2016), which is the least. However, this contradicts the results of Rana, Dwivedi, and Williams (2013a) and Rana et al. (2015), who mentioned that few studies have been undertaken to examine the success of e-government systems.

From the above results, it seems that IS success model is for different applications and has a certain power to explain the success/failure of these IS. This result is consistent with Legner et al. (2016), who explained that the IS success model is not dependent on technological features, but rather on the quality of dimensions as perceived by the users. This, therefore, enables the comparison of the success factors for various technologies and applications (Legner et al., 2016). In the current review, there is a study which has found that IS success model cannot explain the cause of success. Pringgandani et al. (2018) measured the success of one of the e-learning systems in the Indonesian educational sector; and found that six of eight hypotheses are insignificant. Hence, Pringgandani et al. (2018) suggested further research to find the determinants of the success of IS in order to create a suitable success model, especially in a place where the use of IS is mandatory.

In conclusion, out of the 16 articles on e-Government systems, to the best of the researcher's knowledge, no study has measured the success of GFMIS in one of the developing countries, while very few studies have measured the success of e-Government systems from the employees' perspective (see for example, Floropoulos et al., 2010; Sappri & Baharudin, 2016; Stefanovic et al., 2016). Hence, it appears that empirical studies in the field of GFMIS are needed, especially in relation to developing countries.

2.7.4 Review Based on the Industry/Sector

In the contemporary global world, the growth rate of IS/technology is high, and it now has become an agent of development for individuals, organisations, and governments at large. It has an impact on all facets of life. The performance of organisations and governments and their ability to withstand the competitive power depend on the extent to which they deploy IS. Supporting the acclaimed wider acceptability of IS, different concepts have emerged in the literature and in practice. Concepts, such as e-business, e-government, e-banking, e-health, e-Insurance, e-commerce, and e-learning, are the order of the day in contemporary society. In this section, the industries/sectors identified in the literature are classified into 14 sectors, comprising public sector, educational sector, banking industry, Small and Medium Enterprises (SMEs), health sector, the insurance industry, and others, depending on the type of activities (see Figure 2.4).

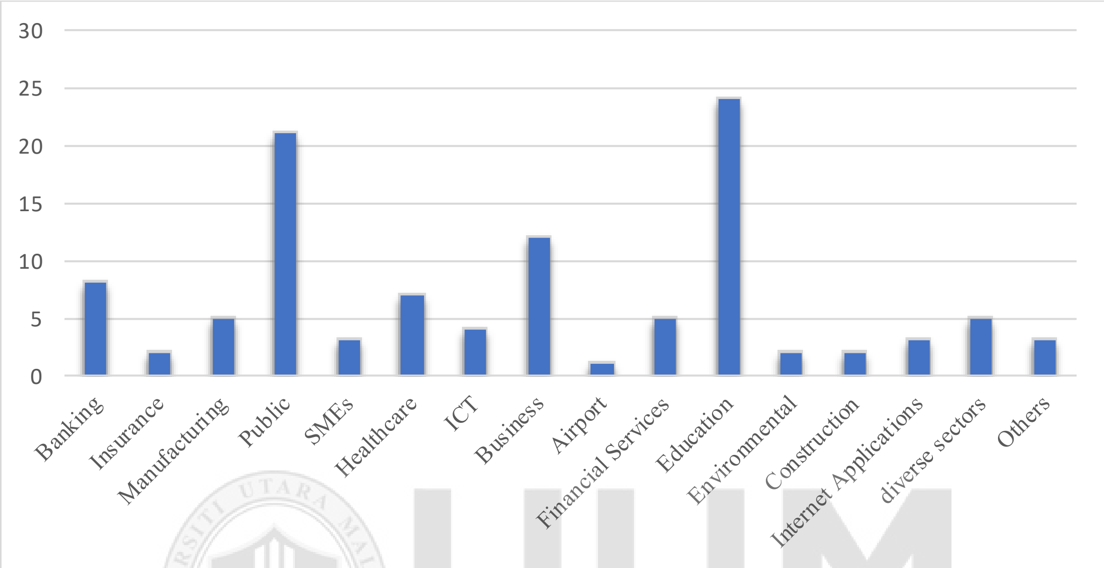


Figure 2.4. Review Based on Sector

As contained in Figure 2.4, 24 articles representing 24% of the total articles reviewed have been conducted in the educational sector (e.g., Sandjoj & Wahyuningrum, 2015; Kim-Soon et al., 2017), whereby the concentration of many of these studies is in respect of e-learning, and the respondents are mostly undergraduate students. A total of 21 articles, representing 21% of the total articles reviewed, have been conducted in the public sector (e.g., Agbabiaka & Ugaddan, 2016; Stefanovic et al., 2016;); while studies emanating from construction, environmental, and airport industries are less than 5%.

The present analysis also shows that little consideration has been given to the manufacturing division when compared to other industries (e.g., Public; Education and Healthcare); hence, this result is consistent with that obtained by Ghobakhloo and Tang

(2015). Additionally, this analysis contradicts that obtained by several researchers (Rana, Dwivedi, & Williams, 2013b; Rana et al., 2015; Sørum et al., 2012), regarding the public sector; the present study found that numerous studies have focused on measuring the public sector systems using IS success model. Few studies, on the other hand, have measured the success of e-government IS from the employees' perspective.

In conclusion, despite the problems confronting the government of the country in ensuring e-governance in developing countries, none of these studies, however, has been carried out in the public sector of Jordan. Hence, there appears to be a dearth of empirical studies in the aspect of e-Government IS success in Jordan.

2.7.5 Theories Complimenting IS Success Model

In response to DeLone and McLean's call for further tests and validation of the model in different contexts (DeLone & McLean, 2003; Urbach & Müller, 2012), a number of studies have attempted to validate selected constructs (e.g., Montesdioca & Maçada, 2015); or test the entire model in a single study (e.g., Al-Debei et al., 2013; Balaban et al., 2013), to further test the validity and applicability of the model. Other studies have either extended or re-specified this model by adding several variables (e.g., Al-Khafaji & Azeez, 2018; Al-Sulami & Hashim, 2018; Son, Hwang, Kim, & Cho, 2015).

While these examinations have been entirely grounded in the IS success model, some of the studies have incorporated other models or theories in an attempt to expand the applicability of the IS success model. Among the models or theories that have been used to complement the IS success model are: Unified Theory of Acceptance and Usage of Technology (UTAUT) to explain the adoption of e-government services (AL

Athmay et al., 2016); Expectation Confirmation Model (ECM) to explain the success factors of Internet Banking usage (Jagannathan, Balasubramanian, & Natarajan, 2016); and Technology Acceptance Model (TAM) to explain the success of the e-learning system (Sandjoj & Wahyuningrum, 2015). Taken as a whole, the theories and models integrated into the IS success model are summarised in Figure 2.5:

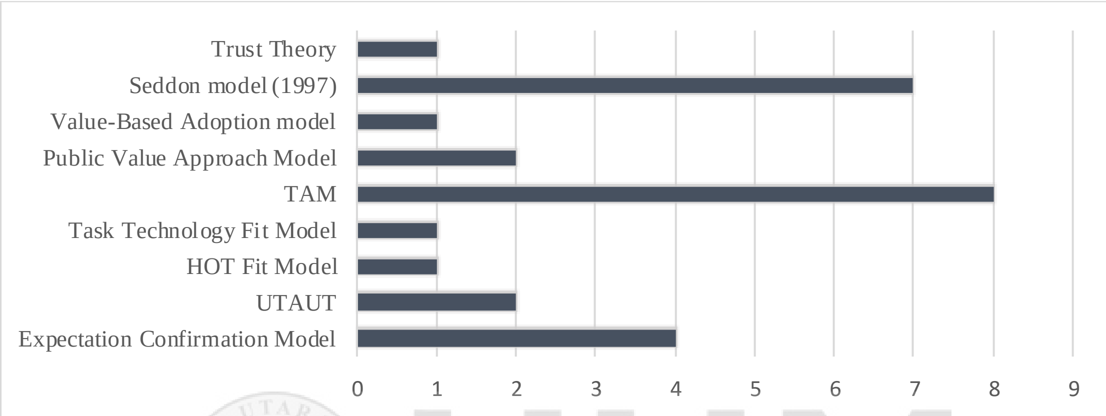


Figure 2.5. Theories Integrated into the IS Success Model

The result shows that TAM is the most frequently incorporated model into the IS success model (e.g., Mohammadi, 2015a; Mohammadi, 2015b); followed by the Seddon model (e.g., Rana et al., 2013a; Widjaja et al., 2018); ECM (e.g., Budiardjo, Pamenan, Hidayanto, & Cofriyanti, 2017; Ramayah, Ahmad, & Hong, 2012); UTAUT (i.e., Al Athmay et al., 2016; Mardiana, Tjakraatmadja, & Aprianingsih, 2015); and Public Value Approach Model (i.e., Agbabiaka, 2018; Agbabiaka & Ugaddan, 2016); with one occurrence for the trust theory (i.e., Chen et al., 2015); Value-Based adoption model (i.e., Wang, Wang, Lin, & Tsai, 2018); Task Technology fit model (i.e., Tam & Oliveira, 2016); and Human Organisation Technology Fit model (i.e., Rumambi, Santoso, & Setyohadi, 2017).

Incorporation of multiple models in a single study, to some extent, facilitates researchers to have a more comprehensive insight into the relevant issues. For example, Widjaja et al. (2018) integrated IS success model with the Seddon model to examine IS success of the central bank in a developing country (i.e., Mongolia). A number of studies have integrated three IS models. For example, Mardiana et al. (2015) combined the IS success model, UTAUT, and TAM, to identify important factors affecting the intention to use IS among government employees in Indonesia. Meanwhile, Ramayah et al. (2012) integrated TAM, IS success model, and ECM to determine the critical factors influencing e-training effectiveness amongst multinational companies in Malaysia.

As mentioned above, TAM is the most commonly used model to complement the IS success model. DeLone and McLean (2016) pointed out that the TAM captures a portion of IS success and is crucial to understand user behaviour. Nevertheless, they considered TAM is not as comprehensive as IS success model in measuring IS success. As DeLone and McLean (2016) further claimed, IS researchers have primarily established a link between the two models to understand the acceptance, and ultimately, the success of IS.

In conclusion, considering that the present study examines the success of one of the e-government systems, IS success model (2003) is regarded as the most cited model to explain IS success that links IS use, user satisfaction, and net benefits. Furthermore, IS success model is most applicable to examine the research problem raised in the present study as the dependent variables of the model are highly related to the practical issues discussed in section 1.2. Therefore, this study uses only the IS success model (2003) as the underpinning theory to develop the hypotheses.

2.7.6 Weight Analysis between IS Success Model Constructs

IS success model comprises six main variables: Information Quality (IQ), System Quality (SYQ), Service Quality (SEQ), Use (U), User Satisfaction (US), and Net Benefits (NB). Use and user satisfaction can be taken as both dependent and independent variables.

Of the 93 studies that have focused on the relationships between the IS success model constructs, four studies have made use of IS success model several times in a similar research study due to diverse analysis for the frameworks, country, and user types (e.g., Sandjoj & Wahyuningrum, 2015; Wie & Widjaja, 2017). In other words, multiple time listings of a study depending upon relationships or hypothesis numbers have been examined. For instance, in some situations, these studies conducted a review in two or three countries, and the comparison of results was made to examine the variances. For this review, such cases were considered as two/three separate studies because the data were analysed separately. Therefore, according to the results of the present study analysis, there are shreds of evidence of 98 occurrences of associations between the study variables.

A weighted analysis was performed by pairing independent/dependent variables to better assess the predictive power of each variable. This study adopted an approach proposed by earlier works (Jeyaraj, Rottman, & Lacity, 2006; Williams, Rana, & Dwivedi, 2015), in specifying the maximum and the minimum number of predictors used. The value of each of the predictors was classified as being the best, worst, or promising predictors. The predictive power (PP) was calculated by dividing the number of times the variable's (independent/dependent) association was determined as significant by the total number of times that the association had been surveyed across all researches (Williams et al., 2015). The outcome "1" of the weight analysis indicates that the association between variables is significant across all researches, while "0" represents a non-significant relationship of variables across all the researches studied (Jeyaraj et al., 2006; Williams et al., 2015). The weight indicates the analytical power of the independent variables of the study. Table 2.5 shows the results of weight analysis and the strength of the relationship between the variables in the IS success model.

Table 2.5. *Weight Analysis Results*

Relations	#	(+)*	(-)*	Insig.	Weight	PP
IQ → U	37	18	0	19	18/37	.49
IQ → US	85	69	0	16	69/85	.81
SYQ → U	37	27	0	10	27/37	.73
SYQ → US	86	67	1	18	69/86	.80
SEQ → U	32	20	0	12	20/32	.62
SEQ → US	70	46	0	24	46/70	.66
U → US	32	28	0	4	28/32	.87
U → NB	41	34	0	7	34/41	.83
US → NB	58	56	0	2	49/50	.97

Notes: #: number of tested relationships; (+)*: positive significant relationship; (-)*: negative significant relationship; Insig.: insignificant relationship, PP: Predictive Power.

*Approach adapted from Jeyaraj et al. (2006) and Williams et al. (2015)

As shown in Table 2.5, all IS success model associations of the variables are evident in at least one research. Nonetheless, the empirical evidence from existing literature shows that different relationships have different levels of support as numerous studies have found a significant relationship between variables, and others, no significant correlation.

In terms of the independent variables, system quality is the most commonly used predictor, which has been tested 123 times. This is followed by information quality (122), and service quality (82). In terms of the dependent variable, user satisfaction is considered as the most tested variable (273 times).

A variable will be qualified as the best predictor if the weight of an independent variable is equal to ".80" or higher (Jeyaraj et al., 2006). Hence, based on the weight analysis reported in Table 2.5, the best predictors for user satisfaction are information quality (.81), system quality (.80), and use (.87). Meanwhile, the best predictor for use is system quality (.73). Finally, the best predictors for the net benefits are use (.83) and user satisfaction (.97).

However, several factors must be considered while considering these variables, for example, only "1" weight is not enough to declare a variable as best predictor (Jeyaraj et al., 2006). It is important to know how many times a specific association was studied, as reliable evidence from the researches is required to identify the best predictor (Jeyaraj et al., 2006). Therefore, Jeyaraj et al. (2006) suggested that to identify the best predictors, the relationship between independent and dependent variables must be examined at least five times. Figure 2.6 illustrates the predictive power of the independent/dependent variables.

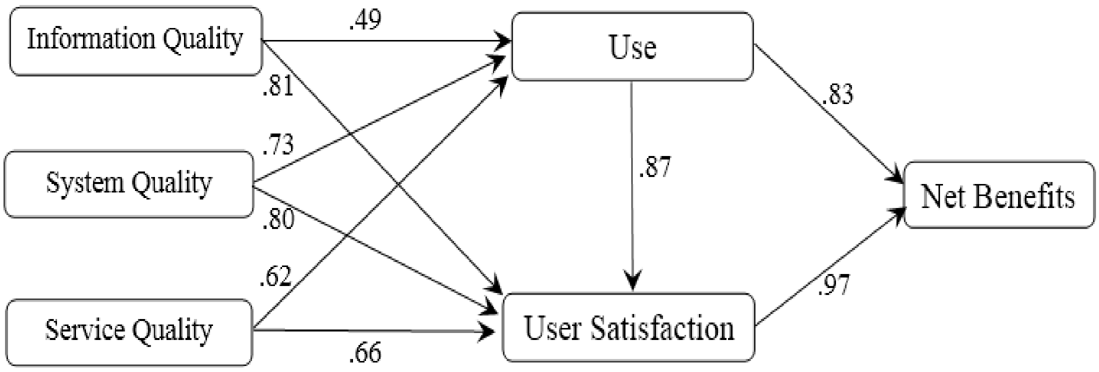


Figure 2.6. Weight Analysis between IS Success Model Variables
*Approach adapted from Jeyaraj et al. (2006) and Williams et al. (2015).

2.7.7 Other Constructs Integrated in the IS Success Model

As discussed earlier, numerous researches have been carried out to restructure or to expand the IS success model. Several scholars have been working on the model's validity and authenticity (e.g., Al-Debei et al., 2013; Dernbecher, 2014); while others have been suggesting other applicable dimensions into the existing model for a more comprehensive view of IS success (e.g., Aldholay et al., 2018a; Tam & Oliveira, 2017; Victor Chen, Chen, & Capistrano, 2013). Hence, this section reports several success variables that have been added in different paths or relationships of the IS success model and examines the factors affecting the IS success model in several studies.

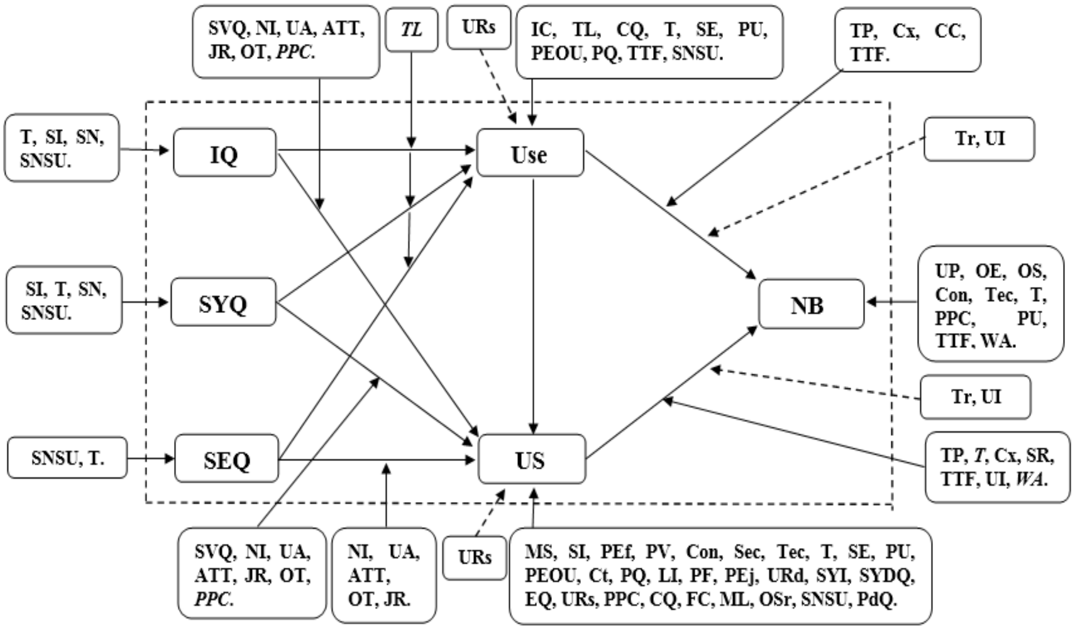
In the presence of different nature of relationships applied in earlier works, this section is restricted to examining the direct, moderating, or mediating impacts of the IS success factors on the IS success model dimensions. Furthermore, this study focuses only on the predictor variables of IS success, while ignoring the control variables. Table 2.6 reports 10 most frequently used success variables in prior studies.

Table 2.6. *Most Frequently Used Variables Integrated into the IS Success Model*

Variable	**Frequency**	**Referred Articles (Example)**
Attitude to technology	3	Rana et al. (2015); Wie and Widjaja (2017)
Educational quality	2	Mohammadi (2015a); Mohammadi (2015b)
Perceived ease of use	8	Mohammadi (2015a); Sutjahyo et al. (2018)
Perceived usefulness	19	Mardiana et al. (2015); Rana et al. (2014)
Process quality	3	Legner et al. (2016); VictorChen et al. (2013)
Self-efficacy	3	Aldholay et al. (2018a); Ramayah et al. (2012)
Social influence	2	AL Athmay et al. (2016); Wu and Chen (2015)
Trust	10	Agbabiaka (2018); Al-Khafaji and Azeez (2018)
Uncertainty avoidance	2	Chen et al. (2013); Wie and Widjaja (2017)
User involvement	2	Sappri and Baharudin (2016); Sappri et al. (2016)

Results reveal that perceived usefulness is commonly used with the IS success model, followed by trust and perceived ease of use. Other factors are also used but not as frequent as the first three mentioned. Comparing these results with those of Petter et al. (2013), the current results show that three factors, namely, trust, attitude toward technology, and user involvement, are considered as success factors that have consistently been found to affect IS success (Petter et al., 2013).

Other constructs least frequently tested include perceived value, security, self-readiness, transformational leadership, perceived enjoyment, perceived fee, civil conflicts, cost, user resistance, habit, facilitating conditions, complexity, and collaboration quality. Having more frequent testing in earlier studies makes the constructs have greater validity and reliability in predicting its dependent variable than other constructs. Figure 2.7 illustrates the mapping of all variables onto the relationships/constructs of the IS success model.



Notes: ATT - Attitude Toward Technology; CC - Civil Conflicts; Con - Confirmation; CQ - Collaboration quality; Ct - Cost; Cx - Context; EQ - Educational quality; FC - Facilitating Conditions; IC - Individual Characteristics; JR - Job Relevance; LI - Learning interaction; MS - Management Support; ML - Motivation to learn; NI - National Identity; OE - Organisational Environment; OS - Organisational Structure; OSr - Organisation Support; OT - Organisation Type; PEf - Perceived Effectiveness; PdQ - Product quality; PEj - Perceived Enjoyment; PEOU - Perceived Ease of Use; PF - Perceived Fee; PPC - Perceived Product Complexity; PQ - Process Quality; PU - Perceived Usefulness; PV - Perceived Value; SE - Self-Efficacy; Sec - Security; SI - Social Influence; SN - Subjective norms; SNSU - Social Network Service Utilisation; SR - Self-Readiness; SYDQ - System design Quality; SYI - System Importance; T - Trust; Tec - Technostress; TL - Transformational leadership; TP - Time Perception; Tr - Training; TTF - Task Technology Fit; UA - Uncertainty Avoidance; UP - User Performance; URd - User Readiness; URs - Users' Resistance; WA - Workaround.
Italic indicates variables were used as a mediator.
Line arrows: Previous studies propositions.
Dash line arrows: The present study propositions.

Figure 2.7. Diagrammatic Representation of Other Success Variables
*Approach adapted from Lee, Kozar, and Larsen (2003) and Williams et al. (2015).

The diagrammatic representation indicates the influence of an extensive list of variables on user satisfaction and use constructs. This is because the intention of the IS success model is to evaluate the IS success from users' perspectives, where the success of IS is proxied by these factors. Therefore, these results are consistent with Legner et al. (2016). They indicated that IS success model does not rely on technology features but quality dimensions from the perspective of end-users. Hence, several studies from different contexts have incorporated several variables with the quality factors to measure users' behaviour and attitude toward IS.

The analysis reported in Figure 2.7 further reveals that the previous variables have direct, moderating or mediating effects on the relationship between dimensions of IS success model and the determinants of IS success. For the direct relationship, some variables have reported a positive or negative effect on IS success model variables, while others have reported insignificant results. For example, several studies have found perceived usefulness to have a positive effect on user satisfaction and net benefits (Chen et al., 2015; Kim-Soon et al., 2017; Rana & Dwivedi, 2018; Widjaja et al., 2018). Further, perceived ease of use is found to have a positive effect on user satisfaction and use, and net benefits (Alali & Salim, 2013; Rana, Dwivedi, Williams, & Weerakkody, 2014; Sandjoj & Wahyuningrum, 2015). Some studies have not found any significant relationship (e.g., Alali & Salim, 2013; Mohammadi, 2015a; Mohammadi, 2015b).

Besides, trust is found to have a positive effect on user satisfaction and use (Al-Sulami & Hashim, 2018; Weerakkody et al., 2016); and on overall quality factors (Chen et al., 2015; Rana et al., 2015). In contrast, other studies have found that trust does not have any effect on use and net benefits (Agbabiaka, 2018; Agbabiaka & Ugaddan, 2016; Susanto, Bahaweres, & Zo, 2012). Regarding this construct, the analysis reveals that trust is the only variable that has been tested with all IS success model variables.

Several studies have found a negative correlation between a number of variables and IS success model variables. For example, Wang et al. (2018), in their study to examine the success of the m-learning application, found that perceived fee has a negative effect on user satisfaction and intention to use. Weerakkody et al. (2016), who investigated the influence of system quality, information quality, trust, and cost on user satisfaction of e-government services, found that cost has a negative effect on user satisfaction. Choi et al. (2014), who studied the impact of doctors' resistance on the success of the Drug Utilisation Review (DUR) system in South Korea, found that users' resistance has a negative effect on user satisfaction. Further, Rana et al. (2013a) examined the success of the online public grievance redressal system among the citizens of India and reported complexity to have a negative effect on the intention to use. Rana et al. (2014) also ascertained a negative effect of perceived risk on the intention to use.

With respect to the moderating and mediating effects, the analysis reveals that several variables have a moderating and mediating effect on the dimensions of IS success model. Overall, 13 papers have empirically tested the moderating or mediating effects of IS success model variables. For example, one of the studies (i.e., Glood, Osman, & Nadzir, 2016) was conducted in an unstable environment, where conflict is an integral part of social life. Glood et al. (2016) investigated the contributing factors of mobile government success in the Iraqi context from the perspective of citizens by testing the moderating role of civil conflicts. They found that civil conflicts negatively moderated the relationship between use and net benefits of mobile government.

Sappri and Baharudin (2016) investigated the factors influencing HRMIS success from the perspective of Malaysian public sector employees. The study confirms the positively moderating effect of user involvement on the relationship between user satisfaction and individual benefits. In another study, Sappri et al. (2016) tested the moderating effect of user involvement and self-readiness on the relationship between user satisfaction and individual benefits and found that user involvement moderates positively this relationship, while self-readiness does not have any effect. This result is consistent with Sabherwal et al. (2006), who reported that user involvement affects one or more of the variables of IS success. As for the mediating effect, Aldholay, Isaac, Abdullah, and Ramayah (2018b) reported a significantly mediating role of transformational leadership in the relationship between overall quality and actual usage of online learning in Yemen.

The present analysis also shows that while a number of factors have been tested as direct independent variables in one study, other studies have treated the factors as moderator/mediator, and vice versa. For example, while several authors have tested the direct effect of trust (e.g., Rana et al., 2015; Susanto et al., 2012), Agbabiaka (2018) tested trust as a mediator. Additionally, Rana et al. (2015) tested the direct effect of attitude toward technology with IS success model, while several studies have tested the moderating effect of attitude toward technology (Chen et al., 2013; Wie & Widjaja, 2017). Having said that, more research is needed to identify other related variables and to verify whether or not those variables best fit as a mediator, moderator, or direct independent variables of the IS success model.

In conclusion, the findings in this section reveal that IS success determinants are not limited to the IS overall quality factors that initially were specified in the IS success model. This observation concurs with Petter et al. (2013). Thus, researchers and practitioners can provide additional variables that can influence specific measures of the IS success model.

Based on the above discussion, despite the presence of several factors in prior studies, as far as the researcher is aware, no study has incorporated training to act as a moderator in the relationship between the independent variables (use and user satisfaction) and the dependent variable (net benefits) as done in the present study. Furthermore, despite user involvement having been tested as a moderator in the relationship between user satisfaction and individual benefits, the present study adopts user involvement as a moderator in the relationships between both use/user satisfaction and net benefits. Also, based on the review of previous studies conducted from 2010-2018, only one study has examined users' resistance as a determinant of the IS success model. Therefore, the present study analyses the impacts of users' resistance to the success of GFMIS, by determining its effect on use and user satisfaction.

Finally, despite the existence of several variables (e.g., overall quality factors, user resistance, and user involvement) in prior studies, few studies has incorporated these factors in a single research model to assess the relationship between these factors and the net benefits of GFMIS in Jordan's public sector as executed in this research.

2.8 Other Constructs Tested in the Present Study

The integration of several success variables into the IS success model could lead to a more wide-ranging approach for addressing the research problem. More specifically, this study expands the IS success model by incorporating three relevant variables. First, the present study examines the direct relationship between user resistance and GFMIS use/user satisfaction. This is because resistance to use the IS might cause underutilisation of the system, which may affect the level of use and user satisfaction (Adeleke, 2016; Haddara & Moen, 2017). As a result, it could threaten the benefits of the system, thereby leading to the system's failure (Zhang et al., 2005).

Secondly, the literature review (refer to sections 2.4.3 and 2.7.7) indicates none of the existing studies on GFMIS and the studies adapting IS success model, have considered training either as a moderating or independent variable while examining IS success at an individual level. Having considered this gap and the fact that training is viewed as among the CSFs for an IS implementation (Hwang, 2014; Hwang et al., 2012), this study integrates training as a viable moderator to explain the relationship between GFMIS use/user satisfaction and net benefits.

Finally, to expand the model further, this study proposes user involvement as a moderating factor in the relationship between GFMIS use/user satisfaction and net benefits. According to Sappri and Baharudin (2016), users involved in IS have a positive attitude to and perception of its usefulness, thereby increasing their satisfaction towards the system. Hence, the involvement of staff at different stages of IS implementation is important (Ghobakhloo & Tang, 2015; Sappri et al., 2016). Sections 2.8.1 to 2.8.3 discuss in detail user resistance, training, and user involvement, which represent the other constructs integrated into the IS success model in the present study.

2.8.1 User Resistance

User resistance has been indicated as a crucial determiner of implementation success (Hirschheim & Newman, 1988; Markus 1983; Laumer & Eckhardt, 2012). Users' resistance behaviour arises when the usage of the IS (e.g., ERP system) is made obligatory in that employees must use the system even if they prefer not to use it (Mahmud, Ramayah, & Kurnia, 2017). Therefore, in the case of mandatory IS usage, organisations need to take into consideration the negative attitude towards using technology and devise necessary action for the success of the system (Haddara & Moen, 2017; Laumer, Maier, Eckhardt, & Weitzel, 2014; Mahmud et al., 2017).

In IS research, user resistance is conceptualised based on the objectives of the study. For instance, Kim and Kankanhalli (2009) and Markus (1983) defined the term as the users' opposition to change in relation to new IS implementation. Hirschheim and Newman (1988) delineated user resistance as an adverse reaction to a proposed change which may manifest itself in a visible, overt fashion, such as through sabotage or direct opposition; or in a less obvious and covert manner, such as relying on inertia to stall and ultimately kill a project. Klaus and Blanton (2010) conceptualised the term as the behavioral expression of users' opposition to a system during its implementation; whilst Lin and Rivera-Sánchez (2012) demarcated is as the refusal to continue to use a system because the benefits of discontinuing its use are perceived to be greater than the costs. Lapointe and Rivard (2005) summarised various other definitions for user resistance.

The contextual aspect of user resistance has been examined in several past studies. Markus (1983) examined user resistance based on the three orientations: 1) system; 2) people; and 3) interaction. The system-oriented approach attributes resistance to technology-based factors, including those related to user interface, performance, security, ease-of-use, and degree of centralisation (Markus, 1983; Jiang et al., 2000). The people-oriented approach identifies individual or group-related factors as precursors to resistance, including background, traits, and attitude toward technology (Markus, 1983; Jiang et al., 2000). Finally, the interaction-oriented approach states that resistance is caused by perceived social losses due to people-technology interactions which affect power relationships as well as social and job structures (Markus, 1983; Jiang et al., 2000).

Bhattacherjee and Hikmet (2007) integrated the TAM and resistance to change by employing the dual-factor model of technology usage to come up with a theoretical model for examining the resistance of physicians to healthcare IS usage. The authors suggested that the integration of resistance to change into the TAM will improve understanding as to why people resist certain technologies. According to them, although acceptance behaviour targets a specific IS and is driven by user perception, resistance entails a broader opposition to change prompted by the projected negative impacts brought about by that change. The authors concluded that people are not resisting the technology itself, but rather the changes brought about by the implementation of a new IS at the workplace.

Klaus and Blanton (2010) established a framework for explaining the occurrence of user resistance during system implementation. According to them, enterprise system implementation is a rich ground for examining user resistance due to the system's complexity compared to other types of software, its mandatory usage, and the requirement for users to adapt to new processes and utilise standardised systems to enable information sharing and retrieval. The authors identified 12 factors that drive user resistance, which were subsequently categorised into four main groups of issues, namely the individual, the system, the organisational, and the process factors.

Salih, Hussin, and Dahlan (2013) identified the factors that can give rise to user resistance to ERP system usage in the post-implementation stage in one of the Malaysian companies. The findings of the study show that change in job content, increased efforts, lack of user training, and lack of user involvement, are the main factors predicting user resistance. Ngafeeson and Midha (2014), who focused on user resistance to IT in the healthcare sector in the USA, found that user resistance is predicted by perceived threats emanating from two sources: perceived loss of control and perceived dissatisfaction.

Based on the review of previous studies conducted from 2010-2018 (refer to Figure 2.7), only one study (i.e., Choi et al., 2014) has examined user resistance as a determinant of the IS success model to the best of the researcher's knowledge. Choi et al. (2014), who studied the impact of doctors' resistance on the success of the DUR system in South Korea, found that users' resistance has a negative effect on user satisfaction. In another context, Adeleke (2016) focused on the pre-implementation end-user resistance to IS implementation in Nigeria. Using a qualitative method, the author identified three major themes that can cause participants' resistance to change: perceived loss of jobs, costs of switching technology, and concerns with ease of use of new technology. Ngafeeson and Midha (2014) suggested further research on the factors that could predict user resistance from different perspectives, because user resistance is believed to be a complex concept. Likewise, Adeleke (2016) suggested further inquiry into the process of user resistance to IS implementation.

Hence, in the GFMIS context, as noted by Combaz (2015), Khan and Pessoa (2010) and USAID (2008), the main stakeholders, especially the prospective users of the GFMIS, need to be part of the conceptual design preparation of the project. This is necessary to minimise issues of resistance arising from undue vested interests and opposition from persons who may see the introduction of the new system as a threat to their jobs (Haddara & Moen, 2017). Taking the above step is necessary in view of the fact that any systems implementation that ignores change management arising from opposition may be likely to fail (USAID, 2008).

In the Jordanian context, a survey conducted by USAID (2014a), has found that most of the respondents (76%) are of the view that the new system is slower compared to the old system. Some of the respondents believe that the GFMIS makes their work less efficient, while some further believe that the GFMIS is quite taxing to their job routine as approvals must be sought and granted prior to undertaking certain procedures under the GFMIS, which is viewed as duplication of work. Furthermore, the earlier report of USAID (2013) states that the delay in implementation of GFMIS was caused by pre-implementation resistance. In addition, Shannak (2015) reported that users' resistance is considered as one of the challenges of the GFMIS in Jordan. Therefore, the above argument justifies focusing on user resistance to GFMIS in this study.

2.8.2 Training

Generally, the inability of the GoJ to guarantee successful e-Government has been linked to the inability to retain competent technical staff in government agencies, non-skilful and incompetent workforce, and resistance to change by the workers (AL-Naimat et al., 2013; Jordanian e-Government, 2013). Consequently, training of employees has become a critical component for successful e-Government initiatives that needs to be integrated within the implementation phase of e-Government (AL-Naimat et al., 2013; Alshibly et al., 2016; Tbaishat & Khasawneh, 2015). For instance, studies have shown that training of employees on IS usage can improve their performance, and subsequently, lead to the successful implementation of e-Government in Jordan (Al-Gharaibeh & Malkawi, 2013). Other researchers (Alkhaleefah et al., 2010; Al-Shboul et al., 2014; Majdalawi et al., 2015) have further confirmed that lack of training is a significant challenge for the successful implementation of e-Government. The GoJ should therefore, avail its employees with more training and educational opportunities pertaining to the use of IT to maintain and improve the future usage of such technology (Alshibly et al., 2016; Tbaishat & Khasawneh, 2015).

For GFMIS, Khan and Pessoa (2010) emphasised that employee skills are necessary to effectively access, operate, locate, manage, understand, and evaluate GFMIS initiatives at various stages. In addition, manuals and other materials required for training need to be included to introduce the basics of using GFMIS, specifically on the GFMIS business processes and also on hands-on training (GFMIS, 2017b). This would be attained by putting in place well-defined training programmes that promote capacity and confidence building amongst users (Hendriks, 2012). Sawalha and Abu-Shanab (2015) found that GFMIS end-users are well-trained employees when managers can conduct well-planned training and many workshop sessions before using the GFMIS.

Wei et al. (2011) mentioned that training reflects users' perception of their IT training in terms of usefulness, relevance, and adequacy. Studies in the IS context that have considered training as a variable, include Bradford and Florin (2003), Vatanasakdakul, Aoun, and Chen (2017) and Wei et al. (2011). Bradford and Florin (2003) developed a model that draws upon the Diffusion of Innovation Theory and IS success model to examine the success factors of ERP systems. The study tested the relationship between innovation, organisational, and environmental characteristics and system success (using two dimensions: perceived organisational performance and user satisfaction). Training (a factor under the organisational context) was found to affect user satisfaction. Vatanasakdakul et al. (2017) found a positive effect of training on user satisfaction. Wei et al. (2011) showed that a high-quality IT training programme in schools is crucial to computer self-efficacy for students in Singapore.

Moreover, training has been recommended by numerous studies (Lundu & Shale, 2015; Odolo & Gekara, 2015), as a factor that could enhance the effective use of GFMIS. As noted by some studies (e.g., Ajami & Mohammadi-Bertiani, 2012; Jalil, Zaouia, & El Bouanani, 2016; Umble, Haft, & Umble, 2003), training can effectively increase employees' knowledge and performance. In addition, Zaied (2012) noted that training could enable the users to develop favourable perceptions of perceived usefulness and perceived ease of use, given that with training, less effort is required in learning and accepting the technology. Training is also an important element for introducing a new technology and for reducing rejection due to the complex nature of the technology.

A number of IS studies have used training as a moderator. Ahearne, Jelinek, and Rapp (2005) integrated user training as a moderator to explain the correlation between the use of sales force automation system and the performance of the salesperson. The results show that the salesperson’s performance can only be enhanced by the SFA tools if there is sufficient user training. Norfazlina, Akma, Adrina, and Noorizan (2016) examined the effect of user satisfaction on the task productivity of the customer information system via training. The findings demonstrate that training plays a moderating role in the relationship between the two aforementioned variables. Following Ahearne et al. (2005) and Norfazlina et al. (2016), the present study uses training as a moderator to test the relationship between GFMIS use/user satisfaction, and net benefits. At present, none of the existing studies of GFMIS and the IS success model has examined the training variable as a moderator or independent variable at the individual level.

2.8.3 User Involvement

Al-Gharaibeh and Malkawi (2013) recommended the engagement of employees of governmental entities at the stages of analysis, design, construction, and deployment of IS. User involvement refers to the extent of the users' participation in the process of IS development and implementation (Petter et al., 2013).

Ghobakhloo and Tang (2015) argued that user involvement positively contributes to IS usage by maximising one's cognitive skills during interaction with IS, which would ultimately result in enhanced organisation-wide user satisfaction. In the context of the GFMIS, Combaz (2015) and Khan and Pessoa (2010), asserted that the main stakeholders, especially the prospective users of the GFMIS, need to be part of the conceptual design preparation of the project. This is because without user involvement, the process of IS implementation would fail (Zhang et al., 2005). User involvement can reduce the resistance to change by the workers, and this will assure the successful implementation of the e-Government initiative (Jordanian e-Government, 2013).

User involvement represents one of the suggested additions made to the IS success model (DeLone & McLean, 2003). However, there are mixed findings on the relationship between user involvement and use, suggesting that further studies are needed (Petter et al., 2013).

Ghobakhloo and Tang (2015), in their study of IS success among manufacturing SMEs in Iran and Malaysia, found that user involvement has a positive relationship with use. In another study, Zaied (2012) found user involvement as one of the important factors of user behaviour and user satisfaction. In addition, Amoako-Gyampah (2007) found that involvement is very important in influencing perceived usefulness of the technology from ERP system users' perspective in the USA.

User involvement has been used as a moderator by several studies. Sappri et al. (2016), for instance, found user involvement moderates the relationship between user satisfaction and net benefits. Sappri et al. (2016) suggested that the variable must be retained as an important construct in the model as public sector employees would prefer participation in the IS they are using. In addition, Nawi, Rahman, and Ibrahim (2012) signified that more accurate user requirements could be received by involving users. Following this, the present study uses user involvement as a moderator to test the relationship between GFMIS use/user satisfaction, and net benefits. Adopting user involvement as a moderator is also inspired by the recommendation made by several studies (e.g., Kujal, 2003; Petter et al., 2013; Sabherwal et al., 2006; Sappri et al., 2016), which have posited that user involvement could be adopted as a construct, which will consequently lead to IS success.

2.9 Summary of the Chapter

Measuring the success of e-Government systems has become increasingly more important (Dwivedi et al., 2015; Hu & Wu, 2016). However, insufficient research has been conducted so far to examine the determinants of e-Government success (Rana et al., 2015; Sterrenberg & Keating, 2016). Hence, there is a pressing need to carry out studies on IS success in the context of developing countries through the adoption and expansion of the IS success model (DeLone & McLean, 2016; Faaeq et al., 2013; Petter et al., 2013); and to identify the role of the model in explaining the variations in individual usage and end-user satisfaction, and successful adoption of the e-Government system (GFMIS) in the context of Jordan. Thus, the present study expands the IS success model by integrating training, user involvement, and user resistance to address the identified gaps.

This chapter reviews previous literature on e-Government with emphasis on GFMIS. Specifically, the chapter examines e-government and GFMIS in the context of Jordan. In order to grasp a better understanding of the GFMIS, the chapter evaluates different definitions given by different authorities and the perspectives from which GFMIS has been viewed. It goes further to discuss the factors that can lead to the success or failure of the system. Furthermore, the chapter discusses the theory that underpins the study. It also examines the IS success model constructs for the purpose of determining its suitability and applicability for this study. It also synthesises and criticises the selected previous studies. Finally, the chapter reviews the other constructs which have been integrated into the IS success model in the present study.

CHAPTER 3

RESEARCH MODEL AND HYPOTHESES

3.1 Introduction

In this chapter, a discussion on the research framework and hypotheses development is presented. The research model shows the links among the variables of the study. Hypotheses development involves a discussion about the relationship between overall quality factors and GFMIS use; between overall quality factors and GFMIS user satisfaction; between user resistance and use/user satisfaction; between use and user satisfaction; between use/user satisfaction, and net benefits; and finally, the moderating effects of training and user involvement on the relationship between use/user satisfaction and net benefits. A summary concludes the chapter.

3.2 Development of the Research Model

This study investigates the factors affecting the success of GFMIS implementation from the perspective of public employees in Jordan, by measuring it through three distinct indicators: system use, user satisfaction, and net benefits. For this purpose, the IS success model (2003) is used. Several studies have recognised that there are further research opportunities with regards to the IS success model and its need for further investigation (Delone & McLean, 2016; Hsu et al., 2015). This is due to the fact that most experiments using the model have focused on one element of the success only and made use of personal opinion as to how the success of the application is evaluated (Petter et al., 2008). DeLone and McLean, who originated the theory, called for further development and validation of their model in future studies (Delone & McLean, 2016; Petter et al., 2013).

Previously, many studies have extended and contextualised the original model since its first introduction. Delone and McLean came up with an adapted version of the IS success model, which clearly indicates its need to be tested on different IT contexts in various parts of the world. Details of the updated model and prior studies using the model are discussed in Chapter 2 (refer to sections 2.5, 2.6 and 2.7 for details). At present, there is a dearth of empirical studies on factors that affect the success of GFMIS implementation (refer to section 2.4.3), especially in the Jordanian context (refer to section 2.3). Thus, the present study addresses this gap.

3.2.1 The Applicability of IS Success Model for GFMIS Domain

An IS must be able to accurately identify the main mechanisms that will allow users to build and operate technological solutions (Petter et al., 2013). The socio-technical perspective states that the measurements of success should be able to capture both technological (overall quality-related factors) and human aspects (user-related factors) (Wu & Wang, 2006). A proper combination of both factors is needed to ensure a successful GFMIS (Peterson, 2006; USAID, 2008). Typical to a majority of IS, GFMIS success is dependent mainly on the level of usage, user satisfaction, and net benefits of the system, all of which may be linked to information quality, system quality, service quality, and other relevant factors (DeLone & McLean, 2016). As such, the overall quality dimensions (i.e., information, system, and service quality) and human dimensions (i.e., IS usage, user satisfaction, and perceived system benefits) offer a good basis for determining the most apt constructs that can serve as the measurements of GFMIS successfully.

Information quality has been employed as a measurement of success for traditional IS (Urbach & Müller, 2012). An IS is a mechanism for managing information that is needed by employees to carry out their day-to-day tasks (Petter et al., 2012). With GFMIS, information quality is crucial for determining the level of usage/user satisfaction. Hence, information quality is an important determinant of GFMIS success.

System quality is determined by its operational characteristics (Wu & Wang, 2006). It identifies system errors, ease-of-use, stability, flexibility and response time. It is a measure of the system's reliability and predictability regardless of the information it carries. Hence, it is also crucial for determining GFMIS success.

Numerous studies have highlighted the importance of service quality in boosting IS success (Cho et al., 2015; DeLone & McLean, 2003). It entails the quality of support received by the IS users (Petter et al., 2008). According to Floropoulos et al. (2010), service quality contributes to improving work efficacy, simplifying and standardising functions, and enhancing the user-system interaction. Hence, service quality must be considered as a main determinant of GFMIS success in the context of Jordan.

Typically, IS usage is used as a proxy for measuring IS success (Doll & Torkzadeh, 1988). Doll and Torkzadeh (1988) and DeLone and McLean (1992, 2003) agreed that system usage can be an apt measure of success and a crucial variable for determining IS success. IS usage can be reasonably measured by evaluating the extent to which the system's full functionality is being utilised for its intended purpose. Hence, GFMIS usage can serve as a proper measure of GFMIS success due to its ability to capture the richness and nature of its usage.

User satisfaction is another common measure of IS success (Balaban et al., 2013; Hsu et al., 2015; Stefanovic et al., 2016). A system which is well liked by its users can irrefutably be considered as successful (Wu & Wang, 2006). Studies have highlighted that the measure of IS usage alone is inadequate when it comes to mandatory systems, such as ERP and GFMIS (Holsapple et al., 2005; Seddon, 1997). Employees who are satisfied with the system that they are obligated to use have a higher tendency to be more productive and creative (Holsapple et al., 2005; Hsu et al., 2015). Hence, user satisfaction is deemed as another possible factor to explain GFMIS success.

In this study, net benefits refer to the perceived individual benefits and improved performance attained by employees as a result of IS usage (Stefanovic et al., 2016; Urbach et al., 2010). It entails the extent of a user's belief that a system's usage will benefit him/her or his/her organisation, typically in the form of improved job performance and productivity (Wu & Wang, 2006). In addition to capturing the users' feelings toward the system's usage, net benefits also capture aspects, such as IS efficiency and effectiveness (DeLone & McLean, 2016; Hou, 2012). Hence, this construct is crucial for measuring IS success. This study therefore uses GFMIS net benefits to measure GFMIS success.

In sum, the IS success model introduced by DeLone and McLean (2003) is used in this study as a fundamental theory after refining it to suit the study's context. Past quantitative findings (e.g., Dernbecher 2014; Sappri et al., 2016; Sappri & Baharudin, 2016; Stefanovic et al., 2016; VanCauter et al., 2017) have revealed the validity and applicability of a majority of the IS success model's hypotheses, especially in the context of the public sector.

This model can be interpreted as follows: GFMIS can be evaluated in terms of the information, system and service quality. These characteristics subsequently affect GFMIS use and user satisfaction. As a result of using the system, certain benefits will be achieved. The net benefits will (positively or negatively) influence user satisfaction and IS use (Urbach et al, 2010). Hence, GFMIS usage and user satisfaction are key predictors of its net benefits in the context of the public sector. Meanwhile, usage and user satisfaction are considered as the outcomes of the overall quality factors of using GFMIS.

3.2.2 The Extension of IS Success Model for GFMIS Domain

Despite its prominence as an effective framework for determining the main IS success factors and their correlations, the IS success model has received criticisms for its disregard of other possible IS success determinants (Aldholay et al., 2018; Sabherwal et al., 2006; Tam & Oliveira, 2016, 2017). Thus, to address this concern, the present study relies on additional factors to better explain GFMIS success in the context of Jordan. It has been suggested that the IS success model can be incorporated with other possible success factors which would enable the investigation of IS success in multiple contexts (Petter et al., 2013). This study therefore extends the IS success model by integrating three related variables.

First, based on the literature review, the IS success model has been used in several studies to examine e-government systems (e.g., Floropoulos et al., 2010; Stefanovic et al., 2016). However, very few studies are available on GFMIS success and the effect of user resistance despite the identified role of process change in affecting the response of users towards a given system (Klaus & Blanton, 2010).

As presented in section 1.1, several studies have highlighted the complexity of GFMIS, in that it requires more time to perform financial and accounting operations (e.g., Shannak, 2015; USAID, 2014a). Such a complex system can facilitate improvements in budget preparation and execution as well as financial reporting. Despite this identified benefit, employees may still deem the system's usage as laborious, which would in turn, cause resistance, particularly if the system's usage is mandatory. Therefore, this study measures GFMIS success by altering the IS success model, specifically by incorporating the variable of employee resistance as a socio-technological measure. Despite the various definitions of user resistance (see section 2.8.1), this study uses the definition by Klaus and Blanton (2010) and Choi et al. (2014) that user problems are caused by process changes that come with GFMIS implementation.

Second, based on the IS success model, a direct and positive correlation between IS usage/user satisfaction and net benefits is assumed (e.g., Chang, 2014; Hou, 2012; Namisango, Kafuko, & Byomire, 2017). Other studies have suggested that increased IS usage/user satisfaction is insignificantly or negatively correlated to employee performance (e.g., Gaardboe et al., 2017; Grise & Gallupe, 2000; Ramayah et al., 2012; Roky & Al Meriouh, 2015; Stratopoulos & Dehning, 2000; Vancauter et al., 2017). This study however assumes that the net benefits of GFMIS are not determined solely by system usage and/or user satisfaction. Hence, there is a need to look into other factors that may affect the attainment of the expected net benefits.

According to Burton-Jones and Grange (2013), the maximum benefits of IS can only be attained with its effective usage. Ahearnea et al. (2005) asserted that although technology might improve user effectiveness, it might not do so if users do not receive proper training. Norfazlina et al. (2016) suggested that training programmes should be provided by the organisation to mitigate the problems associated with the complexity of IS and high-task demands that exceed the users' attention, so that it would not adversely affect users' satisfaction and the consequent net benefits.

Third, user involvement has also been identified as affecting the IS usage/user satisfaction-subsequent net benefits relationship (Ghobakhloo & Tang, 2015; Sappri & Baharudin, 2016; Sappri et al., 2016). Ghobakhloo and Tang (2015) found a positive link between user involvement and IS usage, whereby the users' cognitive skills are maximised when interacting with IS, resulting in greater user satisfaction and net benefits achievement across the organisation. Engagement in post-implementation activities can also lead to user satisfaction with the system. Consequently, GFMIS usage can be enhanced, ultimately leading to the attainment of the net benefits (Sappri & Baharudin, 2016; Sappri et al., 2016). Sappri et al. (2016) proposed retaining the variable as a key construct in the IS success model considering that public sector employees are more likely to participate in the IS that they are utilising. Further, GFMIS usage/user satisfaction has been indicated as a factor that can improve employee performance, provided that proper training and user involvement are in place (Combaz, 2015; Khan & Pessoa, 2010).

According to Sekaran and Bougie (2016), when the independent-dependent variables' relationship is determined by a third variable, then that third variable is considered as a moderating variable in the studied relationship (Dawson, 2014; Sekaran & Bougie, 2016). Thus, this study analyses the interconnections between GFMIS use/user satisfaction and GFMIS net benefits as critical enablers of GFMIS success from the perspective of the users, although evidences exist that other factors could impact these relationships. Accordingly, this study uses training and user involvement as moderating factors in the relationships between GFMIS use/user satisfaction and net benefits.

3.2.2 Research Model

The research model of the study is illustrated in Figure 3.1. Despite the presence of several factors (overall quality factors, user resistance, training, and user involvement) in prior studies, few studies have incorporated these factors in a single research model to assess the relationship between these factors and the net benefits of GFMIS in Jordan's public sector.

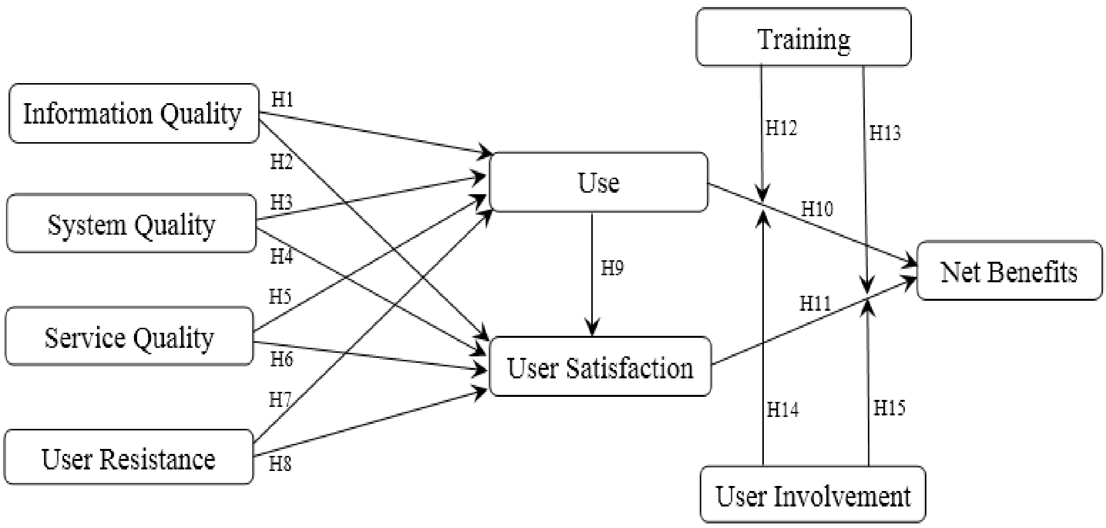


Figure 3.1. The Research Model

3.3 Hypotheses Development

Based on the previous related literature, the current section discusses hypotheses development. In line with the research questions and their objectives (see sections 1.3 and 1.4 for details), the following sub-sections introduce the hypotheses tested in this study. All the statements of the hypotheses are in the alternative forms.

3.3.1 Relationship between Information Quality and Use

Information quality constitutes the desirable characteristics of an IS output (Petter et al., 2008). It involves the quality of the information produced by the system and the usefulness of such information to the user (Urbach & Müller, 2012). Information quality is an important construct in the IS model since it has a positive effect on usage (Wang & Wang, 2009) and a huge impact on organisational performance (Petter et al., 2013). Stefanovic et al. (2016), for instance, examined one of the e-Government's system performance from the employees' perspective in Serbia and found positive effect of information quality on the usage of the e-Government system. This result is consistent with prior studies on e-Government (e.g., Edrees & Mahmood, 2014; Rana et al., 2015). In the context of Jordan, Al-Debei et al. (2013), Al-Nassar (2017) and Alshibly (2014) indicated a positive relationship.

In the context of this study, information quality is predicted to have a positive relationship with the use of GFMIS in the Jordanian public sector. This is in line with prior studies (see, for example, Hu & Wu, 2016; Kim-Soon et al., 2017, Laumer et al., 2017; Weerakkody et al., 2016), which have established a positively significant relationship between information quality and system usage.

The fact that information quality can guarantee system usage is supported by scholars. IS is meant for managing and providing information necessary for day-to-day work for the users, but this can only be facilitated when the users can access accurate, meaningful, and timely information (Harold & Thenmozhi, 2014). For example, in the context of web portals, sufficient content and adequate information can enhance the willingness of users to use the portal more and more (Hollmann et al., 2013). Additionally, it can also enhance the willingness of the users to recommend the portal to other people to use (Hollmann et al., 2013). This is consistent with the findings of Hsu et al. (2015), which indicate that when users perceive that information is updated, relevant, accurate, complete, and consistent, and the format is easy to understand, it will lead them to higher extended use and satisfaction levels. However, inaccurate, insufficient, and inadequate information may lead to problems in information quality, which may consequently discourage the users to continue using the portal (Hollmann et al., 2013).

Based on the above discussion, information quality could be considered as a viable predictor of IS use; however, research on this in the context of Jordan is scant (see section 2.3), and more research is required to solidify the body of literature on the usage of IS in Jordan. Thus, this study proposes that:

H1 : There is a positive relationship between information quality and use of GFMIS in the Jordanian public sector.

3.3.2 Relationship between Information Quality and User Satisfaction

Manchanda and Mukherjee (2014) and Wang and Yang (2016) showed the positive effect of information quality on user satisfaction. This result could be explained by the fact that the quality of the IS information will strengthen users' confidence and assist them in using the IS towards achieving organisational benefits (Bradford & Florin, 2003). Furthermore, research has signified that IS fundamentally manages information and provides employees with the needed information to accomplish their daily tasks at work (Petter et al., 2012). Therefore, information quality is a crucial aspect for determining the system's success.

Floropoulos et al. (2010) indicated that for taxation IS, greater information quality will lead to greater overall user satisfaction. This is made possible via the provision of information that is up-to-date, precise, and reliable. According to Budiardjo et al. (2017), similar to the effect of good information or knowledge quality, a good KMS can also lead to enhanced user satisfaction. This is because the KMS provides users with accurate information (Tona, Carlsson, & Eom, 2012).

Following Floropoulos et al. (2010), the present study predicts that information quality has a positive relationship with the satisfaction of the users of GFMIS in the Jordanian public sector. Hence, higher information quality results in a greater user satisfaction of the system. Accordingly, the following hypothesis is postulated:

H2 : There is a positive relationship between information quality and user satisfaction of GFMIS in the Jordanian public sector.

3.3.3 Relationship between System Quality and Use

To improve the success of an e-Government system, authorities involved need to develop the system to guarantee better usability and user-friendliness. This is because when an IS meets the users' needs, the level of satisfaction of such users will increase, and the level of IS usage will also improve (Ghobakhloo & Tang, 2015). As a result, a higher system quality leads to a higher use of the system (DeLone & McLean, 2016).

System quality constitutes the desirable characteristics of an IS and subsumes measures of the IS itself (Petter et al., 2008). Other studies (refer to Figure 2.6) that have found a positive effect of system quality on IS use include Cho et al. (2015) and Subiyakto et al. (2015). A similar finding was discovered by Sabherwal et al. (2006). In contrast, Lee and Lee (2012) discovered the insignificant influence of system quality on IS use. In the context of Jordan, the importance of system quality on IS use was reported by Al-Debei et al. (2013) and Al-Shibly (2014).

Given the above discussion, system quality is predicted to have a positive relationship with GFMIS use in the Jordanian public sector. It is argued that in the GFMIS setting, the use of a system will be higher when the system is user-friendly and enables the users to search for information and retrieval of content, provides supporting services, and enables smooth interaction. Thus, this study proposes that:

H3 : There is a positive relationship between system quality and use of GFMIS in the Jordanian public sector.

3.3.4 Relationship between System Quality and User Satisfaction

The fact that system quality would guarantee user satisfaction is supported by the existing studies (refer to Figure 2.6). According to Stefanovic et al. (2016), the success of an e-Government system can be improved if the authorities develop the system in a way that ensures better usability, user-friendliness, as well as ease of use. In addition, DeLone and McLean (1992; 2003) posited that when an IS has quality features, such as timeliness, and is accurate and efficient, users will be satisfied and will continue using such IS. High system quality would guarantee ease of IS use, and would enhance user satisfaction at the individual level (Agbabiaka & Ugaddan, 2016; Laumer et al., 2017; Weerakkody et al., 2016). On the contrary, a poor quality system would give rise to dissatisfaction and negative net benefits (DeLone & McLean, 2003).

Existing studies (see, for example, Hollmannet et al., 2013) have discovered a positive effect of system quality on user satisfaction. Petter and Mclean (2009) suggested that quality system with characteristics, such as reliability, convenience, ease of use, and functionality, can improve its usage and ultimately, and increase user satisfaction. In the context of Jordan, Al-Debei et al. (2013) signified that IS with better system quality would enhance user satisfaction.

Hence, the present study predicts that system quality has a positive relationship with the satisfaction of the users of GFMIS. Accordingly, higher system quality results in greater user satisfaction of the system. The following hypothesis is therefore postulated:

H4 : There is a positive relationship between system quality and user satisfaction of GFMIS in the Jordanian public sector.

3.3.5 Relationship between Service Quality and Use

The importance of service quality in improving IS usage has been pointed out in the extant literature (refer to Figure 2.6). Service quality refers to the quality of support that users receive from the IS department (Petter et al., 2008). DeLone and McLean (2003) argued that service quality is more important than other factors because it has to do with customer satisfaction; lack of service quality and poor user support could lead to loss of customers and decrease in sales.

Several studies (see, for example, Al-Sulami & Hashim, 2018; Edrees & Mahmood, 2014; Hsu et al., 2015; Martins et al., 2018; VictorChen et al., 2013) have found that there is a significant effect of service quality on IS use. A similar finding was reported by Balaban et al. (2013) in the context of the e-Portfolio system, and Mohammadi (2015a) in e-learning. In the context of ERP, Hsu et al. (2015) observed that in order to increase use, organisations need to develop an IS system with better service quality.

Therefore, in the context of this study, service quality is predicted to have a positive relationship with the GFMIS use in the Jordanian public sector. This is because service quality, which could come in the form of IS department's support to users, has the capability to enhance the use of an organisation's IS by the users (Chiu et al., 2016;

Hollmann et al., 2013; Marjanovic et al., 2015; Subiyakto et al., 2015). Accordingly, the following hypothesis is proposed:

H5 : There is a positive relationship between service quality and use of GFMIS in the Jordanian public sector.

3.3.6 Relationship between Service Quality and User Satisfaction

Floropoulos et al. (2010) noted that an IS with service quality is an essential tool that can improve work effectiveness and the quality of services, simplify, and standardise functions, as well as improve decision-making processes. Subsequently, with a high level of service quality, IS usage will be enhanced. According to Cho et al. (2015), when users feel more satisfied with the service quality of an IS (e.g., Healthcare Information Systems), there will be an increase in the use level of such IS by the users and their satisfaction with usefulness increases. In another context, Fan and Yang (2015) found that citizens choose online government services mainly due to their expectations of and satisfaction with valuable government services. This positive effect has been discovered by several IS studies (see, for example, Gorla & Somers, 2014; Lwoga, 2013; Mohammadi, 2015b).

Based on the above discussion, the present study predicts that there is a positive relationship between service quality and user satisfaction of GFMIS in the Jordanian public sector. This is because modern advances in IS justify the inclusion of service quality as an important factor that could enhance user satisfaction and prevent more complications of the model (DeLone & McLean, 2003). The following hypothesis is therefore proposed:

H6 : There is a positive relationship between service quality and user satisfaction of GFMIS in the Jordanian public sector.

3.3.7 Relationship between User Resistance and Use/User Satisfaction

Very little data on the cause and effect between use and user resistance has been made available, and this relationship can be argued (Norzaidi, Chong, & Mohamed, 2008). User resistance is considered as an important factor that leads to the failure of ERP in developing nations (Dwivedi et al., 2015; Hawari & Heeks, 2010). As in a closed system, employees tend to think of being inhibited by the ERP system, which unavoidably, could give rise to resistance to the system (Zhang et al., 2005). Hence, user resistance in IS can be regarded as an adversative reaction or the disapproval of users to perceived change relating to the implementation of a new IS (Kim & Kankanhalli, 2009).

Measuring user resistance is important in the implementation of IS due to the diverse variations in technical and social systems outcomes (Haddaraa & Moenb, 2017). In response to the variations, users might resist the new IS and cause interruptions in the budget overruns, project duration, and underutilisation of the new IS, which may affect the level of usage, user satisfaction and their performance (Adeleke, 2016; Haddara & Moen, 2017, Norzaidi et al., 2008).

Even when IS is compulsory, the level of use may differ as some users choose not to comply with their mandate (Linders, 2006). Employees may use the IS, but their job satisfaction, and loyalty toward the organisation can be negatively affected (Brown, Massey, Montoya-Weiss, & Burkman, 2002). Linders (2006) stated that the use of mandatory IS does not always lead to the desired results. This is because some users will be still unwilling to switch to the new system; they insist on using the existing IS and handle their work as before. Furthermore, some user groups have argued that the new IS does not support their workflow process (Linders, 2006). As a result, Brown et al. (2002) and Norzaidi et al. (2008) explained that employees would use a mandatory IS to accomplish their tasks and keep their jobs, but they may also engage in alternative destructive behaviours, which may or may not be intentional. Alternatively, user acceptance does not equate to zero user resistance when it comes to obligatory IS (Kim & Kankanhalli, 2009; Nah, Tan & Teh, 2004). Users who adopt the new IS could still have feelings of resistance against it which could lead to issues of underutilisation, that in turn, could affect performance (Kim & Kankanhalli, 2009; Norzaidi et al., 2008). Hence, the present study postulates that:

H7 : There is a negative relationship between user resistance to and use of GFMIS in the Jordanian public sector.

Furthermore, Jiang, Muhanna, and Klein (2000) found that user resistance has a negative effect on strategies to promote acceptance across system types. Likewise, Choi et al. (2014), in their study on the impact of doctors' resistance to the success of the DUR system, reported a negative association between doctors' resistance and user satisfaction. Jiang et al. (2000) reported a similar finding.

For enterprises, IS implementation is highly likely to be a productive research ground for examining user resistance. This is due to the complexity of the IS itself compared to other software, its mandatory usage, and the requirement for users to adapt to new processes and utilise standardised systems for sharing and retrieving information (Klaus

& Blanton, 2010). As presented in sections 1.1 and 1.2, research has highlighted the complexity of GFMIS, in terms of its increase in financial and accounting operations time (e.g., Shannak, 2015; USAID, 2014a, 2018). The complicated tasks should be observed to help improve the process of budget preparation and execution and financial reporting. Although employees recognise its usefulness, they may consider the tasks as laborious in their daily work. Thus, the process may invoke employees' resistance even if they use the system due to mandatory requirements, and this will affect their level of satisfaction.

Based on the discussions above, the present study predicts that there is a negative association between user resistance and user satisfaction of GFMIS in the GoJ. It is argued that resistance to using the IS system could threaten the benefits of the system, thereby leading to the system's failure (Ngafeeson & Midha, 2014; Salih et al., 2013). In the context of Jordan, Hawari and Heeks (2010) considered resistance as a "bad thing" which may point out that the system is taking the organisation in the wrong direction. Accordingly, the present study postulates that:

H8 : There is a negative relationship between user resistance and user satisfaction with GFMIS in the Jordanian public sector.

3.3.8 Relationship between Use and User Satisfaction

Evidence from past studies has shown that the model of usage is beneficial for finding a positive influence on user satisfaction (refer to Figure 2.6). Several studies have reported a positive association between use and user satisfaction, including Zha, Xiao, and Zhang (2014) in a digital library; Roky and Al Meriouh (2015) in industrial information system; and Mohammadi (2015a) in e-learning. As a result, the present study examines this relationship because GFMIS is recognised as one of the mandatory e-Government systems in Jordan.

Aldholay et al. (2018a), Aldholay et al. (2018b), and Rana and Dwivedi (2018) found that the direct effect of system usage on user satisfaction can also affect system success. Conversely, low system usage quality could lead to increased dissatisfaction and affect net benefits negatively (DeLone & McLean, 2003). In other words, when system usage fails to fulfil user needs, satisfaction is not achieved and further usage is halted (Iivari, 2005). Thus, the present study hypothesises that:

H9 : There is a positive relationship between use and user satisfaction of GFMIS in the Jordanian public sector.

3.3.9 Relationship between Use and Net Benefits

System usage is commonly acknowledged as a useful proxy measure of IS success (Doll & Torkzadeh, 1988). While system use is an outcome of better overall quality factors, system usage behaviour is an important predictor of net benefits in the organisation.

The fact that IS usage would guarantee net benefits is supported by previous studies (Petter & Fruhling, 2011; Tona et al., 2012; Urbach, Smolnik, & Riempp, 2011; Wang & Liao, 2008). For example, Wang and Liao (2008) concluded that perceived net benefits is the closest to measuring e-Government system's success, and intention to use or usage will increase the net benefits. Other studies (e.g., Petter et al., 2008), on the other hand, have found moderate support for the relationship between use and net benefits. Consistent with the previous discussion, Al-Debei et al. (2013) showed a similar finding in the context of Jordan. Similarly, Al-Shibly (2014) signified that system use would enhance net benefits in the context of Jordan.

Following prior studies (refer to Figure 2.6), the present study predicts that there is a positive association between IS use and net benefits. Higher GFMIS usage has been shown to result in better attainment of the expected net benefits. In short, GFMIS can streamline the financial and accounting operating procedures as well as offer efficient control, planning and decision-making mechanisms (Alsharari, 2013). Proper usage of this system can reduce accounting mistakes and offer real-time accounting and financial information required by employees to conduct internal transactions as well as prepare reports and budgets. This in turn, can result in better employee performance and the attainment of the projected net benefits. In this regard, this study hypothesises that:

H10 : There is a positive relationship between use and net benefits on the use of GFMIS in the Jordanian public sector.

3.3.10 Relationship between User Satisfaction and Net Benefits

In the present study, net benefits indicate the perceived individual benefits and the successful performance that employees gain through the use of IS (Stefanovic et al., 2016; Urbach et al., 2010), such as in terms of saving time, increasing productivity, improving job performance, and making the job easier (Urbach et al., 2010). Several studies (see, for example, Balaban et al., 2013; Stefanovic et al., 2016) have shown strong impact of user satisfaction on net benefit. In the e-government context, several studies have confirmed this proposition (see, for example, Al-Khafaji & Azeez, 2018; Legner et al., 2016; VanCauter et al., 2017).

In the case of mandatory systems, studies have indicated that IS use, though mandatory, is not sufficient to enjoy the IS benefits (Holsapple et al., 2005; Seddon, 1997). Consequently, satisfied employees are more likely to be productive and creative, especially where the use of such a system is mandatory (Holsapple et al., 2005; Hsu et al., 2015).

Following prior studies (refer to Figure 2.6), the present study predicts that user satisfaction could generate certain net benefits. The more satisfied the IS users are, the more direct will be the impact on its net benefits (Stefanovic et al., 2016). Hence, it is hypothesised that:

H11 : There is a positive relationship between user satisfaction and net benefits on the use of GFMIS in the Jordanian public sector.

3.3.11 Moderating Effect of Training on the Relationship between Use/User Satisfaction and Net Benefits

Training has generally been recognised as one of the CSFs for IS implementation (Hwang, 2014; Hwang et al., 2012; Ngai, Cheng, & Ho, 2004; Sharma & Yetton, 2007). Floropoulos et al. (2010) posited that despite its potential benefits, e-Government programmes will not be well-accepted unless adequate training is provided to its users. An effective training programme on a system with high quality, such as the ones proposed by Zaied (2012), can improve its usage and user satisfaction (El-Hoby & Ibrahim, 2017). Adequate training equips users with the necessary procedural knowledge to properly operate the system (Bradford & Florin, 2003; Tilahun & Fritz, 2015). When they know how to use the system properly, there may be increased usage, and this may in turn, transform into net benefits.

Researchers have theorised that with proper training, IS use will favourably impact personal effectiveness (Tilahun & Fritz, 2015; Vatanasakdakul et al., 2017; Zaied, 2012; Wei et al., 2011). Ahearnea et al. (2005) argued further that technology might improve user effectiveness in theory; however, it will not do so if users do not receive proper training. Norfazlina et al. (2016) suggested that training programmes should be provided by the organisation to mitigate the problems associated with the complexity of IS and high task demands that exceed the users' attention, so that it would not adversely affect users' satisfaction and the consequent net benefits.

The direct effect of training on successful implementation and effective use of an IS has been recognised by several studies, including Hong, Katerattanakul, Hong, and Cao (2006), Sharma and Yetton (2007) and Venkatesh, Zhang, and Sykes (2011). Training of end-users does not only enhance the successful implementation of the system (e.g., Umble et al., 2003), but also user satisfaction (Bradford & Florin, 2003; Tilahun & Fritz, 2015; Zaied, 2012).

Although past studies have considered training as one of the driving factors, there is limited evidence to support this assumption (Sharma & Yetton, 2007; Venkatesh et al., 2011). While the key role of training is not well pronounced in prior research, an alternative view is to consider training as a variable that facilitates the role of other independent variables instead of considering it as a separate variable itself. The view expressed above is in line with the recommendation of previous studies (refer to section 3.2.2). For example, A review of existing literature underscores the moderating role of training in the IS research field. Ahearnea et al. (2005) signified that the use of sales force automation system could enhance salespersons' performance under conditions of adequate user training. Meanwhile, Norfazlina et al. (2016) found that IS user satisfaction could enhance net benefits (measured with task productivity) under conditions of user training.

Based on the previous studies (e.g., Glood et al., 2016; Sappri & Baharudin, 2016; Tam & Oliveira, 2016, 2017). This study asserts that the desired net benefits from using GFMIS cannot simply be achieved by only using this system and/or being satisfied with it; this is the reason to believe that training plays a key role in achieving the desired net benefits. The findings of past studies on the correlation between the IS success model constructs have been largely inconsistent (see Figure 2.6). Some studies have indicated that higher IS usage/user satisfaction can insignificantly or negatively affect employee performance (e.g., Gaardboe et al., 2017; Grise & Gallupe, 2000; Ramayah et al., 2012; Roky & Al Meriouh, 2015; Stratopoulos & Dehning, 2000; Vancauter et al., 2017), especially if the organisations are unsuccessful in redirecting resources to supervise and support the new IS implementation in a proper manner. Other studies, however, have indicated that certain moderating variables, such as training, can facilitate the aforementioned relationship (Ahearnea et al., 2005).

Inconsistent findings from past studies have indicated that there is room to extend the study and fill the existing gaps. According to several researchers, inconsistent findings could be remedied by testing a moderation effect (Baron & Kenny, 1986; Dawson, 2014). While despite the importance of training, Ahearnea et al. (2005) discovered that there is a shortage of empirical evidence on its role as a moderator in the relationship between IS use and net benefits.

Hence, it is expected that using GFMIS and user satisfaction of the GFMIS could enhance the net benefits of the system under conditions of adequate user training. The present study therefore, hypothesises that training would strengthen the relationship between IS use/user satisfaction and net benefits. Thus, it is hypothesised that:

H12 : Training moderates the relationship between GFMIS use and net benefits of GFMIS in the Jordanian public sector such that the relationship is stronger when more training is given.

H13 : Training moderates the relationship between user satisfaction and net benefits of GFMIS in the Jordanian public sector such that the relationship is stronger when more training is given.

3.3.12 Moderating Effect of User Involvement on the Relationship between Use/User Satisfaction and Net Benefits

User involvement is one of the examples of suggested additions to the IS success model because this variable may lead to success (DeLone & McLean, 2003). In addition, Petter et al. (2013) identified user involvement as a success factor that has consistently been found to influence IS success and can be incorporated into the IS success model. Furthermore, several studies (e.g., Amoako-Gyampah, 2007; Harris & Weistroffer, 2009), have considered user involvement as an important factor for IS implementation success. This variable is regarded as the level of necessity and personal relevance attached to a given IS by the users (Zaied, 2012).

User involvement has been used in prior studies related to input and output design (Zaied, 2012); and system testing and evaluation (Sappri et al., 2016). For instance, in a study conducted by Rouibah et al. (2009) on the effects of human motivations on IS usage and user satisfaction in an Arabic country, IS usage was found to be influenced by user involvement. A recent study by El-Hoby and Ibrahim (2017) has discovered that user involvement is positively associated with the effective utilisation of ICT resources and capabilities. Srivihok (1999) found an indirect influence of user involvement on Executive Information Systems implementation success in Australia.

In general, the tasks and requirements incorporated in the implementation programme can be contextualised better by the employees who can suit them to their individual work style (Cappetta, Maruping, Madden, & Magni, 2015). By doing so, the employees can also better understand the GoJ's intentions for employing GFMIS. Hence, there is a rather indirect relationship between user involvement and GFMIS usage, user satisfaction or net benefits (Cappetta et al., 2015; Kefi & Koppel, 2011; Sappri & Baharudin, 2016; Sappri et al., 2016). In short, GFMIS usage/user satisfaction can be complemented by having the employees involved in the GFMIS post-implementation process.

Greater GFMIS usage along with employee involvement can improve the possibility of achieving the desired net benefits of using GFMIS. Likewise, better contextualisation along with greater GFMIS usage (i.e., extension of GFMIS functions and features) and employee involvement can improve the employees' capability of attaining the desired net benefits from GFMIS usage, which in turn, will contribute to enhanced job performance. The organisation hence plays an instrumental role in driving employee involvement, which in turn, facilitates effective information delivery and knowledge sharing, applied to various employee settings. This can ultimately improve the role of usage/user satisfaction in attaining the desired net benefits (Cappetta et al., 2015).

In contrast, even though GFMIS utilisation might be high, an inability to involve the employees in the decisions related to their daily work, may limit the benefits realised from using GFMIS. Hence, user involvement is projected to be highly significant in converting GFMIS usage into an actual performance enhancer. Hence, it is hypothesised that:

H14 : User involvement moderates the relationship between use and net benefits of GFMIS in the Jordanian public sector such that the relationship is stronger when user involvement is high.

It has been argued that user involvement is an important factor that could have an influence on the link between IS user satisfaction and net benefits (Sappri & Baharudin, 2016). The notion that user involvement could serve as a moderator, as suggested by Kujala (2003) and Sappri et al. (2016), and the fact that investigating the condition under which the effects of IS user satisfaction could enhance net benefits, can provide important insights into theory and practice in the IS research field.

Employee involvement has been evinced as improving employee satisfaction and net benefits attainment in the context of e-governmet system usage (Sappri & Baharudin, 2016; Sappri et al., 2016). This means that higher employee involvement in e-government post-implementation process can drive employee satisfaction toward attaining the net benefits of using e-government systems. Specifically, Sappri and Baharudin (2016) argued that users who are involved in IS have a positive attitude and perception of its usefulness, thereby increasing their satisfaction with the system. Sappri et al. (2016), in their study of the moderating effect of user involvement on the factors that influence IS net benefits, found that user involvement moderates positively on the relationship between user satisfaction and net benefits. Following these studies, the present study proposes thus:

H15 : User involvement moderates the relationship between user satisfaction and net benefits of GFMIS in the Jordanian public sector such that the relationship is stronger when user involvement is high.

3.4 Summary of the Chapter

The current chapter presents the explication of the research framework and its hypotheses development. The research framework and its hypotheses are based on the literature review to answer the research questions of the study. The chapter ends with a summary.

CHAPTER 4

RESEARCH METHODOLOGY

4.1 Introduction

The methodology adopted for this study is deliberated in this chapter, including the research type, research design which entails the unit of analysis, population, sample size, and sampling technique. The next sections focus on instrumentation, operational definitions, measures, content, and face validity. Other subsections of the chapter discuss the translation process, the questionnaire design and structure, pilot study, and data collection and data analysis procedures. The last subsection summarises the chapter.

4.2 Research Type

There are two objectives for conducting a business research (Sekaran & Bougie, 2016). The first is to solve existing managerial issues which demand a suitable solution. Studies that are carried out with the purpose of applying the findings to solve existing issues in an organisation are termed as applied research (Sekaran & Bougie, 2016).

The second objective is to understand how organisational issues can be solved and subsequently, the findings be used to enrich the existing body of knowledge (Sekaran & Bougie, 2016). This contributes to knowledge development in various functional business areas and adds to the relevant literature. The attained knowledge is typically used for solving organisational issues. Studies under this objective fall under the category of basic research (Sekaran & Bougie, 2016).

Theoretically, regarding theory confirmation or theory extension, in the context of applied research, existing theories are applied to a given study setting. In short, past studies can be used as the foundation for developing new arguments; while in the context of basic research, insights into existing theories and models are enhanced by new study findings (Sekaran & Bougie, 2016, p. 82). Incorporating multiple variables into current theories can result in a more comprehensive approach to solving research problems. To a certain extent, researchers become dependent on their individual insights and ideas (Sekaran & Bougie, 2016).

Practically, applied research is conducted with the intent to apply the findings to solve certain organisational issues; while basic research is conducted with the intent to generate new knowledge in areas relevant to industries, organisations, and academia (Sekaran & Bougie, 2016).

The present study examines GFMIS success from the perspective of employees by incorporating several success factors into the IS success model, thus enriching the model with new insights. Theoretically, this study examines the implementation of a new e-government system by employing the IS success model which is adapted to include three related variables. In practical terms, this study offers new findings that are valuable for the relevant authorities to manage e-government projects more succesfully. The findings may also prove to be valuable for Jordan and other developing nations, as they add to the existing knowledge about e-government systems in developing nations. Hence, based on the presented discussions and the rule of thumb introduced by Sekaran and Bougie (2016), this study is deemed to fall under the category of basic research.

4.3 Research Design

Quantitative representation and presentation of social phenomena can be done through determination of the cause-effect relationship between and among variables through the mechanism of correlation and experimentation (Creswell, 2012). This can be achieved through deductive inquiry, and it has to do with testing the theoretical and empirical-based hypotheses that show the causal links among variables under examination (Creswell, 2012). Furthermore, the focus of deductive research is the generalisation of the conclusion that enables the appraisal of theory (Sekaran & Bougie, 2016). The research approach in the present study is deductive research approach, which supports the philosophical supposition of the positivist paradigm and objectivism.

Zikmund, Babin, Carr, and Griffin (2013) mentioned that there exist three different kinds of research design, namely, experimental design, historical design, and non-experimental design. Non-experimental research design, also known as survey design, consists of questionnaires and interviews. Experimental design, on the other hand, includes laboratory research, while the historical research design requires the use of observation and secondary data.

This study adopts a quantitative research approach, which is an integral part of non-experimental research design. This approach examined the structural relationship among the constructs under examination: information quality, system quality, service quality, user resistance, training, user involvement, use, user satisfaction, and net benefits. The hypotheses of this study were tested using Partial Least Squares (PLS) path modelling.

This study used a cross-sectional design because data were obtained from the respondents at one point in time. The collected data were statistically subjected to analysis and interpretation to generate conclusions or make necessary inferences in relation to the population of the study. The cross-sectional design is given priority in this study because of its cost-effectiveness and time saving (Sekaran & Bougie, 2016). Data collection by using the questionnaire is considered appropriate because of its wide acceptability for data collection that entails a large population, which is difficult to observe directly (Sekaran & Bougie, 2016).

4.3.1 Unit of Analysis

In social science research, three common categories of a unit of analysis comprising organisational, individual, and group units of analysis, are recognised (Creswell, 2012). As the objective of this study is to determine the factors that influence the success of GFMIS implementation as perceived by the public employees in Jordan, the unit of analysis is the individual employee. In other word, the data used to test the research model of the study were collected from employees in the financial and administrative affairs directorate of the ministries and the institutions using the GFMIS system. Since the target respondents are the end users of GFMIS, the unit of analysis of this study is therefore, the individual.

The IS success model was adapted as a basis to realise this objective. The data related to the issues under examination were gathered from the employees in selected MDAs (e.g., accountant, financial controller, treasurer).

4.3.2 Population

A group of people with similar and common characteristics that can easily be identified and examined by researchers is known as a population (Creswell, 2012). The population of the present study is GFMIS users. The list of the employees who are GFMIS users in 24 ministries and 28 departments/agencies and are using the system, represents all the GFMIS users in Jordan (Ayman Abu Arab; Bilal Abdallat; Hamzeh Aljazzazi, Mohammad Aloqaily, personal communications).

The information gathered shows that in each MDA, there are financial and management affairs directorates, comprising numerous units (e.g., budget and accounting unit, financial control unit, payroll unit). The total number of employees who are currently using the GFMIS in the government MDAs (comprising financial and management directorates of all MDAs) is 2,178. Figure 4.1 illustrates the organisational structure of the GoJ. Appendix E shows all MDAs from which the population of the present study was drawn.

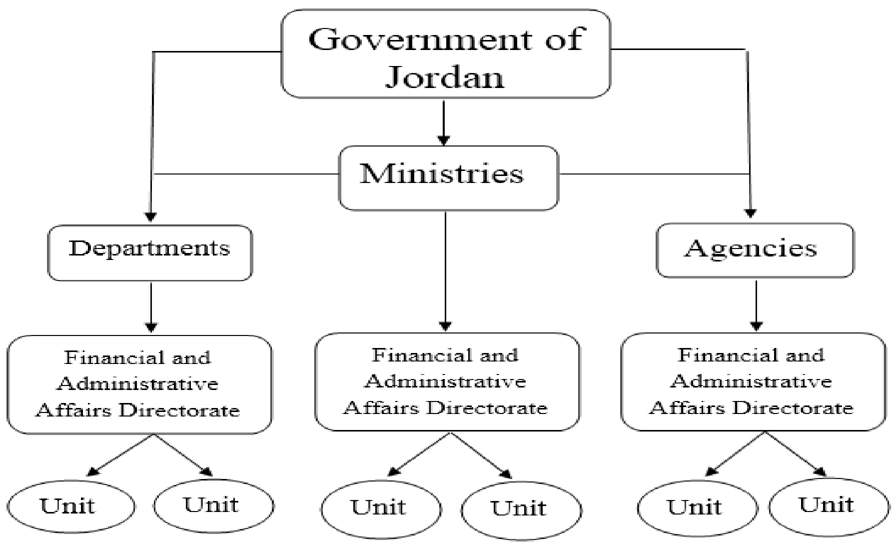


Figure 4.1. Government's Organisational Structure of Jordan

Based on Figure 4.1, the target respondents for the present study are the GFMIS users, who are working in the units under each financial and administrative affairs directorate of the MDAs, GFMIS users are the most appropriate respondents as they have experience in using the GFMIS and also are more capable to provide insightful feedback on its use.

4.3.3 Sample Size

A sample, according to Creswell (2012), is a subset of a bigger population chosen for the purpose of research. The finding of the study emanating from the sample is capable of being generalised on the whole population. Furthermore, a sample refers to the part of a given population that is accessible for selection in some stages of the sampling process.

As gathering data from the entire population of a study is almost impossible, it is therefore necessary to draw representative samples from the population. Sekaran and Bougie (2016) posited that conducting a study by using a representative sample normally produces better, dependable, and reliable findings, and at the same time, reduces fatigue and error in data collection. Sampling errors may be costly and may also affect the findings of the research; therefore, selecting a correct sample size is essential.

Improper sample size selection can lead to two types of error, namely, Type I error and Type II error. Some hypotheses that are ordinarily supposed to be accepted might be rejected because of a small sample size, hence, Type I error is committed (Sekaran & Bougie, 2016; Sekaran, 2003). However, when a selection of large sample size is done, the occurrence of Type II error is feasible as some hypotheses which are ordinarily supposed to be rejected may be accepted, hence, a weak relationship may move to a significant level (Sekaran & Bougie, 2016; Sekaran, 2003). Arising from this, it is discerned that an over 500-sample size might be susceptible to Type II error (Sekaran & Bougie, 2016; Sekaran, 2003).

Although different techniques of appropriate sample size determination have been suggested by different researchers and scholars, the present study used a statistical power test. The power of the statistical test is a process by which the sample size should be estimated or determined. As noted by Faul, Erdfelder, Lang, and Buchner (2007), the statistical power test is considered as a possibility or probability that null hypotheses would not be considered acceptable as it is not a truth or a possibility of not accepting a specific effect size of a particular sample size at a certain alpha level.

In this study, a priori power analysis was conducted through G*Power 3.1.2.9 software (Faul et al., 2007). To carry out a power analysis test, Cohen (1988) and Faul et al. (2007) recommended certain parameters that should be taken into consideration. These include the Power (1-β err prob; .95), an alpha significance level (α err prob; .05), and medium effect size (f^2) (.15), as well as comprising the eight predictors of the dependent variable, “net benefits”.

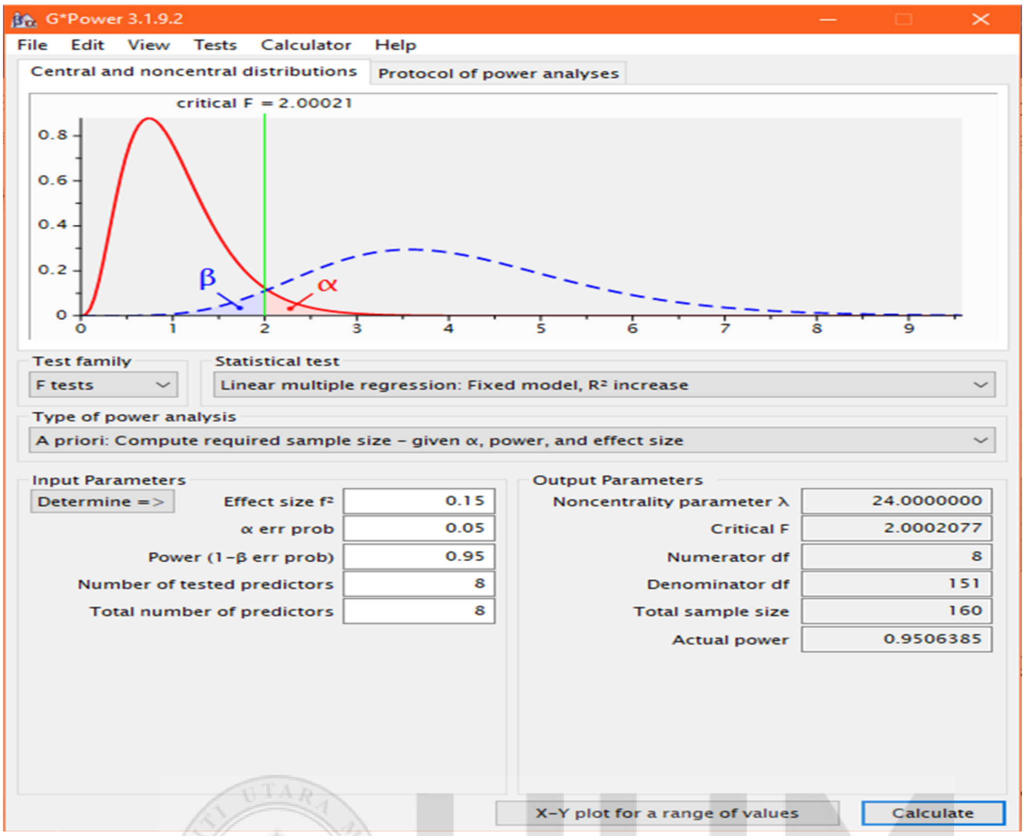


Figure 4.2. The Output of a Priori Power Analysis

From Figure 4.2 above, a 160-sample size was determined by the test as appropriate for multiple regression analysis of this study. However, the calculated sample size of 160 seemed to be inadequate. Krejcie and Morgan's (1970) sample-size determination study was considered next to supplement the statistical power test. Since the population of the present study is 2,178, the sample size based on Krejcie and Morgan's (1970) sample size determination is 327. Hence, the overall sample size is 327.

Considering the response rates reported in studies of similar settings, that is, around 31% to 75% (see Table 4.1), this study doubled the number of samples to 654. This would ensure adequate representation of the population under study.

Table 4.1. *Response Rate for e-Government Studies in Jordan*

Study	Respondent	Sample	Response Rate
Alawneh et al. (2013)	GoJ Employees	400 (220)	55%
Alrawabdeh (2014)	GoJ Employees	200 (141)	70%
Al-Rawahna et al. (2018)	GoJ Employees	153 (93)	61%
Alshibly (2014)	GoJ Employees	150 (104)	69%
Alshibly and Al-Dmour (2010)	GoJ Employees	906 (281)	31%
Alshibly et al. (2016)	GoJ Employees	400 (152)	38%
Hammouri and Abu Shanab (2017)	GoJ Employees	113 (50)	44%
Tadros and Alzubi (2015)	GoJ Employees	232 (175)	75%

4.3.4 Sampling Technique

The adopted sampling technique of this study is the proportionate stratified random sampling technique. The essence of the random sampling technique is to allow every object in the general population to be equally eligible to be chosen as part of the sample population (Sekaran & Bougie, 2016). The reason for adopting this sampling technique is that the present study drew samples from numerous government ministries (comprising both financial and management directorates for all MDAs) in Jordan. This sampling technique is deemed fit for this study because the technique would ensure representative samples to be obtained from all the government ministries or departments. A total of 654 employees out of the 2,178 employees was selected based on this sampling technique.

Proportionate stratified random sampling technique is a balanced sampling technique of which a fixed proportion of samples are taken from different groups (Sekaran & Bougie, 2016). This sampling technique is more relevant for situations where unequal variability is anticipated from some strata (MDAs in this study), where a stratum or some strata appear to be too small or too large (Sekaran & Bougie, 2016). For this purpose, strata (MDAs) was determined. The strata in the present study are 52 MDAs, determined by computing the population element's average number. For this purpose, strata were computed by the division of strata numbers. For the present research, 42 is the average number obtained (i.e., 2,178/52).

The estimation of the respondents' percentage was the next step from every stratum. One can do it by dividing the sample size/population of the research. In the next step, it is multiplied by 100. For the present research, 30% (654/2178*100) is the respondents' percentage selected from every stratum. In quota sampling, determining the number of subjects of the sample is the next step. Scholars can achieve this through the multiplication of the total number of every element of the population by the percentage calculated. In the present research, the number of subjects in the sample for the first stratum is 13 (i.e., 43*30%). The result is presented in the population table (refer to Appendix E). These processes guarantee an equal distribution of the respondents across the MDAs in which the employees to be sampled are working.

4.4 Instrumentation

In offering a complete measurement of the constructs of this research, a multi-items scale was adapted from existing literature for all constructs. The constructs were measured using a 7-point interval scale. Adopting this interval scale is influenced by Zikmund et al.'s (2013) suggestion that the interval scale enables powerful statistical calculations (e.g., standard deviation, variance).

To facilitate comparison and validation of IS success research, the constructs in this study are defined and measured based on the framework of the IS success model. The measures employed in this study have been utilised in past studies as listed in Appendix G.

There are four independent variables in this study, namely information quality, system quality, service quality, and user resistance. Information quality is the measurement of the desired system outputs, entailing five items derived from Stefanovic et al. (2016). Next, system quality is the measurement of the attainment of the desired technical characteristics of IS, which in this study is measured using six items derived from Lai and Yang (2009), Wu and Wang (2006) and Zainol, Fernandez, and Ahmad (2017). Service quality entails the measurement of the quality of support provided to the IS users, using five items adapted from Roky and Al Meriouh (2015). Lastly, user resistance is the measurement of the users' perception of the IS using the three items of workload, time consumption, and potential benefits as taken from Choi et al. (2014).

The dependent variables include GFMIS usage, user satisfaction and net benefits. GFMIS usage is the measurement of the extent of the IS usage to perform tasks, entailing seven items adapted from Almutairi and Subramanian (2005), Wang and Wang (2009) and Wu and Wang (2006). User satisfaction entails the measurement of the users' pleasure in using the system, as determined via seven items adapted from Floropoulos et al. (2010) and Wu and Wang (2006). Finally, the net benefits variable refers to the measurement of the gains attained by the users as a result of successful IS usage; the items for this construct are derived from Stefanovic et al. (2016) and Urbach et al. (2010).

Finally, the moderating variables include training and user involvement. Training is measured using six items adapted from Wei et al. (2011), whilst user involvement is measured using 10 items derived from Sappri et al. (2016). Appendix F provides the questionnaire sample.

4.5 Operational Definitions of the Constructs

The present study examines the factors influencing the successful implementation of GFMIS from the perspective of public employees in Jordan. The operational definition of the study's constructs is tailored to reflect its context.

Information quality	:	The characteristics of the system output desirable by the public employees who are GFMIS users in Jordan, which are reflected by reliable, precise, useful, sufficient, and up-to-date attributes.
System quality	:	The level of attaining expected characteristics of the technical aspects of GFMIS by the public employees, reflected in GFMIS stability, reliability, user-friendly interface, response time, flexibility and ease-of-use.
Service quality	:	The quality of support received by the public employees in using the system as given by the IT support staff and/or the IT department. This construct is measured by responsiveness, assurance, empathy, and reliability.
Training	:	The employees' perception of their GFMIS training in terms of usefulness, relevance, adequacy, and acquisition of skills.
User involvement	:	The participation of GFMIS users during the post-implementation process. This construct is measured in terms of participation in GFMIS installation or conversion, participation in scheduling GFMIS training sessions,

		participation in GFMIS training sessions, and participation in testing and evaluating GFMIS performance.
User resistance	:	The employees' perception of GFMIS process issues, which represents the problems faced by the users resulting from the changed processes due to GFMIS implementation. This construct is measured in terms of workload increase, time consumption, and lack of potential benefits.
Use	:	The extent of the GFMIS being used to perform the financial and accounting operations/tasks.
User satisfaction	:	Employees' feelings of pleasure regarding GFMIS. Several items measure this construct, namely, satisfaction with GFMIS efficiency and effectiveness, satisfaction that GFMIS supports their work, GFMIS meets employees' expectations, and overall satisfaction with GFMIS.
Net benefits	:	The perceived individual benefits and the successful performance that employees gain through the use of GFMIS. This construct is measured by different items, such as saving time, increased productivity and effectiveness, improved job performance, and making the job easier.

4.6 Measures

This section presents the fitting, validated, and recommended measures from the prior literature for the variables of this study. All the measurement items were adapted from prior studies, and all constructs were measured via reflective measures (refer to Appendix G).

4.7 Content Validity

Before real data collection and after the preparation of measurements, it is crucial to test for content validity before administering the questionnaire to the intended or targeted respondents. The rationale behind this is that it will guarantee that the dimensions and the items, which are used for measuring the constructs of the study, are accurately and precisely doing what they are intended to do (Creswell, 2012). In short, the instrument measures exactly what it is meant to measure and not something else (Pallant, 2011). Therefore, content validity performs the function of ensuring that the dimensions and indicators of specific variables measure such variables with a high level of representativeness and adequacy. Hence, content validity or pre-test was carried out.

Content validity was done through a panel of experts who were requested to review the construct composition and item suitability (Sekaran & Bougie, 2016). To pre-test the original instrument, expert review is an inexpensive and relatively quick method for evaluating a questionnaire (Olson, 2010; Zikmund et al., 2013). The number of reviewers can be anywhere between just two or three to more than 20 (Olson, 2010; Willis, Schechter, & Whitaker, 1999). For that reason, the researcher conducted a pre-test with two groups of experts. The first group comprised eight academicians from Universiti Utara Malaysia, which was performed in July/August 2018, to review the contents of the questionnaire including its structure, readability, comprehensiveness, and suitability for the area of study. The second group comprised four professionals working in the GoJ (specifically from the MoF, Income and Sales Tax Department [ISTD], Customs Department).

The academicians concentrated more on the meaning of each question and evaluated the instrument to ensure that: 1) each item is able to measure exactly what it is meant to measure; 2) that no overlap or repeat questions exist within the same construct measurements as well as no overlap or repeat questions with respect to other constructs; 3) that there are no leading questions; and 4) the appropriateness of the scale adopted, the statistical method, and the software used for this study (Smart PLS 3). The feedback from the academicians suggested that the proposed questionnaire is valid and understandable, but with some adjustments. For example, rewording and rephrasing of some items, rewriting of some items and adding additional words to some items.

Based on the experts' comments, alterations to the initial questionnaire were considered. All of the comments were considered.

After completing this step, the researcher validated the questionnaire with the second GoJ group. This step concentrated more on the ability of the instrument to be clear enough for the actual respondents and the ability of each item to measure the construct, as well as to ascertain the clarity of each question. As a result, the opinions and expert advice were sought to enhance the quality of the instrument, as suggested by Hair, Black, Babin, and Anderson (2010) and Sekaran (2003). Finally, 56 items that met validity were used for data collection.

In conclusion, the feedback given by both groups of experts enabled the researcher to make several modifications to eliminate confusion and to make the instrument more understandable by rephrasing and rearranging several questions to enhance the general flow as well as the sequencing of the questionnaire.

4.8 Translation

The native language of the target population will enable the researcher to get more insightful information on the target population during the process of collecting data. Additionally, researchers have assumed that the questionnaire in the language of respondents would be easier to elicit responses (Zikmund et al., 2013). Jordan is one of the Arabic countries where Arabic is the main language. The majority of Jordanian citizens use this language as their medium of communication. Therefore, a research questionnaire in the Arabic language gave the researcher the advantage of communicating with the target population in the MDAs and guarantee a better understanding of the survey by the respondents. Hence, translation procedures were conducted before data collection.

The back-to-back translation was considered suitable for the present study because it ensures consistency and prevents mistakes in translation (Brislin, 1970). The back-to-back translation was done by a team of professional translators (Certified Legal Translators) who are experts in English-Arabic-English translation at “Danial Bureau for Authenticated Translation,” Irbid-Jordan. In the first step, the survey questionnaire was translated into Arabic from English. Scholars have suggested that for the development of an instrument, translation is very important (Sekran, 2003). For the translation, a native Arabic speaker was chosen. The person with the same qualification was used for translation from Arabic to English (refer to Appendix H). Lastly, the researcher examined and compared the translated version with the original version. Figure 4.3 summarises the translation process.

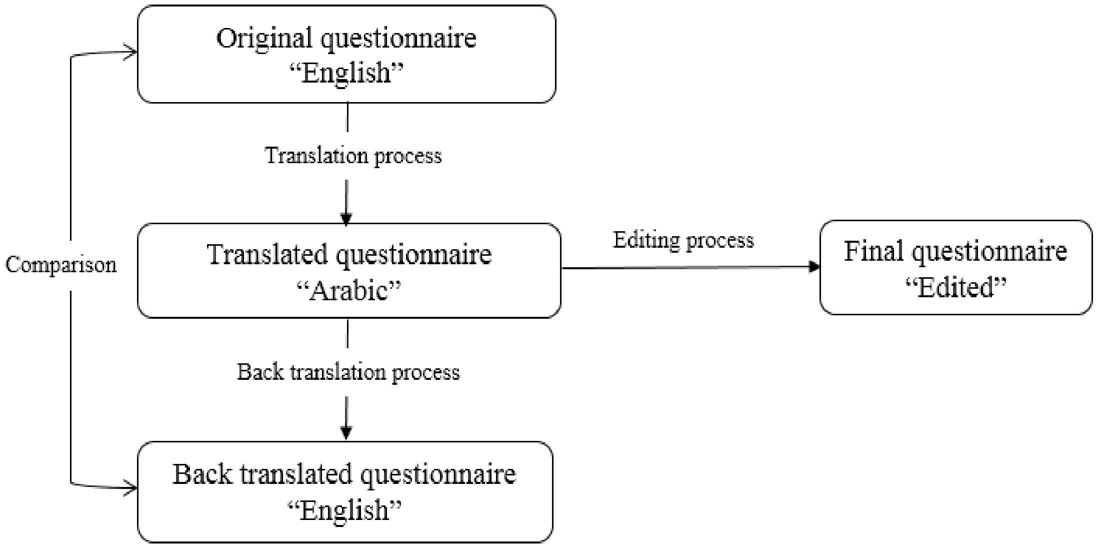


Figure 4.3. Translation Process

To ensure that the translation process had achieved the idiomatic and conceptual equivalence (Sekaran, 2003), two academicians with experience in the fields of AIS and MIS from one Jordanian university (i.e., Irbid National University) carried out a comparative examination between the Arabic and the English versions of the questionnaire. This process is important to ensure that it has been translated properly without any mistakes.

4.9 Questionnaire Design

The Booklet type of questionnaire was used in this study. Scholars have argued that there are some advantages of using the booklet type, such as the booklet being easy to follow through, it enables the usage of the double-page format for questions that focus on multiple people or events, it has a minimum chance of being misplaced or lost, and it enables respondents to turn the pages easily (Sudman & Bradurn, 1983).

The respondents were asked to tick (√) the appropriate box for all questions, except for one question (J4) where the respondents were asked to fill it manually. The questionnaire was printed using A3 paper size.

4.10 The Questionnaire Structure

The questionnaire used in this study started with the cover page displaying the UUM logo, name of the school, the name of the university (Universiti Utara Malaysia), the title of the study, and some explanation about the aims and contributions of this study. It also contained the assurance that the anonymity and confidentiality of the respondents would be maintained as this would enhance their inclination to take part in the survey. In addition, the cover letter contained the time needed and the number of sections, as well as instructions regarding the proper way to answer and return the questionnaire.

Questions were structured into 10 main sections, with a total of 56 items (excluding respondents' profile). There was a different theme for every section as mentioned below:

Section "A" comprises questions about the current status of GFMIS use. Specifically, the questions focus on the extent of GFMIS use. Section "B" is on the benefits and the successful performance that users obtained from using GFMIS. This section contains seven distinct questions that are relevant to the net benefits.

Section “C” questions aim to understand the users’ feelings of pleasure or displeasure regarding GFMIS. This section contains seven distinct questions that are relevant to user satisfaction.

Sections “D”, “E”, and “F” are to assess the users’ perceptions of information quality, system quality, and service quality, respectively; while section G is to understand user resistance to GFMIS.

Section “H” is to understand the users’ participation level in the post-implementation process of GFMIS; while section “I” seeks user perception of the GFMIS training programme.

Finally, section “J” consists of respondents’ profile, comprising seven questions related to the respondents’ profile, such as gender, age, educational qualifications, place of work, current position and experience.

4.11 Statistical Reliability of the Measurements (Pilot Study)

Following the initial content validity testing, subsequent alterations, and translation of the questionnaire, and based on the suggestion of Zikmund et al. (2013), a pilot study was conducted to enhance the instrumentation of the research by measuring the reliability of the instrument. The pilot study was also conducted to ensure the clarity of the scale items, questions, and instructions, as suggested by Pallant (2011). Hair et al. (2010) defined reliability as the extent of internal consistency among the measurements with multiple constructs. An instrument that is reliable means there will be the same results produced every time the instrument is used. For this reason, researchers conduct the instrument’s reliability analysis so they can determine its internal consistency.

Therefore, to employ the pilot study in a successful way, it should include individuals representing those who will receive the questionnaire. For this study, Jordanian government employees (GFMIS users) are the respondents. Scholars have mentioned that the maximum sample size of a pilot study is 100, whereas minimum can be 25, so that the internal consistency of the variables can be checked. Accordingly, 50 users from the MoF were chosen randomly and requested to participate in the survey.

The questionnaires were distributed in the MoF with the aim to simulate the general population. After two weeks, 39 questionnaires were collected. Three were excluded due to excessive missing data, bringing the final total to 36 valid questionnaires to be used for analysis in the pilot study. The pilot study was completed in September 2018.

According to Sekaran (2003), there are various methods for measuring construct reliability, one of which is Cronbach's alpha coefficient, i.e., a method that is commonly used in social science studies. Furthermore, Pallant (2011) and Sekaran and Bougie (2016) suggested that Cronbach's alpha coefficient is the most prominent technique for testing inter-item consistency reliability. Hence, the Cronbach's alpha analysis was carried out to determine the internal consistency of the present study's instrument.

Instrument reliability was tested using SPSS. The findings demonstrated reliability standards ranging from .719 to .908. Based on previous researches, a coefficient alpha of between .70 and beyond is considered to be adequate (Hair et al., 2010; Sekaran & Bougie, 2016). All the items and their corresponding internal consistency levels are presented in Table 4.2.

Table 4.2. *Reliability Analysis of the Pilot Study*

Variables	Items	Cronbach's Alpha
Use	7	.804
Net Benefits	7	.744
User Satisfaction	7	.815
Information Quality	5	.868
System Quality	6	.719
Service Quality	5	.876
User Resistance	3	.780
User Involvement	10	.908
Training	6	.843

From the above Table, results indicate that the level of Cronbach's alpha is above the established benchmark of .70. Consequently, all the constructs are reliable (Hair et al., 2010).

4.12 Data Collection Procedure

Following the validation, translation, and pilot testing of the questionnaire, the process of data collection began. Data were gathered from employees serving in the selected ministries and departments in Jordan. The data collection process took about four months from October to January 2018/2019. A total of 654 questionnaires were distributed by the researcher and the enumerators to the sampled respondents.

As part of the exercise, an official letter was collected from the Othman Yeop Abdullah Graduate School of Business (OYA, UUM) to facilitate the data collection process. To enhance the cooperation from the MDAs, the researcher collected another supporting official letter from Irbid National University (INU) to assist him in the data collection process; this letter was useful also because it is from a local university (refer to Appendix I).

The survey package for each MDA included a certain number of the questionnaires and two copies from the OYA and INU invitation letters. These letters asked the respondents for their cooperation, and also assured anonymity and confidentiality of their responses. Furthermore, the survey package included an Arabic invitation letter for each MDA to facilitate this process (Kanuk & Berenson, 1975); this letter was helpful when the responsible person in the employee affairs unit in each MDA did not understand the English language.

With the help of the employee affairs units, the questionnaire was self-administrated and distributed to the employees who are using GFMIS at the selected MDAs by the researcher and his enumerators. This method is more popular in the Jordanian context and usually facilitates a higher response rate (Alawneh et al., 2013; Hammouri & Abu Shanab, 2017; Sawalha & Abu-Shanab, 2015). However, there is typically a low response rate to self-administered data collection. Hence, it is crucial to conduct follow-up measures (Dillman, Smyth, & Christian, 2014; Kanuk & Berenson, 1975; Zikmund et al., 2013). Dillman et al. (2014) indicated that low response rates are attained due to not conducting follow-up with the respondents; they mentioned that after a period of one to two weeks, respondents who have not responded can be reminded via phone calls or personal visits. Therefore, following their suggestions, after a period of one to two weeks, non-responsive MDAs in this study were reminded through self-visits.

Two weeks following the distribution of the questionnaires, the researcher visited the employee affairs units to collect the first set of completed questionnaires, and this set of questionnaires was labelled as early responses. The respondents who had not filled their respective questionnaires were encouraged to fill it within two weeks. After two weeks, the questionnaires were collected at the employee affairs units and labelled as late responses. Both early and late responses were tested for non-response bias.

It is nearly impossible to collect data without challenges and hindrances. During data collection, the main challenge was related to the respondents' reluctance to complete the questionnaire, especially with regards to sharing information about their workplace. However, this issue was resolved by assuring the respondents that all information given by them will remain confidential. In addition, some employees also refused to spend their time to answer the questions; and others refused to answer the questions because they thought that it is a type of secret information that they cannot provide. Therefore, the researcher and his enumerators explained more about this study to encourage the employees who resisted. Also, some employees asked the researcher for permission to collect the data.

Furthermore, the study encountered other challenges and hindrances during the data collection process. For example, in some sensitive places and departments (e.g., Parlement, Ministry of Interior, Public Security), the security and police did not allow the researcher to enter and meet the employees personally, unless the researcher got assistance from some employees in the MDAs. Moreover, at the time (November and December 2018) of data collection, a number of protests and strikes were organised by labour unions and opposition groups against government policy.

4.13 Data Analysis Technique

The present study made use of a combination of descriptive and inferential statistical analysis. This section discusses the selection of an appropriate data analysis technique/SEM approaches.

4.13.1 Descriptive Statistical Analysis

The descriptive analysis, which was done through SPSS, deals with the respondents' demographic information. This was handled through the summation of the data and presented in a myriad of tables. In this type of analysis, the description of data in frequency and percentages of occurrence of different outcomes is carried out (Pallant, 2011; Tabachnick & Fidell, 2007).

4.13.2 Inferential Statistical Analysis

Inferential analysis deals with the prediction of the relationship between variables based on collected and analysed data. The inferential analysis is capable of examining many equations simultaneously (Hair et al., 2017). It also indicates the direction and level of relationship among the constructs of the study. Also, the measurement error is taken care of by the inferential analysis. In complex models, inferential analysis smoothens the modelling. In this study, the inferential analysis was conducted with the assistance of SEM.

A high-quality statistical analysis is achieved by using the SEM, which enables the researchers to answer research questions in a single and all-inclusive analysis that models the correlations between the constructs in a simultaneous manner; the SEM also assesses factor analysis and hypotheses simultaneously (Astrachan, Patel, &

Wanzenried, 2014; Hair, Hult, Ringle, & Sarstedt, 2017). Hence, this study employs the SEM technique for assessing the dependent variables so as to ensure that the derived findings are reliable.

The SEM parameters can be estimated using either the Covariance-Based SEM (CB-SEM) approach or the Variance-Based SEM (VB-SEM or PLS-SEM) approach (Astrachan et al., 2014; Hair et al., 2017). The selection is determined by the research settings and objectives. The subsequent sections present the three considerations in making the decision which entails the research goals, model complexity, and data characteristics.

4.13.2.1 Research Goals

Studies which aim to confirm or test theories would benefit more from using CB-SEM as the statistical technique (Hair et al., 2011; Henseler et al., 2009). In contrast, in a situation in which: (i) theories are not well developed; (ii) path relationships between the latent constructs are the primary concern in model testing; and (iii) researchers are generally less concerned with predictive accuracy of the model, the PLS-SEM approach is the methodological choice (Hair et al., 2011; Henseler et al., 2009). PLS-SEM is oriented more towards predicting path relationships between the latent constructs rather than the predictive accuracy of the model. PLS-SEM is the most preferred approach when the research objective is theory development and prediction (Hair et al., 2011; Henseler et al., 2009). However, PLS-SEM also supports theory testing (confirmation) (Hair, Sarstedt, Ringle, & Mena, 2012).

Additionally, PLS-SEM path modelling is superior than CB-SEM, because of its capacity to simultaneously examine the relationship among the indicators of the constructs in the measurement model, and the relationship among the endogenous constructs in the structural model (Hair et al., 2017). Furthermore, PLS path modelling is recognised as appropriate for researches that are prediction-oriented, exploratory in nature, and deal with standing theories extension (Hair et al., 2017).

4.13.2.2 Model Complexity

PLS-SEM approach is particularly common in IS research (e.g., Chen et al., 2015; Marcoulides, Chin, & Saunders, 2009; Tam & Oliveira, 2016, 2017; Tangsuwan & Mason, 2018; Wang & Yang, 2016). It is especially compatible with exploratory-based studies (Hair et al., 2017). It also performs path model estimations comprising multiple constructs, several structural path relationships and/or multiple indicators per construct (Hair et al., 2017). PLS-SEM is also flexible enough to measure more advanced model elements, including moderator variables (Hair et al., 2011; Hair et al., 2017; Henseler & Chin, 2010). In the context of this study, the model employed is compatible with the exploratory nature of the research, whereby three of its variables are not well-developed (two as moderators).

4.13.2.3 Data Characteristics

As compared to CB-SEM, PLS-SEM is more flexible in its assumptions about normal data distribution and number of mandatory observations (Hair et al., 2011). According to Marcoulides and Saunders (2006), PLS-SEM has substantial statistical power when used with data that is almost normally distributed; while Hair et al. (2011) mentioned that under normal data conditions, CB-SEM and PLS-SEM results are highly similar.

Based on the suggestions of Astrachan et al. (2014) and Kline (2011), the most suitable data size for CB-SEM for the present study's research model is roughly 560 (i.e., 10 times the model's number of predictors). Hence, considering that the study respondents consist of government employees who show a low response rate (see Tables 4.1 and 5.1), the recommended dataset size to meet the CB-SEM requirement is impossible to achieve. In contrast, the PLS-SEM approach averts all issues related to small sample sizes and is usable in situations where CB-SEM is not employable (Astrachan et al., 2014; Hair et al., 2011; Henseler et al., 2009).

Based on the discussions above, PLS-SEM seems to be the more suitable approach for this study. This is because: 1) the study is exploratory in nature, predicting the independent-dependent variables' relationship, thus explaining the GFMIS success factor variances instead of confirming/rejecting the given theories; 2) PLS-SEM is able to examine and confirm theories; 3) the study's research model has a number of interaction effects; 4) PLS-SEM is more applicable considering the present study's number of observations; and 5) this study is a basic research and not an applied research (see section 4.2). Hence, this study employs the PLS-SEM instead of CB-SEM.

4.14 Summary of the Chapter

This chapter explains the research design of the study. The chapter also discusses the operational definitions of the constructs, measures, content and face validity, translation, questionnaire design and structure, data collection procedure, and data analysis technique. As described in this chapter, the present study opted for the cross-sectional method, whereby data were gathered at one point in time. The unit of analysis is individual, as the target respondents are the individual employees working in the selected ministries and departments in Jordan. The last subsection summarises the chapter.

CHAPTER 5

DATA ANALYSIS AND FINDINGS

5.1 Introduction

The primary objective of this chapter is to highlight the results based on the data collected from the Jordanian public employees. SPSS version 24 was used to attain the statistical results of the descriptive data (i.e., the respondents' information and questionnaire constructs), whilst smartPLS version 3 was used to attain the assessment of the measurement and structural models.

This chapter starts by providing the results of the response rate, data screening and preliminary analysis. After that, the results of the descriptive statistics of the respondents' information and questionnaire constructs are presented. Furthermore, this chapter presents the measurement model (outer model) results, which include individual items reliability, internal consistency reliability, convergent validity, and discriminant validity. Then, the results of the structural model (inner model), such as R-squared values, effect size (f^2), the significance of the path coefficients, and construct cross-validated redundancy of the model, are highlighted. Lastly, the moderating effects of training and user involvement on the structural model are offered.

5.2 Response Rate

The mathematical calculation for determining the response rate entails calculating the number of completed/returned surveys and dividing that total by the number of overall participants from the beginning (Zikmund et al., 2013). In this study, 654 questionnaires were distributed to 52 MDAs located in Jordan. Of this, 293 questionnaires were returned and 361 were not returned. This yielded a response rate of 45%. Out of the total returned questionnaires, 29 were empty or incomplete and therefore unusable questionnaires. Sixteen cases with high missing data were deleted (Hair, Black, Babin, & Andersen, 2014). This yielded a usable response of 264 with a response rate of 40% as shown in Table 5.1.

Table 5.1. *Summary of Data Collection and Response Rate*

Response	**Frequency/Rate**
Distributed questionnaires	654
Returned questionnaires	293
Response rate	45%
Returned and unusable questionnaires	29, as follows: 8 (Empty) 5 (Not using GFMIS) 16 Incomplete questionnaires
Returned and usable questionnaires	264
Usable response rate	40%

In the context of GoJ employees, the response rate is generally good in comparison to other studies in the same field. For example, Alawneh et al. (2013) obtained a 55% response rate; Alshibly and Al-Dmour (2010) obtained 31%; Hammouri and Abu Shanab (2017) obtained 44% (see Table 4.1 for details). The response rate for this study is, however, lower than some other studies in the same context. For example, Alrawabdeh (2014) obtained 70%, while Alshibly (2014) achieved 69%. Compared to the studies conducted in developing countries which adapted the same model and targeted government employees, the response rate is generally average. For example, Stefanovic et al. (2016) obtained 28% as a response rate from government employees in Serbia, while Sappri and Baharudin (2016) obtained 77% as a response rate from government employees in Malaysia.

This study yielded a response rate that complied with the recommendations of Hair et al. (2014), who stated that the sample size should be 10 times more than the estimated model coefficients (i.e., study variables). Thus, a sample size of 90 is sufficient for analysis, as this study has nine constructs. By using priori G*Power 3.1.2.9 prerequisite (Faul et al., 2007) (refer to Figure 4.2), in this study, a sample size of 160 is suitable for analysis.

5.3 Data Screening and Preliminary Analysis Data

Screening variables are significant in the data analysis process and prior to hypothesis examining and improving the generalisability of findings (Pallant, 2011). In the present study, data screening was conducted after the collected data were recorded into the SPSS software version 24. The following data screening analyses were done: (1) missing value analysis; (2) assessment of outliers; (3) multicollinearity test; and (4) normality test (Hair et al., 2014; Pallant, 2011; Tabachnick & Fidell, 2007).

5.3.1 Data Coding

Data preparation began with data coding (Sekaran & Bougie, 2016), which entails the assignment of a number to the responses received for the purpose of database entry (Sekaran & Bougie, 2016). The researcher coded all the items of the questionnaire's constructs using two, three, or four letters, so that they can easily be identified in the SPSS and PLS. Specifically, items for net benefits were coded NB1 to NB7, items for user satisfaction were coded as US1 to US7, items for use were coded as U1 to U7, items for information quality were coded as IQ1 to IQ5, items for system quality were coded as SYQ1 to SYQ6, items for service quality were coded as SEQ1 to SEQ5, items for user resistance were coded as UR1 to UR3, items for training were coded as T1 to

T6, and finally items for user involvement were coded as UI1 to UI10. After coding all the 264 valid questionnaires, the data were entered into the SPSS.

5.3.2 Missing Value Analysis

Missing data entails information that is unavailable for a subject/case, which typically occurs because a respondent did not answer certain questions in a survey (Hair et al., 2014). Thus, missing values represent the number of lost values in the selected data set (Hair et al., 2014). Missing value treatment can employ different methods, such as mean replacement or EM (expectation-maximisation) algorithm, and the nearest neighbour to obtain values for missing data points in the set of data used for the analysis. As an alternative, researchers may consider deleting cases with missing values (i.e., casewise deletion) (Hair et al., 2017).

Missing data can be analysed using several specifically-designed statistical programmes and techniques, such as the Missing Value Analysis in SPSS (Hair et al., 2014; Pallant, 2011; Tabachnick & Fidell, 2007), which can identify all blank cells as missing data. If the researcher decides to leave a blank when certain information is unavailable, that variable view column can be left as it is (Pallant, 2011). Therefore, in this study, after coding the data into the SPSS, all missing values were kept as a blank cell, and descriptive statistics were computed to identify the number of missing values.

Out of the 14784 (56*264) data points, 119 were randomly missed, which accounted for .8% (refer to Table 5.2). The problem is less serious if the missing data from a large dataset is only 5% or lower with a random pattern; nearly all missing value procedures would produce the same results (Tabachnick & Fidell, 2007). In this study, descriptive statistics of the missing values showed that none of the indicators had 5% or more of missing values (refer to Table 5.2). Therefore, missing values in this study were replaced by SPSS, using mean replacement.

Table 5.2. *Number and Percentage of Missing Values*

Variables	**Number of Missing Values**	**% Per Variable**
IQ	7	.53% (7/1320)
NB	18	1% (18/1848)
SEQ	14	1% (14/1320)
SYQ	10	.63% (10/1584)
T	13	.82% (13/1584)
U	13	.7% (13/1848)
UI	16	.6% (16/2640)
UR	9	1.1 (9/792)
US	19	1% (19/1848)
Total Missing Values	**119 out of 14784 data points**	
Total Percentage of Missing Values	**.8%**	

Note: IQ - Information Quality; NB – Net Benefits; SEQ - Service Quality; SYQ - System Quality; T - Training; U - Use; UI - User Involvement; UR - User Resistance; US - User Satisfaction.

*Note: Percentage of missing values is calculated by dividing the total number of missing values by the total number of data points multiplied by 100.

5.3.3 Outliers

An outlier entails an extreme value for one variable (a univariate outlier) or an odd score combination for two or more variables (multivariate outlier), which causes distorted statistics (Tabachnick & Fidell, 2007). According to Hair et al. (2014), outliers in a dataset must be assessed to determine any influential observations (unbalanced effect on the regression results) and to decide on their omission from the analysis as they may pose substantial impacts on the study results.

Based on the recommendation of Pallant (2011), Tabachnick and Fidell (2007) and Hair et al. (2014), Mahalanobis Distance (D^2) check (Mahalanobis, 1948) was done in the present study to identify and treat outliers (multivariate). D^2 was calculated via SPSS, and then, the Chi-square value was calculated.

Table 5.3. *Critical Values for Evaluating Mahalanobis Distance Values*

df	***p* = .05**	***p* = .01**	***p*=.001**
7	14.07	18.48	24.32
8	15.51	20.09	26.13
9	16.92	21.67	27.88

Source: Table of critical Chi-Square values.

In this study, nine variables (eight IVs) were adapted and adopted; therefore, eight indicate the Chi-square table degree of freedom (refer to Table 5.3), which is 15.51 with *p*-value= .05, 20.09 with *p*-value= .01, and 26.13 with *p*-value= .001. So, based on the recommendations of Tabachnick and Fidell, the standard is 26.13 (Pallant, 2011; Tabachnick & Fidell, 2007). Thus, any figure with a D^2 of 26.13 or higher was identified as a multivariate outlier and deleted from the data set. Following Pallant's (2011), and Tabachnick and Fidell's (2007) standard for removing outliers, seven cases were identified as multivariate outliers (see Appendix J), and excluded from the analysis. Therefore, the sample number become 257 (i.e., 264 cases - 7 cases).

Table 5.4. *Outliers Cases*

Case No	**MAH_1**
20	54.93009
65	35.72181
122	64.84924
139	46.92571
153	72.84834
216	45.04604
248	42.83458

After examining the outliers one by one, it seemed that these cases clearly differ from all the other cases in the dataset, specifically, there is no variance in the answers for these seven cases, as they apply the same answer for many questions. For example, in some cases, the respondents selected the same answer for two/three pages. Therefore, these seven cases did not represent the population, and were excluded from the dataset; these cases differ in systematic ways from the rest of the cases.

5.3.4 Multicollinearity

Multicollinearity is known as a correlation matrix issue that happens when the variables have extreme correlations (Tabachnick & Fidell, 2007). According to Hair et al. (2014), multicollinearity is the extent to which the effect of a certain variable is predictable or justifiable by the other variables in the analysis. Multicollinearity also gives rise to the coefficients' standard errors and abates the analysis (Tabachnick & Fidell, 2007).

In this study, multicollinearity was assessed using two methods, namely, tolerance value and Variance Inflation Factor (VIF) (Pallant, 2011). Tolerance value and VIF were assessed using regression results from the using SPSS in this study (Pallant, 2011). Hair et al. (2014) and Pallant (2011) suggested that multicollinearity is an issue if VIF value is higher than 10, and tolerance value is less than .10.

Table 5.5 shows the tolerance and VIF values for the exogenous constructs in this study. It indicates that tolerance values range from .627 – .854 which is greater than .10, while VIF values range from 1.171– 1.595, which is less than 10. Table 5.5 shows that in this study, multicollinearity is not a concern among the exogenous constructs as all tolerance values exceed .10, and all the VIF values are less than 10 (Hair et al., 2014; Pallant, 2011).

Table 5.5. *Tolerance and VIF Values for the Exogenous Latent Constructs*

Variables	**Tolerance**	**VIF**
IQ	.824	1.213
SEQ	.854	1.171
SYQ	.759	1.318
T	.811	1.233
U	.627	1.595
UI	.837	1.194
UR	.674	1.483
US	.734	1.361

Secondly, the correlation matrix was assessed using SPSS for all exogenous constructs. According to Hair et al. (2014), multicollinearity arises between exogenous constructs (i.e., independent variables) if the correlation coefficient results indicate .90 and more. The correlation matrix of all exogenous constructs is presented in Table 5.6. As shown, all correlations among the exogenous constructs are under the recommended threshold values of .90, where the correlation of the exogenous constructs range from -.39 to .47, which reflects independent and not high correlation among the exogenous constructs. It is worth mentioning that the highest correlation is between use and system quality.

Table 5.6. *Correlation Matrix*

Constructs	US	U	T	UI	IQ	SYQ	SEQ	UR
US	1							
U	.370**	1						
T	.248**	.284**	1					
UI	-.212**	-.271**	-.271**	1				
IQ	.272**	.302**	.209**	-.175**	1			
SYQ	.252**	.470**	.152*	-.118	.232**	1		
SEQ	.318**	.271**	.044	-.036	.183**	.182**	1	
UR	-.367**	-.388**	-.372**	.341**	-.338**	-.272**	-.105	1

5.3.5 Normality

Although PLS-SEM is non-parametric and does not require normal data, it is important to evaluate the data to check if it is too far from normality. Marcoulides and Saunders (2006) considered that when using PLS with data that is close to normal, PLS has great statistical power (see section 4.13.2.3 for details).

In addition, the lack of normality in PLS-SEM is less severe; nevertheless, the PLS-SEM results must still be carefully examined when there is a substantial deviation of the distributions from normality. Thus, it is always advisable to take the distribution into account when using PLS-SEM, as extremely non-normal data can be a problem and may expand the standard errors from bootstrapping (Hair et al., 2014).

Normality entails the extent to which the sample data distribution agrees with the normal distribution (Hair et al., 2014). Nevertheless, normality is a significant primary step in almost every multivariate analysis for screening the variables (Hair et al., 2017; Tabachnick & Fidell, 2007). For this reason, evaluation of data is very important if it is too far from normality. That is why, there can be some serious problem for the assessment of items if data are extremely abnormal and inflate the standard errors from bootstrapping, even though PLS-SEM is non-parametric and does not require normal data (Hair et al., 2017).

Researchers have suggested using both graphical plots and statistical tests to assess the normality of the variables. In the present study, graphical methods of normal Q-Q plot and histogram, and a statistical method of Kurtosis and Skewness were applied by using SPSS (Hair et al., 2014; Tabachnick & Fidell, 2007) to test the normality of the data.

Skewness entails the measure of the distribution symmetry, typically compared to a normal distribution. A distribution with a positive skew has several large values and wanes to the right, whilst a distribution with a negative skew has several small values and wanes to the left. Meanwhile, Kurtosis entails the measure of the distribution's flatness or peakedness in comparison to a normal distribution. A flat distribution is indicated by a negative value, whilst a peaked distribution is specified by a positive distribution (Hair et al., 2014). According to Curran, West, and Finch (1996), absolute values of Kurtosis and Skewness, must be < 7 and < 2, respectively. Thus, based on the recommendation of Curran et al. (1996), and as shown in Table 5.7, in this study, all the constructs have Kurtosis and Skewness values within the acceptable range of ±7 and ± 2, respectively.

Table 5.7. *Values of Skewness and Kurtosis of Measured Variables*

Variables	**Skewness**	**Kurtosis**
IQ	.086	-.220
NB	-.412	-.330
SEQ	.137	.593
SYQ	.318	.302
T	-.021	-.280
U	-.050	-.880
UI	.185	-.313
UR	-.167	-.769
US	.084	-.563

In addition, Figure 5.1 shows that the data in this study adheres to a normal pattern, considering that all the histogram bars are nearing the normal curve. Also, Figure 5.2 represents that data in this study follow the normal pattern since the normal probability plot is close to a normal shape. Thus, in the present study, normality is not a serious issue.

According to Hair et al. (2017), even though lack of normality is not much in severity with the use of PLS-SEM, scholars must still test PLS-SEM findings carefully when normal distributions are significantly higher than usual. Therefore, when working with PLS-SEM, it is also valuable to think about the distribution (Hair et al., 2017). In addition, one of the characteristics of PLS-SEM is that it has the ability to handle and deal with complex models with many structural model relationships (Hair et al., 2017). Given this study has a complex structural model, testing the moderating effect of training and user involvement using PLS-SEM is justified.

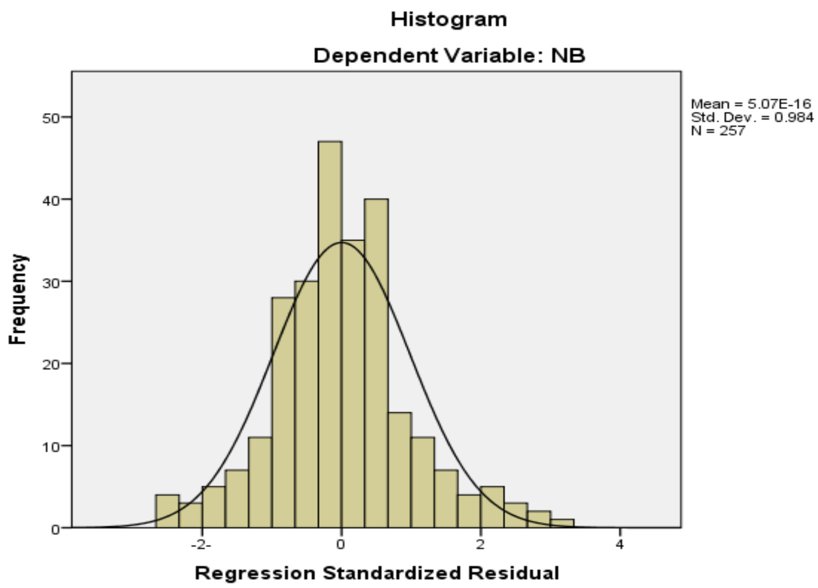


Figure 5.1. Histogram for Test of Normality

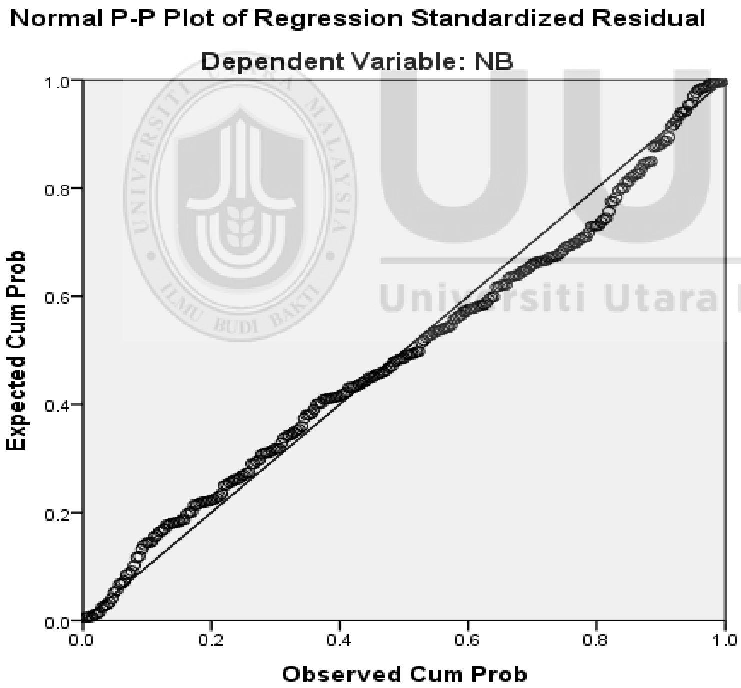


Figure 5.2. Normal Probability Plot

5.3.6 Non-Response Bias

Non-response bias occurs when the difference between the respondents and non-respondents is so great, to the extent that the results are not reflective of how the overall sample would have responded and hence cannot be generalised to the entire population (Armstrong & Overton, 1977). Non-response bias literature defines three methods of estimation, namely, subjective estimates, comparisons with known values for the population, and extrapolation (Armstrong & Overton, 1977). In the present study, an independent sample t-test on the survey items was carried out for the purpose of comparing the responses. Independent sample t-test represents the most appropriate technique to check the non-response bias by comparing the questionnaire responses at the early stage (174 respondents) to the responses at the later stage (83 respondents) as suggested by Armstrong and Overton (1977).

Table 5.8. *Group Descriptive Statistics for Early and Late Respondents*

Construct	**Response**	**N**	**Mean**	**Std. Deviation**
IQ	Early Response	174	4.0161	1.09447
	Late Response	83	3.9073	1.04147
NB	Early Response	174	4.4657	1.23158
	Late Response	83	4.3667	1.19669
SEQ	Early Response	174	4.3273	.99840
	Late Response	83	4.3473	.87863
SYQ	Early Response	174	4.3687	.89115
	Late Response	83	4.3188	.92393
T	Early Response	174	3.8940	.84879
	Late Response	83	3.8467	.91314
U	Early Response	174	3.8980	1.21698
	Late Response	83	3.8864	1.36200
UI	Early Response	174	3.6418	1.03453
	Late Response	83	3.8058	1.04728
UR	Early Response	174	3.4691	1.15090
	Late Response	83	3.3949	1.28222
US	Early Response	174	3.8971	.85037
	Late Response	83	3.8441	.86742

Table 5.8 presents the categorisation of the survey respondents into two independent sample groups according to their response time to the survey which consists of nine constructs (Armstrong & Overton, 1977). As showed in Table 5.8, there are no great differences between the groups' descriptive statistics (i.e., number, mean, and standard deviation) for early and late respondents. Likewise, as shown in Table 5.9, there are no significant differences in T-test results (2-tailed) regarding the early and late respondents. Thus, in the present study, non-response bias is not a serious issue.

Table 5.9. *Results of Independent-Samples T-test for Non-Response Bias*

		F	**Sig.**	**t**	**Sig. (2-tailed)**
IQ	EVA	.608	.436	.756	.450
	EVNA			.770	.442
NB	EVA	.004	.949	.608	.544
	EVNA			.614	.540
SEQ	EVA	1.800	.181	-.156-	.876
	EVNA			-.163-	.871
SYQ	EVA	.005	.945	.415	.678
	EVNA			.410	.683
T	EVA	1.591	.208	.408	.684
	EVNA			.397	.692
U	EVA	3.292	.071	.069	.945
	EVNA			.066	.947
UI	EVA	.347	.556	-1.184-	.238
	EVNA			-1.178-	.240
UR	EVA	1.983	.160	.466	.642
	EVNA			.448	.655
US	EVA	.401	.527	.464	.643
	EVNA			.461	.646

EVA-Equal variances assumed; EVNA-Equal variances not assumed.

5.3.7 Common Method Variance (CMV) Test

CMV can happen when data are collected through a similar instrument at the same time by using self-reported data obtained from one source (Podsakoff, MacKenzie, &

Podsakoff, 2012). The existence of CMV in any research may inflate relationships between variables measured by self-reports (Conway & Lance, 2010). The present study has the probability for CMV because it is accomplished by using self-reported data obtained from government employees working in the Jordanian public sector (Podsakoff et al., 2012). So, it is important in this study to examine the impact of CMV.

In the present study, both statistical and procedural interventions were applied as suggested by Podsakoff, MacKenzie, Lee, and Podsakoff (2003) to reduce the impact of CMV. This study followed Podsakoff et al.'s (2003) suggestions. First, expert opinions were received through the content validity of the items to avoid unclear concepts in the questionnaire (see section 4.6 for details of content validity). The participants were assured that their responses will remain confidential and hence they should respond with the utmost honesty (see section 4.9 for the questionnaire structure).

Second, Harman's single-factor test was conducted using SPSS, with 56 items for all the constructs. Based on the results, none of the factors explained more than 50% of the variance. The findings produced nine components, clarifying a cumulative 47.8% of the variance; the findings also show that only 34.98% of the overall variance is explained by a single factor, i.e., less than 50%, which indicates the lack of CMV in the present study (Podsakoff et al., 2012). Thus, CMV is not a serious problem. Total variance explained is shown in Table 5.10.

Table 5.10. *Total Variance Explained*

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	**Total**	**% of Variance**	**Cumulative %**	**Total**	**% of Variance**	**Cumulative %**
1	3.148	34.977	34.977	3.148	34.977	34.977
2	1.154	12.827	47.804	1.154	12.827	47.804
3	.975	10.838	58.642			
4	.838	9.316	67.958			
5	.75	8.337	76.295			
6	.634	7.042	83.336			
7	.585	6.496	89.832			
8	.493	5.478	95.31			
9	.422	4.69	100			

Section 5.3 presents the aspects of data screening and cleaning. Various analysis techniques and procedures were carried out to ascertain that all the gathered data are appropriate and clean prior to undergoing analysis using the PLS-SEM. The procedures include the application of missing data, removal of outliers, multicollinearity test, normality test, and non-response bias test. A total of 654 questionnaires were self-administrated to GFMIS users in 52 MDAs in Jordan. Specifically, 293 users participated in this study, while the usable responses were 264. Seven cases were identified as multivariate outliers, and hence, excluded from the analysis. The final usable data was 257.

5.4 Descriptive Statistics

Descriptive statistics is an initial phase of statistical analysis. In this study, descriptive statistics were conducted on the questionnaire constructs and the respondents' profile.

5.4.1 Descriptive Analysis of the Latent Constructs

In this section, the descriptive statistics of the mean and standard deviation for the dependent variables, independent variables, and moderator variables are presented. These variables were all measured using the 7-point Likert scale (i.e., from 1 – strongly disagree to 7 – strongly agree). Among the study variables, user resistance has the lowest mean value (i.e., 3.46), whereas net benefits have the highest mean value (i.e., 4.43). The standard deviation of all the variables ranges from .85 to 1.26, indicating the presence of substantial and satisfactory variability in the dataset. Table 5.11 demonstrates the descriptive statistics of all the study variables.

Table 5.11. *Results of the Descriptive Statistics of all the Latent Constructs (n=257)*

Latent Constructs	**Items**	**Minimum**	**Maximum**	**Mean**	**Std. Deviation**
IQ	5	1.00	7.00	3.9841	1.08438
NB	7	1.14	7.00	4.4360	1.22313
SEQ	5	1.80	7.00	4.3338	.95968
SYQ	6	1.67	6.83	4.3461	.91018
T	6	1.67	7.00	3.8820	.87866
U	7	1.00	6.57	3.8937	1.26421
UI	10	1.10	6.70	3.6947	1.03946
UR	3	1.00	7.00	3.4607	1.21797
US	7	1.71	6.29	3.8800	.85457

5.4.2 Descriptive Statistics for Respondents' Profile

The demographic characteristics of the respondents in this study sample are described in this section. This includes gender and age of the respondents, highest educational qualification, years of experience, ministry and unit of work, and job description (refer to Table 5.12).

Table 5.12. *Demographic Characteristics of the Respondents*

Samples Description	**Freq**	**%**	**Samples Description**	**Freq**	**%**
Gender			**MDAs**		
Male	183	71	Ministries	160	62
Female	74	29	Departments and Agencies	97	38
Not reported	0	0	Not reported	0	0
Total	257	100	Total	257	100
Age			**Highest qualification**		
20 - 29	14	5.4	PhD	9	3.5
30 - 39	100	38.9	Master's Degree	20	7.8
40 - 49	102	39.7	Bachelor's Degree	214	83.3
50 and above	32	12.5	Diploma	14	5.4
Not reported	9	3.5	Not reported	0	0
Total	257	100	Total	257	100
GFMIS experience			**Work experiences**		
Less than 1 year	32	12.5	1-5 years	70	27.2
1 to 2 years	49	19.1	6-10 years	115	44.7
3 to 4 years	119	46.3	11-15 years	40	15.6
5 to 6 years	47	18.3	More than 16 years	27	10.5
7 to 8 years	10	3.9	Not reported	5	1.9
Not reported	0	0	-	-	-
Total	257	100	Total	257	100
Unit			**Job descriptions**		
Accounting	203	79	Accountants	195	75.8
Financial	36	14	Finance officers	38	14.7
Statistics & Reports	16	6.2	Head of depts / directorates	19	7.3
Other	2	.8	Other	3	1.2
Not reported	0	0	Not reported	2	.8
Total	257	100	Total	257	100

**For more details, see Appendix E*

The respondents of this study comprise 183 male employees (71%) and 74 female employees (29%), and this is consistent with the Arabic culture in which masculinity dominates most aspects of life. Regarding respondents' age, the majority are in the age groups of 30-39 and 40-49 years. Also, 214 (83.3%) of the respondents have a bachelor's degree, while 20 of the respondents (7.8%) have a master's degree. With regards to using GFMIS, majority of the respondents (around 70%) have professional experience of more than three years, suggesting that respondents have sufficient experience to participate in the survey and to supply reliable data for this study. As for job discerption, about 75% of the respondents are accountants.

Further, for the MDAs that participated in this study, 29.5% are from MoF and its related departments (i.e., general budget department, customs department, department of land and survey, general supply department, and ISTD), while for the units of work, a high percentage of target respondents are from budget and accounting unit, financial control unit, accounts receivable unit, and payroll unit.

5.5 Assessment of PLS-SEM Path Model Results

In this section, the findings of PLS path modelling are shown as suggested by Henseler, Ringle, and Sinkovics (2009) under the two-step process of PLS path model assessment. The two-step process includes the assessing of both the measurement model (outer model assessment) and the structural model (inner model assessment) of the present study (Hair et al., 2017; Henseler et al., 2009). Firstly, the assessment of the measurement model entails investigating the reliability of the individual items and internal consistency as well as the convergent and discriminant validity. Secondly, the structural model assessment entails determining the significance of the path coefficients, R-squared (R^2), the effect size (f^2), the construct cross-validated redundancy (i.e., Q^2), and the moderating effect. This study followed the suggested two-stage analytical techniques as suggested by quantitative analysts (Anderson & Gerbing, 1988), where validation of the instrument was tested first through the measurement model, followed by testing the hypothesised relationships through the structural model (Anderson & Gerbing, 1988; Kashif, Zarkada, & Ramayah, 2016).

5.5.1 Outer Model Evaluation

In the present study, the outer model was assessed via the reliability of individual items, internal consistency, and convergent and discriminant validity (Hair et al., 2017; Henseler et al., 2009).

5.5.1.1 Individual Items Reliability

Measurement of the individual items' reliability focused on the standardised factor loadings of each of the items on their respective constructs (Hair et al., 2017). Basically, standardised loadings must be at a minimum of .708 which specifies that the assigned construct explains more than 50% of an item's variance (Henseler et al., 2009). However, items with standardised factor loadings ranging from .40 to .70 can be retained if the Average Variance Extracted (AVE) value is achieved, whilst indicators with outer loadings of between .40 and .70 should only be omitted if doing so increases the composite reliability (CR) and AVE above the recommended threshold value (Hair et al., 2017). However, indicators with outer loadings that are severely low, i.e., less than .40, should always be omitted (Hair et al., 2017).

In this study, given that the AVE values were achieved without deleting any items with outer loadings between .40 and .70, therefore, items above .40 were retained, while only indicators with outer loadings below .40 were removed (refer to Appendix K). The suggestion by Hair et al. (2017) was used for retaining items with loadings of more than .40.

As presented in Appendix K, only four out of the 56 items were deleted as their loadings were below .40. This move is deemed acceptable as the items are reflective indicators, "i.e., manifestations of the dimensions rather than their components" (Hair et al., 2017; Wymer & Casidy, 2019). Hence, a total of 52 items with loadings above .40 were retained.

5.5.1.2 Internal Consistency Reliability

Internal consistency reliability can be assessed using a construct's composite reliability (CR) or Cronbach's alpha (Hair et al., 2017). Cronbach's alpha is a conservative reliability measure since it most likely underestimates the true reliability of construct measures. On the contrary, CR is generally a liberal estimate because it draws on the outer loadings, which are typically somewhat inflated (Hair et al., 2017). The intersection between Cronbach's alpha and CR reveals the latent variables' true reliability (Hair et al., 2017). In this study, CR coefficient was used to determine the constructs' internal consistency reliability because CR is deemed to be a more appropriate criterion for reliability when it involves PLS-SEM (Hair et al., 2017).

As recommended by Hair et al. (2017), CR coefficient must be at minimum .70 or above. As shown in Table 5.13, in the present study, the latent construct's CR coefficients exceed the lowest adequate level of .70 and more as the CR values range from .859 to .969, representing adequate internal consistency reliability of the measurements used (Hair et al., 2017).

Table 5.13. *Composite Reliability Latent*

Latent Construct	Composite Reliability (CR)
NB	.928
US	.888
U	.969
T	.859
UI	.937
IQ	.908
SYQ	.926
SEQ	.914
UR	.909

5.5.1.3 Convergent Validity

This entails the degree to which the indicators of a certain construct converge or have a high level of variance in common (Hair et al., 2014). In this study, convergent validity of the latent constructs was assessed using the AVE. The values of AVE describe the average variance shared between a construct and its connected items (Fornell & Larcker, 1981).

Table 5.14. *Results of Measurements Model – Average Variance Extracted (AVE)*

Latent Constructs	AVE
IQ	.664
NB	.649
SYQ	.678
SEQ	.682
T	.562
U	.818
UI	.652
UR	.770
US	.576

An AVE value of more than .50 means that the construct explains more than 50% of its indicators' variance, on average. On the other hand, an AVE value less than .50 means that more variance is in the error of the items than in the variance explained by the construct, on average (Hair et al., 2017). Based on Table 5.14, the AVE values in this study range from .56 to .81, indicating that convergent validity is satisfactorily achieved for all the constructs studied.

5.5.1.4 Discriminant Validity

This entails the degree of distinctness of a construct with regards to the extent of its correlation with other constructs and its sole representativeness by the distinctly measured variables (Hair et al., 2014). Proper discriminant validity is attained when an AVE's square root for a certain construct is greater than the correlations with the other constructs within the same model (Fornell & Larcker, 1981). In the present study, as shown in Table 5.15, for the Fornell-Larcker criterion, the constructs' correlations were compared to the AVE's square roots (bold) which shows proper discriminant validity (Fornell & Larcker, 1981).

Table 5.15. *Discriminant Validity (Fornell-Larcker)*

	IQ	NB	SEQ	SYQ	T	U	UI	UR	US
IQ	.815								
NB	.212	.806							
SEQ	.186	.209	.826						
SYQ	.240	.185	.186	.823					
T	.222	.195	.065	.149	.749				
U	.309	.398	.274	.472	.298	.904			
UI	-.165	-.439	-.041	-.101	-.232	-.246	.807		
UR	-.350	-.277	-.103	-.267	-.360	-.388	.299	.877	
US	.282	.411	.310	.261	.227	.380	-.202	-.349	.759

In addition to the Fornell and Larcker (1981) criterion, the Heterotrait-Monotrait ratio of correlations (HTMT) was examined as this standard is viewed as a more reliable standard than the Fornell-Larcker criterion for assessing discriminant validity

(Henseler, Ringle, & Sarstedt, 2015). The HTMT standard in the present study demonstrates that discriminant validity is reached. The highest correlation of the variables is between use and system quality at .504 (refer to Table 5.16), which is less than .90; Hair et al. (2017) and Henseler et al. (2015), suggested that HTMT values above .90 indicate lack of discriminant validity. Therefore, in the present study, both types of validity are reached.

Table 5.16. *Discriminant Validity (HTMT)*

Constructs	**IQ**	**NB**	**SEQ**	**SYQ**	**T**	**U**	**UI**	**UR**	**US**
IQ									
NB	.235								
SEQ	.213	.237							
SYQ	.264	.206	.206						
T	.266	.230	.086	.178					
U	.333	.423	.295	.504	.339				
UI	.187	.467	.057	.115	.278	.261			
UR	.401	.313	.119	.304	.432	.428	.343		
US	.324	.458	.363	.303	.286	.420	.231	.408	

In the present study, the findings of the measurement model designate that all the constructs have reached adequate validity and reliability (see Figure 5.3). This supports an additional examination of the structural model to check the associations between the study constructs (i.e., variables). In the cross-loadings measure, the loading of each indicator should be more than its cross-loadings (Hair et al., 2017). In this study, following the suggestion of Hair et al. (2017), each indicator's loadings are higher than its respective cross-loadings, indicating adequate discriminant validity (refer to Appendix L).

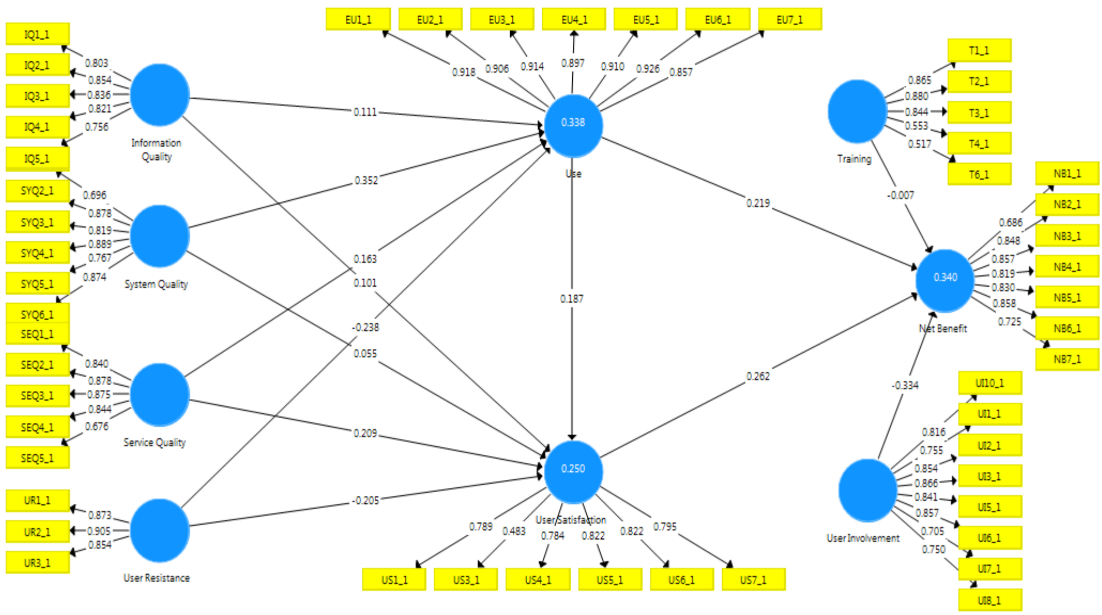


Figure 5.3. Measurement Model

5.5.2 Inner Model Evaluation

Following the assessment of the measurement model's reliability and validity (outer model), the second step entailed assessing the results of the structural model (inner model). In PLS-SEM, the main standards for assessing the structural model are to assess the hypotheses of the main effects, assessment of variance explained in the endogenous variables (R^2), assessment of the effect size (F^2), construct cross-validated redundancy (i.e., predictive relevance of the model Q^2), testing the moderating effects, and determining the strength of the moderating effects.

The bootstrapping process was run with 257 cases and a total of 500 bootstrap samples to determine the significance of the path coefficients in order to compute the standard errors, T-value, and *p*-value of the estimate as it signifies a non-parametric method for assessing the precision of the estimates in PLS (Hair et al., 2017). Following Henseler and Chin (2010), 500 bootstrap calculations accompanied each estimation in measuring each estimate's significance.

The structural model in this study consisted of the main effects model in which the direct relationships between overall quality factors and user resistance; and user characteristics (i.e., use and user satisfaction) and net benefits were examined. In addition, the study examined the interaction model in which the interactions were incorporated into the model to test the moderating effects of training and user involvement on the relationships.

Figure 5.4 and Table 5.17 present the structural model, which include only direct relationships. In the present study, all the relationships are represented by standardised beta values, and in analysing structural model relationships, the significance level was set at $p < .05$, $p < .01$ and $p < .001$ (1-tailed) (Hair et al., 2010).

It must be noted that before testing the hypothesis, the researcher followed the suggestion of Henseler, Hubona, and Ray (2016) and applied the Standardised Root Mean Square Residual (SRMR) to evaluate the model fit. The SRMR entails the root mean square discrepancy between the observed correlations and the model-implied correlations (Hair et al., 2017). Henseler et al. (2016) highlighted that an SRMR value of zero specifies a perfect model fit, whilst an SRMR value of .05 and lower indicates an acceptable fit. Nevertheless, Hu and Bentler (1999, as cited in Henseler et al., 2016), pointed out that SRMR value less than .08 is advocated to reach acceptable PLS path models. In the present study, the SRMR of .054 was detected, indicating an acceptable model fit (Henseler et al., 2016).

5.5.2.1 Significance of Path Coefficients and Hypotheses of the Main Effects

Path coefficient is the standardised beta coefficients of ordinary least squares regressions. Path coefficient values are set between -1 and +1. A coefficient that approximates "+1" indicates a strongly positive relationship. Meanwhile, a coefficient that approximates "-1" suggests a strongly negative relationship (Hair et al., 2014; Henseler et al., 2009). Figure 5.4 shows the full model, which includes the structural model without the moderators' effect (only the direct relationships). Table 5.17 shows the findings of the path coefficient used to test research hypotheses.

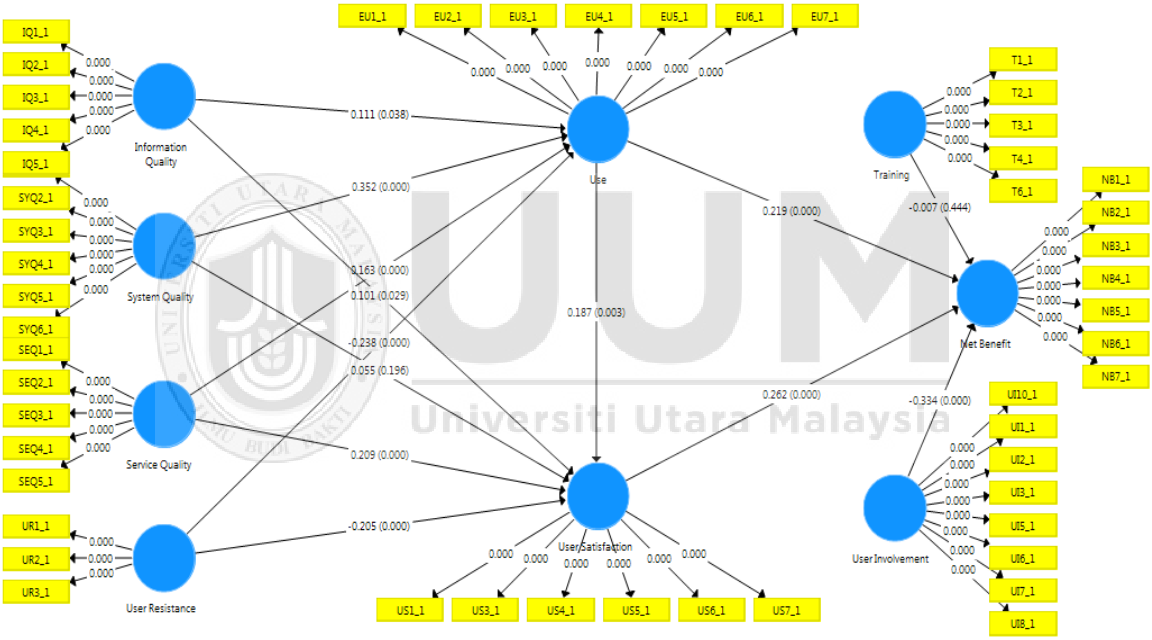


Figure 5.4. The Structural Model (Direct Relationship)

Table 5.17. *The Findings of Direct Relationship*

H	Relationship	Std. Beta	T-value	*p*-value	Result
H1	IQ → U	.111	1.782	.038	Supported
H2	IQ → US	.101	1.895	.029	Supported
H3	SYQ → U	.352	7.283	.000	Supported
H4	SYQ → US	.055	.858	.196	Not supported
H5	SEQ → U	.163	3.345	.000	Supported
H6	SEQ → US	.209	3.469	.000	Supported
H7	UR → U	-.238	4.587	.000	Supported
H8	UR → US	-.205	3.459	.000	Supported
H9	U → US	.187	2.732	.003	Supported
H10	U → NB	.219	4.064	.000	Supported
H11	US → NB	.262	4.337	.000	Supported

The results for the direct relationship show that most hypotheses of the present study's model are valid and applicable to the Jordanian public sector. In other words, the general validity of the developed model is supported. All the research hypotheses are supported, excluding one which proposed that higher system quality produces higher user satisfaction. Specifically, the findings indicate use and user satisfaction as crucial precedents of net benefits. System quality, information quality, and service quality positively affect GFMIS use. Furthermore, information quality and service quality positively affect GFMIS user satisfaction. Finally, the results reveal that user resistance is an important precedent of use and user satisfaction.

5.5.2.2 Assessment of Variance Explained in the Endogenous Latent Variables

The coefficient of determination (R^2 value) is the most prominent measure for evaluating the structural model (Hair et al., 2017). R^2 value entails the variation percentage in the dependent variable(s) that is explainable by the predictor(s) (i.e., IV's) (Hair et al., 2014). Even though R^2 is within the values of 0 and 1, there is no general report on the adequate yardstick value of R^2; the value of R^2 depends on the research context (Hair et al., 2017; Hair et al., 2010). The more the R^2 value approximates one, the greater the variance percentages explained. Cohen (1988) suggested the R^2 values can be evaluated as follows: .26 as substantial, .13 as moderate, and .02 as weak; while in scholarly research, R^2 values of .75, .50, or .25 for endogenous latent variables can each be demarcated as substantial, moderate or weak (Hair et al., 2017). In the present study, Table 5.18 shows the R^2 values of the dependent variables.

Table 5.18. *Result of the Coefficient of Determination R^2 of the Model*

Latent Variable	**R^2**	**Result**
Net benefits	.340	Moderate
Use	.338	Moderate
User satisfaction	.250	Weak

Based on the results in Table 5.18, R^2 values for net benefits is .34, suggesting that use and user satisfaction account for 34% of the variance in net benefits, which is in the moderate range. In addition, the R^2 value for the GFMIS use is .338, suggesting that overall quality factors and user resistance account for 33.8% of the variance in the use of GFMIS, which is in the moderate range. For R^2 value for user satisfaction, it is .25, suggesting that overall quality factors, user resistance, and GFMIS use account for 25% of the variance in user satisfaction, which is in the weak range. Hence, following Hair et al.'s (2017) standards, the R^2 values are considered as moderate to weak levels for the endogenous latent variables.

5.5.2.3 Assessment of Effect Size (F2)

Effect size (F^2) relatively shows the effect and influence of a specific independent variable(s) on the dependent variable(s) by means of changes and modifications in the R^2 (Hair et al., 2017). Cohen (1988) defined F^2 as the extent of the phenomenon's prevalence in the population, or the extent of falseness in the null hypothesis. Below is the equation for expressing F^2 (Cohen, 1988).

$$Effect\ size: f^2 = \frac{R^2_{Included} - R^2_{Excluded}}{1 - R^2_{Included}} f \qquad \text{Equation 5.1}$$

R^2-included refers to the value of R^2 of the dependent variables (i.e., use, user satisfaction, and net benefits) when particular independent variables are included in the model, and R^2-excluded is the value of R^2 of the dependent variable when particular independent variables are excluded from the model. According to Cohen (1988), the F^2 values can be evaluated as follows: .02 as a small effect, .15 as a medium effect, and .35 as a large effect. In the present study, Table 5.19 presents the effect sizes of the independent variables.

Table 5.19. *Result of the Effect Size-F^2 for the Direct Model*

Construct	**F^2**	**Results**
IQ→ U	.016	No effect
IQ→ US	.011	No effect
SYQ → U	.166	Medium effect
SYQ → US	.003	No effect
SEQ → U	.038	Small effect
SEQ → US	.053	Small effect
UR → U	.072	Small effect
UR → US	.044	Small effect
U → US	.031	Small effect
U → NB	.057	Small effect
US → NB	.086	Small effect

Table 5.19 shows that the variables' effect sizes range from medium to no effect. System quality poses the largest effect size on usage, followed by user satisfaction on net benefits, and user resistance on GFMIS usage.

5.5.2.4 Construct Cross-Validated Redundancy (Predictive Relevance)

In this study, the model's predictive relevance (Q^2) was tested using a blindfolding procedure to attain the measures of cross-validated redundancy for each endogenous construct (Hair et al., 2017). It must be noted that this procedure is only used on endogenous latent variables with a reflective measurement model operationalisation (Sattler, Volckner, Riediger, & Ringle, 2010). In this study, Q^2 was calculated in SmartPLS using blindfolding procedure with omission distance of seven (Tenenhaus, Vinzi, Chatelin, & Lauro, 2005). If Q^2 values of the endogenous construct for a certain endogenous (s) latent variable is greater than zero, its explanatory latent variable exhibits predictive relevance (Hair et al., 2017).

Hair et al. (2017) set three criteria for assessing Q^2 as a relative measure of predictive relevance, whereas the respective Q^2 values of .02, .15, and .35, refer to the small, medium, and large predictive relevance for a particular endogenous construct. In the present study, Equation 5.2 and Table 5.20 in the column labelled Q^2 (=1-SSE/SSO) show the results of the Q^2 test for all endogenous latent variables are above zero, thus, suggesting medium predictive relevance of the model (Hair et al., 2017).

$$Q2 = \frac{(1 - SSE)}{SSO} \qquad \text{Equation 5.2}$$

Table 5.20. *Construct Cross-Validated Redundancy*

Construct	Q^2 (=1-SSE/SSO)
Net benefits	.199
Use	.255
User satisfaction	.129

5.5.2.5 Testing the Moderating Effect of Training

This study did not only assess the direct relationships between the variables, but also measured the effect of training and user involvement as the moderators in the relationships between use and user satisfaction, and net benefits. Assessment of PLS-SEM results can be prolonged to additional advanced examinations, such as examining the moderating effects (Hair et al., 2017). To test the moderating effects in this study, predictors (use and user satisfaction) and moderators (training and user involvement) were multiplied (product-indicator approach) to create the interaction effects which were calculated in Smart-PLS 3 (Hair et al., 2017; Henseler & Chin, 2010) as presented in Figure 5.5. The use of product-indicator approach for estimating moderating effects among latent variables with reflective measurement models is based on the recommendations by Henseler and Chin (2010) and Hair et al. (2017). Figure 5.5 shows the structural model with the moderators' effects.

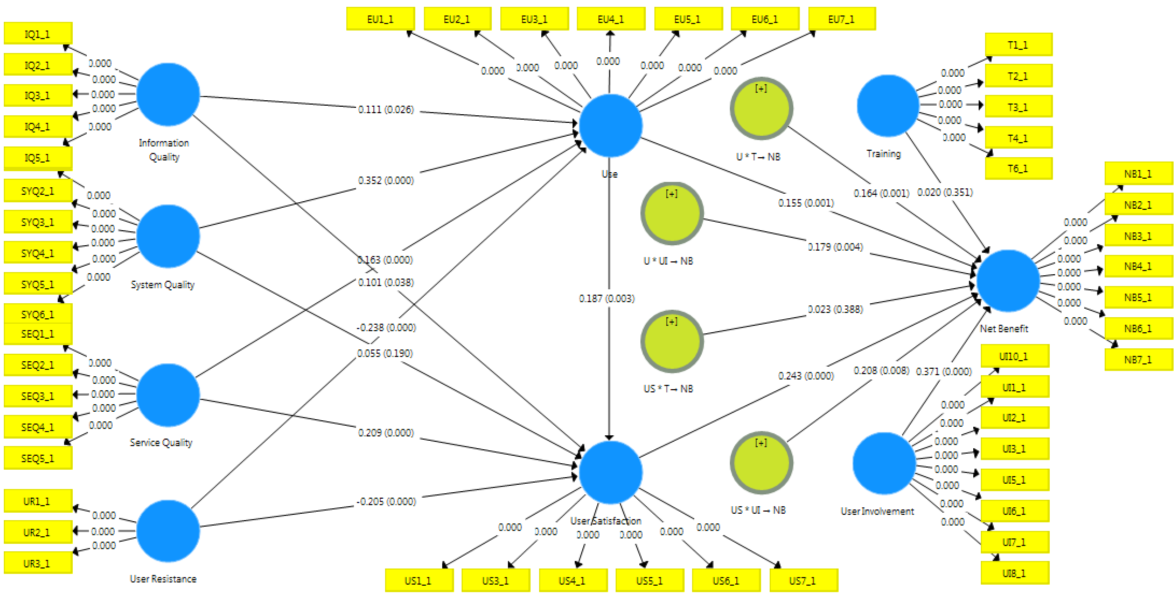


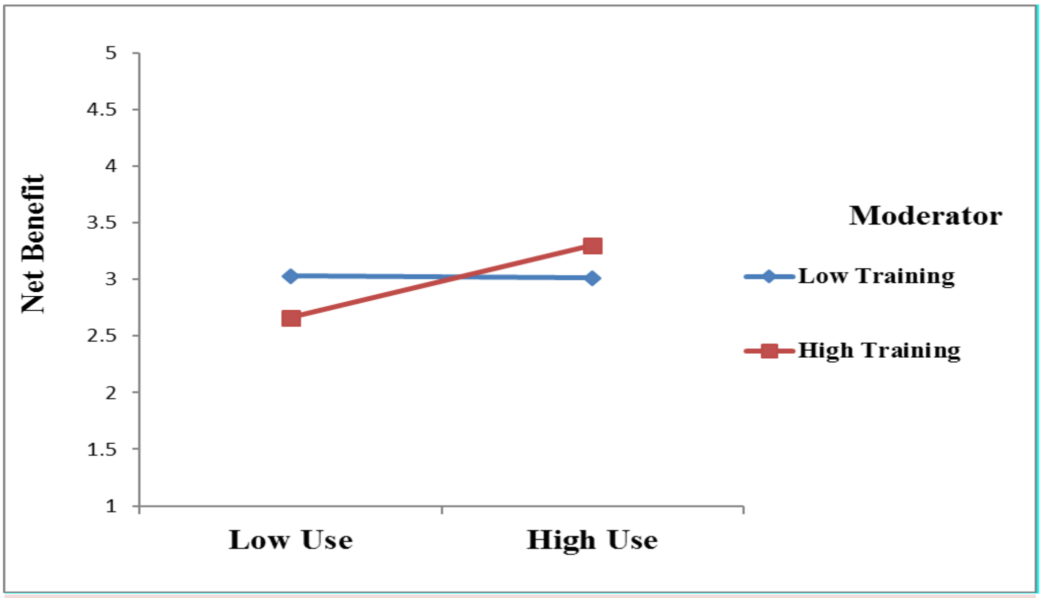
Figure 5.5. The Structural Model with Moderators (Full Model)

From Figure 5.5, and Table 5.21, the result of hypothesis testing indicates that training moderates the relationship between use and net benefits, while training does not moderate the relationship between user satisfaction and net benefits. On the other hand, user involvement moderates the relationships between use/user satisfaction and net benefits.

Table 5.21. *Structural Model Assessment with Interactions*

H	Relationships	Std. Beta	T-value	*P*-value	LLCI 5.00%	HLCI 95.00%	Result
H12	U * T → NB	.164	3.121	.001	.073	.239	Supported
H13	US * T → NB	.023	.286	.388	-.112	.170	Not Supported
H14	U * UI → NB	.179	2.672	.004	.070	.259	Supported
H15	US * UI → NB	.208	2.418	.008	.127	.330	Supported

Hypothesis 12 indicates that training moderates the relationship between use and net benefits. Specifically, the relationship between use and net benefits is stronger (i.e., more positive) for employees with a high level of training compared to employees with a low level of training. In other words, under the condition of high level of training, employees reported high net benefits. As expected, the findings from Table 5.21 and Figure 5.5 show that the interaction terms representing training * use on net benefits (β-value = .164, T-value = 3.121, p-value = .001) are statistically significant. Therefore, Hypothesis 12 is supported. Figure 5.6 shows that the correlation between use and net benefits is most strong for high training levels and most weak for low training levels.



Training strengthens the positive relationship between Use and Net Benefit.

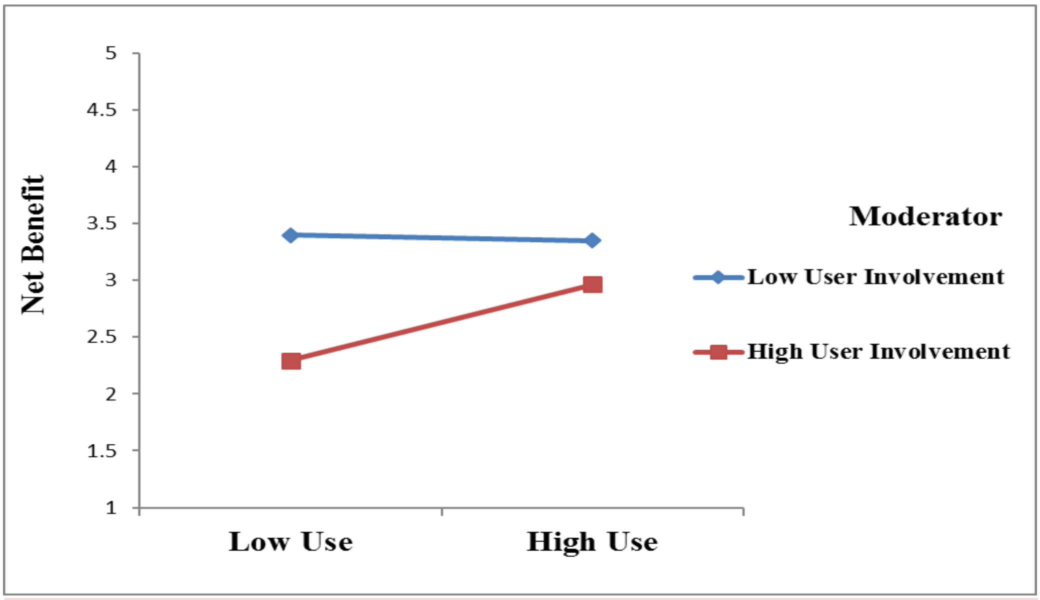
Figure 5.6. Interaction Effect of Training on “Use → Net Benefits”

In Figure 5.6, the two lines are not parallel, which indicates that the moderation effect occurs. Furthermore, the figure indicates that, the high level of training is greater than the low level, indicating that the moderating effect is positive. In other words, training positively moderates the relationship between use and net benefits. Higher levels of training can improve the correlation between GFMIS use and net benefits.

Hypothesis 13 predicts that training moderates the relationship between user satisfaction and net benefits. The results in Table 5.21 and Figure 5.5 show that there is no support for this hypothesis (β-value = .023, T-value = .259, p-value = .398). This implies that training has no moderating effect on the aforementioned hypothesised relationship in the Jordanian public sector.

5.5.2.6 Testing the Moderating Effect of User Involvement

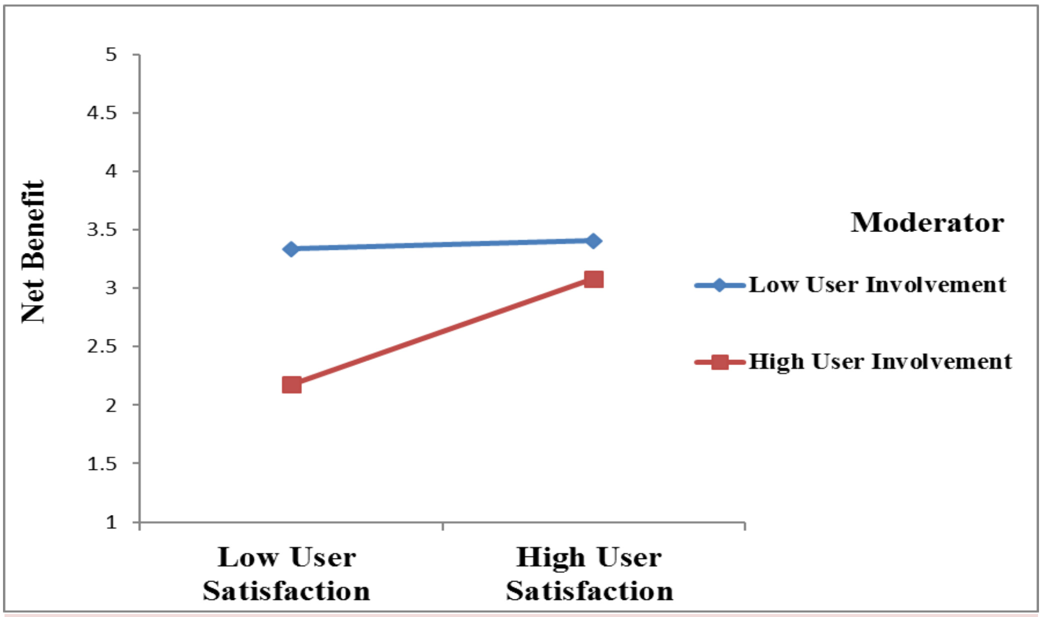
Hypothesis 14 indicated that user involvement moderates the relationship between use and net benefits. Specifically, the relationship is stronger for employees with a high level of involvement compared to employees with a low level of involvement. Table 5.21 and Figure 5.5 show that the interaction terms representing user involvement * use on net benefits (β-value = .179, T-value = 2.672, p-value = .004) are statistically significant. Therefore, Hypothesis 14 is fully supported. Figure 5.8 indicates that the correlation between use and net benefits is most strong with high user involvement and most weak with low user involvement.



User Involvement strengthens the positive relationship between Use and Net Benefit.

Figure 5.7. Interaction Effect of User Involvement on “Use → Net Benefits”

Furthermore, Hypothesis 15 indicated that user involvement moderates the relationship between user satisfaction and net benefits. The finding shows that the interaction terms representing user involvement * user satisfaction on net benefits (β-value = .208, T-value = 2.418, *p*-value = .008) are statistically significant. Therefore, Hypothesis 15 is fully supported. As shown in Figure 5.9, the relationship between user satisfaction and net benefits is strongest in the case of high user involvement.



User Involvement strengthens the positive relationship between User Satisfaction and Net Benefit.

Figure 5.8. Interaction Effect of User Involvement on "User Satisfaction → Net Benefits"

5.5.2.7 Determining the Strength of the Moderating Effects

In the present study, the moderating effects of training and user involvement were introduced between the relationships of use/user satisfaction and net benefits among the employees working in the Jordanian public sector. The strength of the moderating effects was determined by running a comparison between the main effect model's R^2 value and the interaction model's R^2 value (Wilden, Gudergan, Nielsen & Lings, 2013). The strength assessment was carried out using the equation by Cohen (1988) as below:

$$f^2 = \frac{R_i^2 - R_m^2}{1 - R_i^2} \quad \text{Equation 5.3}$$

$i = interaction\ model,\ m = main\ effect\ model$

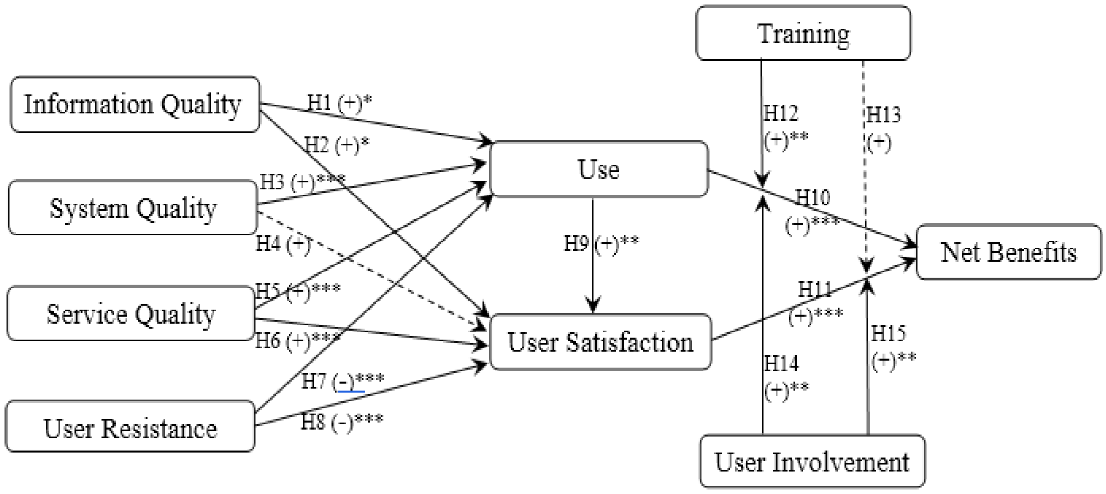
Table 5.22 shows the finding of the strength of the moderating effects of training and user involvement. By following the above-mentioned equation (Equation 5.3), where R^2 included is equal to .448, and R^2 excluded is equal to .34, the net benefits effect size is equal to .108. Following Cohen's (1988) standard, the values of the moderating effect sizes can be evaluated as follows: .02 as weak effects, .15 as moderate effects, and .35 as strong effects, Table 5.22 shows that in the present study, the moderating effect strength is weak. However, even if the moderating effect strength has a small effect size, it does not mean that the effect is unimportant (Chin, Marcolin, & Newsted, 2003). Under extreme moderating conditions, a small interaction effect can be meaningful if the ensuing beta changes are meaningful, in which case, the conditions must be taken into consideration (Chin et al., 2003).

Table 5.22. *The Effect Size of Interactions Effect*

Endogenous Latent Variables	**R^2 Included**	**R^2 Excluded**	**F-squared**
Net Benefits	.448	.340	.108

5.5.3 Summary of Findings

As shown in the various analyses above, 13 of 15 hypotheses are accepted as being significant. On the other hand, two hypotheses are rejected because of insignificant relationships. Figure 5.9 summarises the results of all hypotheses tested (structural model results), including the main and moderating effects.



Line arrows: Statistically significant; **Dash line arrows:** Statistically insignificant.

Std. Beta = (+): positive relationship; **(-):** negative relationship.

***p*-value = *p** < .05, ****p** < .01, *****p** < .001.

Figure 5.9. Summary of Hypotheses Testing

5.6 Chapter Summary

This chapter presents the findings of the present study where the main objective is to investigate the relationships between overall quality factors and user resistance; use and user satisfaction, and net benefits; and the interaction model in which the interactions were incorporated into the model to test the moderating effects of training and user involvement on the relationships. The model assessment in the chapter substantiates adequate reliability and validity of the study constructs.

Out of the 11 direct relationships that were tested, 10 of the alternate hypotheses are supported and one is unsupported. Additionally, four hypotheses were formulated to determine the moderating effects of training and user involvement on the relationship between use/user satisfaction and net benefits. Out of the four moderating hypotheses, three are supported, while one is not supported. The discussion of the study results is presented in Chapter 6, followed by the theoretical and practical implications, study limitations, recommendations for future studies, and lastly the overall conclusion.

CHAPTER 6

DISCUSSION, RECOMMENDATIONS, AND CONCLUSION

6.1 Introduction

In this chapter, the research results are discussed in order to answer the research questions and achieve the research objectives. The results are recapped and discussed in view of the research hypotheses and findings from past studies on the IS success model. This chapter also presents the study's theoretical and practical implications, limitations, and recommendations for future studies. The final section concludes the overall research.

6.2 Recapitulation of the Study's Results

The key goal of the present study is to examine the success of GFMIS in the Jordanian public sector, by investigating the factors affecting the success of GFMIS implementation from the perspective of public sector employees in Jordan. Specifically, the study examines the relationship between overall quality factors, and user resistance, with use and user satisfaction and net benefits. Additionally, the moderating effects of training and user involvement on the relationship between use/user satisfaction and net benefits are studied.

The targeted respondents for the present study are employees who are using GFMIS in the Jordanian public sector. A total of 654 questionnaires were self-administrated to GFMIS users in 52 government organisations in Jordan. A total of 293 users participated in this study. Specifically, the usable responses were 264, after removing outliers and 257 questionnaires remained for the analysis. Data were analysed using PLS-SEM (refer to Chapter Five).

Based on the findings, the reliability and validity levels are acceptable allowing for further analysis. The R^2 value for net benefits is .34, which means that 34% of the variance in net benefits is attributable to usage and user satisfaction. Meanwhile, the R^2 value for GFMIS usage is .338, which means that 33.8% of the variance in GFMIS usage is attributable to overall quality factors and user resistance. Finally, the R^2 value for user satisfaction is .25, which means that 25% of the variance in user satisfaction is attributable to overall quality factors, user resistance and GFMIS usage (see section 5.5.2.2 for details).

Regarding the direct relationship between the independent and the dependent variables, the results show that 10 direct hypotheses are supported out of 11 (refer to Figure 5.9). Specifically, all hypotheses are accepted except for the direct relationship between system quality and user satisfaction.

PLS path modelling results show that information quality, system quality, and service quality are positively and significantly related to use; while information quality and service quality are positively and significantly related to user satisfaction. In contrast, the result of the present study fails to prove a significant influence of system quality on user satisfaction. For user resistance, results show that it is negatively and significantly related to use and user satisfaction. For the dependent variables, results show that use is positively and significantly related to user satisfaction. Additionally, the results from PLS path modelling exhibit that use and user satisfaction are positively and significantly related to net benefits.

With respect to the moderator variables, training and user involvement, on the relationship between use/user satisfaction and net benefits, the results document empirical support for three out of four hypotheses. Specifically, training moderates the relationship between use and net benefits. Meanwhile, user involvement moderates the relationship between use and net benefits, and user satisfaction and net benefits. Conversely, training does not significantly moderate the relationship between user satisfaction and net benefits (refer to sections 5.5.2.5 and 5.5.2.6).

6.3 Discussion of the Direct Effect

The subheadings of Section 6.3 are grounded in the research objectives and research questions of this study. Specifically, the first part discusses the direct effect of the independent variables (i.e., information quality, system quality, service quality, and user resistance) on the first two dependent variables (i.e., use and user satisfaction). Then, the section further discusses the direct relationships between all dependent variables (i.e., use, user satisfaction, and net benefits). After that, the second part of the discussion is the moderating effect of training and user involvement on the relationship between use/user satisfaction and net benefits.

6.3.1 Information Quality and Use

In this study, information quality refers to the desirable characteristics of a GFMIS output (Petter et al., 2008). Five items (i.e., reliable, precise, useful, sufficient, and up-to-date) were used to measure this construct (Stefanovic et al., 2016).

This study aims to identify the effect of information quality on GFMIS use among government employees. For the first research question, the findings indicate a significantly positive relationship between information quality and GFMIS use, suggesting that higher information quality would lead employees to a higher level of GFMIS use.

This outcome concurs with the findings of DeLone and McLean (2003). It is also consistent with several empirical findings in different contexts (e.g., Aldholay et al., 2018a; Glood et al., 2016; Monika & Goal, 2017; Tam & Oliveira, 2017), as well as with prior studies on IS, whereby the IS users are employees (e.g., Hsu et al., 2015; Soegoto & Luckyardi, 2018; Monika & Goal, 2017; Wang & Yang, 2016). More specifically, the finding is in line with prior studies on e-Government systems from employees' perspective (e.g., Stefanovic et al., 2016).

The basis of an IS entails the management of information and the provision of essential information for government staff (Petter et al., 2012). Specifically, Diamond and Khemani (2006) characterised GFMIS as relevant, accurate, up-to-date, sufficient, and reliable to meet the information demands of the users. One reasonable implication of this finding is to increase the net benefits of the GFMIS; thus, the GoJ needs to develop an e-Government system with better information quality that will subsequently affect system usage behaviour and the evaluation of satisfaction as well as the respective net benefits. Based on this, it is obvious that information quality is an important dimension of GFMIS success in Jordan.

Another possible explanation for this finding is that when employees perceive that information is reliable, precise, useful, sufficient, and up-to-date, it will lead to higher extended use and satisfaction levels (Hsu et al., 2015). Information that is imprecise, outdated, insufficient, and unreliable, could cause information quality issues (Hollmann et al., 2013), which may consequently discourage users or they may somewhat resist using this system. Hence, GFMIS usage in this study improves PFM via the provision of real-time financial information usable by employees to effectively carry out financial transactions, programme/project management, budget formulations, and resource allocations. Additionally, it enables communication between the MDAs and the general public. Thus, the convenient provision of relevant financial transaction information by GFMIS can drive employees to use it more frequently.

6.3.2 Information Quality and User Satisfaction

This study aims to determine the impact of information quality on GFMIS user satisfaction among government employees. Consequently, for the second research question, the result shows a positive and significant relationship, suggesting that information quality would lead to GFMIS user satisfaction. Hence, the outcome concurs with the emphasis of DeLone and McLean (2003).

This finding is corroborated by further support of other prior literature (e.g., Kim-Soon et al., 2017; Laumer et al., 2017; Tam & Oliveira, 2016; Wang & Yang, 2016). Furthermore, some scholars (e.g., Dernbecher 2014; Sappri et al., 2016; Sappri & Baharudin, 2016; VanCauter et al., 2017) have found a positively significant relationship in the e-government context from the perspective of government employees. Petter et al. (2008) discovered that the majority of the studies (15 out of 16 studies) show strong support between these two variables.

One plausible reason for this finding is that the quality of output generated by the GFMIS would make employees feel satisfied with the usage of this system. Hence, to increase employees' satisfaction, GoJ needs to develop IS with better information quality that will subsequently affect system usage behaviour and the evaluation of satisfaction.

For instance, in the context of MDA employees, the easy access to information can help lessen their bureaucratic workload. Consequently, the GFMIS users can allocate more time to analysis and strategic objectives and less to information search/extraction, thus improving their level of satisfaction with the system. The provision of better information quality by GFMIS facilitates the MDA employees to improve financial transaction quality as well as PFM's efficacy and effectiveness. In contrast, poor information quality will drive the system users to allocate more time and effort to dissect information, thus increasing operational difficulty. Consequently, the inability to attain quality information via GFMIS usage will lower user satisfaction.

6.3.3 System Quality and Use

In the present study, system quality refers to the desirable characteristics of the technical aspects of an IS (DeLone & McLean, 2016; Petter et al., 2013). This operational definition refers to the quality of the GFMIS itself, which is reflected by stability, reliability, user-friendly interface, acceptable response time, flexibility and ease of use; these six items were adopted to measure this construct (Lai & Yang, 2009; Wu & Wang, 2006; Zainol, Fernandez, & Ahmad, 2017).

For the first research question, the finding indicates a significantly positive relationship. As a result, greater system quality produces higher system usage. In this regard, this outcome concurs with the propositions of DeLone and McLean (2003). Furthermore, several empirical studies from different contexts have reported the same result (e.g., Al-Sulami & Hashim, 2018; Kurt, 2018, Martins et al., 2018). This finding is in line with past studies on IS, where the respondents are employees (e.g., Gaardboe, Nyvang, & Sandalgaard, 2017; Soegoto & Luckyardi, 2018; Wirawan & Napitupulu, 2018). More specifically, this result is in line with previous studies on e-Government IS from employees' perspective (e.g., Dernbecher, 2014; Stefanovic et al., 2016).

There are several possible explanations for this finding. For example, to improve the success of GFMIS, implementers and authorities involved need to develop this system to guarantee better flexibility, usability, and user-friendliness. This is because when the GFMIS meets the employees' needs, the level of usage will improve tremendously. In other words, a higher quality GFMIS eases its usage and fulfils the expectations of all users (DeLone & McLean, 2016; Ghobakhloo & Tang, 2015). Similarly, when employees experience a high-quality system, such as it being reliable, easy to use and flexible, it would help them accomplish their tasks in an effective manner. Therefore, they would be more inclined to extend their use of GFMIS functions and features as GFMIS enables them to search for information, retrieve content, provide supporting services, and enable smooth interaction.

In short, user interaction with the online system, particularly after the completion of a given task, leads to a system quality perception (Sharma & Sharma, 2019; Veeramootoo et al., 2018). Extent of usage is determined by certain system quality elements, including accessibility, interactivity, and ease-of-use (DeLone & McLean, 2016). This means that user dissatisfaction occurs when there are issues with the IS' navigation or when the waiting time is extremely long.

The main goal of GFMIS users is to successfully complete their daily work using the system, which means they need to experience good technical capabilities and ease-of-use. Therefore, good system performance improves GFMIS usage level. This is because improved system quality translates into easily comprehensible information outputs and timely reports that meet the users' requirements (Veeramootoo et al., 2018). Thus, good system quality is characterised by user-friendly and helpful platforms, easy navigation, and rapidly accessible information. All these qualities facilitate the users to complete their daily tasks, resulting in reliable outcomes. In short, an efficient and effective system can improve GFMIS usage level.

6.3.4 System Quality and User Satisfaction

The second research question is on the impact of system quality on GFMIS user satisfaction; the empirical result of the present study does not support the presumed influence of this relationship, and as such, is not in accordance with IS success model prediction. This result seems to contradict other reported empirical studies (e.g., Putra et al., 2018; Wang et al., 2018; Wie & Widjaja, 2017). This suggests that system quality is not a key factor in determining user satisfaction towards GFMIS in the context of Jordanian employees.

Even though the result of this study is in contrast to the aforementioned prediction, it is however, in line with several works that have reported the insignificant role of system quality in user satisfaction (e.g., Agbabiaka & Ugaddan, 2016; Chen et al., 2015; Choi et al., 2014; Floropoulos et al., 2010).

The government employees' level of computer efficacy or literacy may justify the insignificant finding of the role of system quality in user satisfaction. For example, system quality has a significant impact on satisfaction based on the users' experience with regards to ease of use (Petter & McLean, 2009; Teo, Srivastava, & Jiang, 2008), hence, meeting the demand for improved effort in system usage (Weerakkody et al., 2016). However, system quality has a reduced effect on satisfaction when the users are highly self-efficient (Floropoulos et al., 2010), most probably because the respondents have adequate computer and Internet knowledge and system quality does not critically determine their level of satisfaction.

In addition, the USAID (2014b) report has revealed that GFMIS is running on outdated hardware, which represents another area of concern for the GoJ. One of the plausible reasons for this finding is that since GFMIS is an online system, Internet connection issues between the MoF and MDAs could have been passed down to it. Hence, there would be delays or interruptions in the processing or response time, which could be considered as an inherent problem in the MDA's technological infrastructure (e.g., servers, hardware, networks), rather than the quality of the GFMIS itself. This is because the slower Internet technologies and/or slower servers result in slower responding systems.

6.3.5 Service Quality and Use

Service quality is represented by the quality of support received by the public employees (who are GFMIS users) in using the system as given by the IT support staff and/or the IT/IS department (Petter et al., 2013; 2008; Roky & Al Meriouh, 2015). This definition refers to the quality of the IT/IS department services, which is reflected by responsiveness, assurance, empathy, and reliability. Five items were adapted to measure this construct (Pitt et al., 1995; Roky & Al Meriouh, 2015).

This study investigated the effect of service quality on GFMIS use among public employees. For the first research question, the finding indicates a significantly positive relationship between these two variables. This suggests that higher service quality would lead employees to a higher level of GFMIS use. Thus, this outcome concurs with the emphasis made by DeLone and McLean (2003).

The importance of service quality in improving IS use has been pointed out by the existing literature. Several studies (see, for example, Edrees & Mahmood, 2014; Glood et al., 2016; Namisango, Kafuko, & Byomire, 2017; Sandjoj & Wahyuningrum, 2015; Su & Sun, 2012; Zuama, Hudin, Puspitasari, Hermaliani, & Riana, 2017) have examined the effect of service quality on IS use and found that the two variables are positively and significantly correlated. Particularly, the current result is in accordance with several IS studies from the employees' perspective (e.g., Soegoto & Luckyardi, 2018; Stefanovic et al., 2016; Wang & Yang, 2016). Furthermore, in the context of Jordan, Al-Shibly (2014) observed that to increase IS use, organisations need to develop IS system with better service quality.

One reasonable rationale for this finding is that when the IS departments and their staff at MDAs provide high-quality guidance and replies to employees' questions, it will lead to a positive influence on the extent of use. Additionally, the positive interactions with IS department and IT staff may promote more satisfactory experiences, which will increase the extent of use, because employees may feel encouraged to learn about GFMIS features and try more of the available functions.

Meanwhile, lack of service quality and poor user support could discourage the employees from using this system, or they may somewhat resist using it. As a result, MDAs management staff and IS departments should strive to improve their provision of services to users. This would enhance communication and collaboration, and subsequently, increase GFMIS usage.

6.3.6 Service Quality and User Satisfaction

This study determined the correlation between service quality and GFMIS user satisfaction among government employees. For the second research question, the result shows a positive and significant relationship, suggesting that higher service quality would lead to higher GFMIS user satisfaction. Hence, the outcome concurs with the emphasis of DeLone and McLean (2003).

The positive effect has also been discovered by several IS studies (see, for example, Agbabiaka, 2018; Al-Nassar, 2017; Rumambi et al., 2017; Tam & Oliveira, 2016; Tam & Oliveira, 2017). This result is also consistent with previous studies on IS where the respondents are employees (e.g., Alali & Salim, 2013; Al-Khafaji & Azeez, 2018; Choi et al., 2014; Hsu et al., 2015; Monika & Goal, 2017; Soegoto & Luckyardi, 2018). It is also in line with Petter et al. (2008) who indicated that creating awareness and providing support by IS department staff would instantly affect user satisfaction.

The rationale behind this finding is that with a high level of the quality of support (e.g., IS departments provide users with fast services, resolve their problems, understand their needs, solve their problems), GFMIS usage will be enhanced. Furthermore, when employees feel more satisfied with the quality of services, there will be an increase in the extent of use and their satisfaction with GFMIS usefulness (Cho et al., 2015; Floropoulos et al., 2010). Accordingly, employees will choose GFMIS mainly due to their expectations of and satisfaction with valuable services. Conversely, poor service quality will frustrate the employees' trust and decrease their satisfaction with GFMIS. Hence, the GoJ and its related agencies (MDAs) should continuously improve employees' satisfaction through better service delivery, which is one of the key drivers of the success of e-government IS in Jordan (Alshibly, 2014).

6.3.7 User Resistance and Use

In the context of mandatory IS, user resistance is not entirely absent (Kim & Kankanhalli, 2009; Nah et al., 2004). Although users are adopting the new IS, their resistance can be detected via underutilisation (Kim & Kankanhalli, 2009). User resistance in the present study reflects the employees' perception of GFMIS process issues, which represents the problems faced by the users resulting from the changed processes synonymous with GFMIS implementations. User resistance reflected by workload increase, time consumption, and lack of benefits (Choi et al., 2014). The present study determined the impact of user resistance on GFMIS use across government employees. For the first research question, the finding indicates that user resistance and use are negatively and significantly correlated.

Dener et al. (2011) and Khan and Pessoa (2010) observed that user resistance is one of the factors that potentially leads to GFMIS failure after the completion stage. Specifically, in the Jordanian context, USAID (2013) has reported that one of the factors that leads to delayed GFMIS implementation is the pre-implementation resistance among the users. The USAID (2014a) survey later found that most of the respondents considered GFMIS is slower compared to the previous system. Some of them believed that the GFMIS makes their work less efficient, while some further believed that the GFMIS is quite taxing to their job routine. In addition, Shannak (2015) reported that employees' resistance is considered as one of the challenges facing GFMIS use in Jordan. Thus, it is logical to explain this negative relationship between user resistance and use in the Jordanian public sector.

One of the probable reasons for this finding is that GFMIS usage is contingent upon employees' evaluation of the potential benefits from GFMIS. Hence, if GFMIS improves the users' task performance, decreases their workload, saves time, and achieves the desired benefits, then, they are more likely to use this system and extend their use of GFMIS functions and features in their daily work. In other words, the perceived usefulness is related to the level of use, that is, when employees perceive that GFMIS improves their job performance. Otherwise, employees may refrain from using GFMIS if they do not perceive it to be useful, or if they believe that their job performance cannot be improved via GFMIS usage, which will then cause them to resist its usage in their daily tasks.

In conclusion, the causal relationship between user resistance and usage may affect the net benefits as less usage could lead to fewer benefits, thereby preventing employees and MDAs from obtaining the possible benefits of GFMIS, which will lead to several problems for the GoJ.

6.3.8 User Resistance and User Satisfaction

This study aimed to identify the effect of user resistance on GFMIS user satisfaction among government employees. For the second research question, the finding indicates that user resistance and user satisfaction are negatively and significantly correlated. Thus, a higher user resistance leads to lower employees' satisfaction with GFMIS. In this regard, this outcome concurs with previous findings, for example, Choi et al. (2014) who reported a negative association between doctors' resistance and user satisfaction on the success of the DUR system in South Korea.

The current finding could be because higher user resistance is linked to higher dissatisfaction and negative net benefits. Besides, user resistance may affect user satisfaction in an indirect way, for example, employees might resist and cause underutilisation of GFMIS, which may affect the level of usage, and ultimately, user satisfaction.

This result may also be attributable to the fact that GFMIS is unsuitable for some users, thus forcing them to alter their work processes in a way that would fit GFMIS. The incompatibility between GFMIS and work processes may lead to a psychological breach of contract if the employees have the expectation that the MDAs should provide a system that is compatible with the existing work processes (Klaus & Blanton, 2010). The perception that GFMIS is complex could prompt employee resistance even if the system's usage is mandatory. This may consequently affect their satisfaction with the system. Therefore, there is a need to reduce user resistance to be able to attain the net benefits of GFMIS usage and minimise the risks of failure.

6.3.9 Use and User Satisfaction

In the present study, use measured the degree to which government employees utilise the capabilities of GFMIS. Thus, use was operationalised as the extent of the GFMIS being used to perform tasks, measured using seven items related to GFMIS functions as derived from previous studies (Almutairi & Subramanian, 2005; Wang & Wang, 2009; Wu & Wang, 2006). The third research question was designed to examine the importance of GFMIS use in understanding user satisfaction.

The result reveals a positive relationship between use and user satisfaction in the Jordanian public sector. The result is consistent with the IS success model prediction that positive experience with IS use would produce higher user satisfaction. Besides, evidence from past studies has shown that the IS model use is beneficial for finding a positive influence on user satisfaction (e.g., Hassan & Seyal, 2015; Rana & Dwivedi, 2018; Sandjoj & Wahyuningrum, 2015).

In this regard, one explanation for this result could be derived from DeLone and McLean (2003), that a positive experience with IS use will lead to greater user satisfaction in a causal sense. Conversely, poor quality system usage would cause more dissatisfaction and negative net benefits. Another possible explanation is that user satisfaction in the present study refers to the sum of employees' feelings of pleasure or displeasure regarding GFMIS. Therefore, the level of employees' satisfaction is the result of their usage experience, for example, the distinction between the real and anticipated benefits (Chiu et al., 2016). When user satisfaction is higher than user expectations, the former increases and poses positive impacts on the recognition of usage benefits. Hence, user satisfaction is influenced by GFMIS overall quality, GFMIS use, and actual benefits.

6.3.10 Use and Net Benefits

In the present study, net benefits indicate successful performance that employees gain through the use of GFMIS, such as saving time, increased productivity and effectiveness, improved job performance (Stefanovic et al., 2016; Urbach et al., 2010). The fourth research question was designed to examine the importance of GFMIS use in understanding net benefits.

The result in the present study reveals a positive and significant relationship between use and net benefits. This suggests that higher GFMIS use would lead to a higher level of net benefits. Several studies have reported a similar result (e.g., Chang, 2014; Hou, 2012; Namisango et al., 2017; Su & Sun, 2012; Sutjahyo et al., 2018). Also, the present study results support the views of DeLone and McLean (2003).

In the context of GFMIS in developing countries, effective use of GFMIS facilitates extraction of specific information that is required to perform different functions and tasks, while at the same time, helping to save time and effort (Ibrahim & Dauda, 2014). Therefore, in the Jordanian context, one possible explanation for this result is that when employees perceive that they have achieved a high level of benefits from using GFMIS, such as performing the job or task is faster than before, increasing productivity, improving job performance and making job easier, they will be more inclined to utilise and extend their use of GFMIS functions and features. As such, comprehensive GFMIS usage denotes a major PFM achievement in terms of expenditure and revenue control, i.e., the alignment of allocations, transactions, and appropriations; inter-organisation financial transfer control; properly charged accounts; and accurate control of expenditure commitments.

On the other hand, declining usage of GFMIS could indicate that the expected benefits of GFMIS are not materialising. Consequently, lower GFMIS usage could reduce employee performance because poor user acceptance has been a long-known hindering factor to GFMIS success.

6.3.11 User Satisfaction and Net Benefits

In the present study, user satisfaction indicates employees' feeling of pleasure or displeasure regarding GFMIS. Several items related to user satisfaction were derived from previous studies, namely, satisfaction with GFMIS efficiency and effectiveness, satisfaction that GFMIS supports their work, GFMIS meets employees' expectations, and overall satisfaction with GFMIS (Floropoulos et al., 2010; Wu & Wang, 2006).

The fourth research question aimed to examine the effect of user satisfaction on net benefits. The finding shows that the two variables are positively and significantly correlated. Hence, the outcome concurs with the emphasis of DeLone and McLean (2003).

Several studies (e.g., Balaban et al., 2013; Namisango et al., 2017; Rumambi et al., 2017; Wang et al., 2018) have shown strong support for these two variables. Specifically, several empirical studies have reported a significant relationship between these two variables from the perspective of employees (e.g., Alexandre & Isaías, 2012; Hsu et al., 2015; Son et al., 2015; Tona et al., 2012).

A likely explanation could be derived from Chiu et al. (2016) and Stefanovic et al. (2016), who justified why user satisfaction has a positively significant influence on net benefits. User satisfaction entails the users' satisfaction level towards their usage experience, such as the distinction between the real and anticipated benefits (Chiu et al., 2016). When user satisfaction is higher than user expectations, the former increases and poses positive impacts on the recognition of usage benefits. Therefore, this indicates that the higher the user satisfaction with GFMIS, the more the benefits users could yield from the system because user satisfaction is one of the prerequisites in realising benefits to employees.

6.4 Discussion on the Indirect Effect of Training

In the present study, training indicates employees' perception of the GFMIS training programmes in terms of its usefulness, relevance, and acquisition of skills (Wei et al., 2011). Training has generally been recognised as one of the CSFs for IS success (Hwang, 2014; Hwang et al., 2012; Ngai et al., 2004; Sharma & Yetton, 2007). In the context of GFMIS, Dener et al. (2011) and Khan and Pessoa (2010) observed that several factors potentially lead to failure after the completion stage, and one of these factors is an inadequate level of training. The present study proposes that training moderates the relationship between use/user satisfaction and net benefits.

6.4.1 The Moderating Effect of Training on the Relationship between Use and Net Benefits

The examination of training as a moderator is one of the interests of the fifth research question. Training was postulated to play a moderating role in the specified relationship; the results show that the moderating effect of training on the relationship between use and net benefits is significant. In other words, training positively moderates this relationship.

The above result is somewhat consistent with other research that previously has used training as a moderator variable and indicates a good explanation of targeted relationships. For instance, Ahearne et al. (2005) incorporated user training as the moderator in the relationship between IS use and salespersons' performance. They found that the salespersons' performance can only be enhanced by the use of IS when there is sufficient user training.

In the context of GFMIS, a possible explanation for this result could be derived from several scholars (e.g., Khan & Pessoa, 2010; Lundu & Shale, 2015; Odolo & Gekara, 2015), to justify why training positively moderates the specified relationship. For example, Khan and Pessoa (2010) emphasised that employee skills are necessary to effectively access, operate, manage, understand, and evaluate GFMIS initiatives at various stages. Odolo and Gekara (2015) and Lundu and Shale (2015) recommended training as a factor that could enhance the effective use of GFMIS. The results of the present study suggest that employees' skills could be acquired through a high level of training because skilled employees can achieve the optimal usage of GFMIS, which then leads to achieving the desired net benefits from the system. As a result, using GFMIS with a high level of training leads to greater benefits.

Another plausible explanation for this result could be derived from Jordanian e-government researchers. For instance, Al-Gharaibeh and Malkawi (2013) proved that training of employees on IS usage can better their performance. Researchers (i.e., Alkhaleefah et al., 2010; Al-Shboul et al., 2014; Majdalawi et al., 2015) have further confirmed that lack of training is a significant challenge to the successful implementation of e-Government. Al Nagi and Hamdan (2009) and Tbaishat and Khasawneh (2015) recommended that the GoJ should avail its employees with more training and educational opportunities pertaining to the use of IS to maintain and improve the future benefits of such technology.

This present study also postulates that the expected net benefits of GFMIS usage cannot be attained solely through usage. Thus, the study identifies training as a primary factor enabling the attainment of the net benefits. Proper training can improve GFMIS usage, which would in turn, improve the attainment of net benefits. In contrast, there will be no improvement in employee performance if training is inadequate despite increased GFMIS usage. Based on the findings, it is hence concluded that no improvement in user performance will occur without proper system training; in fact, poor training can damage employee performance.

In conclusion, the present study supposes that after receiving a high quality of training, public sector employees would gain knowledge on the proper use of GFMIS. Therefore, their utilisation of the GFMIS may increase, which later transforms into net benefits. In other words, training plays a key role in translating GFMIS use into real performance improvements.

6.4.2 The Moderating Effect of Training on the Relationship between User Satisfaction and Net Benefits

The examination of training as a moderator is one of the interests of the fifth research question. The present study predicted that training moderates the relationship between user satisfaction and net benefits. Unexpectedly, no moderating effect was found for this prediction. This implies that training has no moderating effect on the relationship between user satisfaction and net benefits. Thus, the empirical result of the present study does not support the presumed influence of this relationship.

The above result is consistent with other research that previously has proposed training as a moderator variable. For example, Norfazlina et al. (2016) examined the relationship between user satisfaction (i.e., ease of use, content, and format) and task productivity of CIS. The results of the study indicate that training moderates the relationship between user satisfaction (i.e., ease of use) and task productivity, while no moderating effect was found between user satisfaction (i.e., content and format) and task productivity. In this regard, one potential explanation for this unexpected relationship could be derived from several IS studies (e.g., Bradford & Florin, 2003; Tilahun & Fritz, 2015; Vatanasakdakul et al., 2017; Zaied, 2012), that have suggested that training has a direct effect on the relationship between successful implementation and user satisfaction of an IS, rather than a moderating effect.

Furthermore, training increases the users' knowledge about IS, thus enabling them to use it positively at work (Aggelidis & Chatzoglou, 2009). However, training sometimes does not adhere to the scientific principles of promoting the transference of knowledge and skills into practice (Agarwal, Sambamurthy, & Stair, 2000). On the one hand, detailed IS training is insufficient for ensuring the success of its implementation; the management, on the other hand, must also arrange for general basic and extensive computer courses to increase the acceptance of IS (Tilahun & Fritz, 2015; Vatanasakdakul et al., 2017). Therefore, training sometimes falls into strengthening the relationship between any IS user acceptance or satisfaction and net benefits. Hence, in the case of this study, a possible explanation could be that either the GFMIS is easy to be used by employees regardless of the quality of training provided, or the employees are not satisfied with the level of the GFMIS training provided. As a result, the higher the GFMIS user satisfaction the more the benefits it will yield from this system regardless of the level of training.

Another potential reason for the lack of support for the aforementioned hypothesised relationship is the fact that the present study was conducted among 88% of the respondents with intermediate or lower levels of education (Bachelor's degree & Diploma; see Table 5.12 for details). Therefore, they are more concerned with the quantity rather than the quality of the training provided. In the present study, training was operationalised as the quality instead of the quantity of training.

6.5 Discussion on the Indirect Effect of User Involvement

The last study objective is to determine the moderating role of user involvement. In this study, the researcher defines user involvement as the participation of GFMIS users during the post-implementation process (Sappri & Baharudin, 2016; Sappri et al., 2016). User involvement represents one of the suggested additions made to the IS success model (DeLone & McLeane, 2003). Amoako-Gyampah (2007) and Harris and Weistroffer (2009) considered user involvement as a CSF for IS implementation. Several studies (Dener et al., 2011; Khan & Pessoa, 2010; Zhang et al., 2005), have found that lack of user involvement in the process of IS implementation will lead to failure. The present study proposed that user involvement acts as a moderating variable in the relationship between independent variables (use and user satisfaction) and the dependent variable (net benefits).

6.5.1 The Moderating Effect of User Involvement on the Relationship between Use and Net Benefits

The sixth research question is on the moderating role of user involvement. User involvement was postulated to play a moderating role in the specified relationship. The results show that user involvement positively moderates the relationship between use and net benefits. In other words, a high level of user involvement would increase the positive influence of GFMIS use on net benefits.

Ghobakhloo and Tang (2015) and Amoako-Gyampah (2007), argued that user involvement positively affects IS usage, thus maximising the individual's cognitive skills during his or her interaction with IS, ultimately leading to improved usage level, user acceptance, user satisfaction, and perceived usefulness. Additionally, several scholars have asserted that the main stakeholders, especially the prospective users of the GFMIS, need to be part of the preparation of the GFMIS projects (Combaz, 2015; Diamond & Khemani, 2006; Khan & Pessoa, 2010). In contrast, many e-Government projects have suffered from technical as well as operational difficulties, which can be attributed to low user involvement in system development (Kafaji, 2013). Meanwhile, the Jordanian e-Government (2013) reported that user involvement would reduce the resistance to change by the workers, and this will assure the success of the e-Government implementation.

Hence, in the context of Jordan, when government employees are involved in GFMIS post-implementation activities, such as installation, scheduling training sessions, testing and evaluation of GFMIS, the employees would be more acceptable and satisfied with using GFMIS. Hence, their utilising GFMIS may be increased, and this may in turn, transform into the desired net benefits.

Another explanation for the support for the hypothesised relationship on the moderation effect of user involvement might be related to the implementer (i.e., INTRASOFT International) and/or the GoJ. For example, if the developer or the GoJ team failed to obtain full user involvement especially after implementing the GFMIS, users will tend to complain, resist, or underutilise GFMIS, and this may happen due to the system not meeting their expectations and requirements. Therefore, the expected net benefits of this system will decrease.

6.5.2 The Moderating Effect of User Involvement on the Relationship between User Satisfaction and Net Benefits

Finally, this section of the research determines the moderating role of user involvement on the user satisfaction-net benefits relationship among government employees. For the sixth research question, the finding indicates that user involvement positively moderates this relationship.

The above result is consistent with other studies that previously have used user involvement as a moderator variable in the targeted relationship. For instance, Sappri and Baharudin (2016) investigated the factors influencing HRMIS success, and confirmed the positive moderating effect of user involvement on the relationship between user satisfaction and individual benefits. Further, they argued that users who are involved in IS have a positive attitude and perception of its usefulness, thereby increasing their satisfaction with the system. In another study, Sappri et al. (2016) found that user involvement moderates positively this relationship. They suggested user involvement as a crucial construct in the model as public sector employees would prefer participation in the IS they used.

Based on the findings of present study, user involvement facilitates the correlation between user satisfaction and the expected net benefits from GFMIS. This means that greater employee involvement in post-implementation processes (e.g., participation in GFMIS training scheduling, GFMIS training sessions, and GFMIS performance testing and evaluation) can improve employee satisfaction toward the attainment of the net benefits of GFMIS. In short, greater GFMIS user satisfaction (coupled with higher user involvement) facilitates the achievement of the net benefits of GFMIS usage and improves job performance. The GoJ hence plays a key role in driving employee involvement towards building trust between the MDA management and the employees, specifically via relevant information sharing, which in turn, enhances the effect of user satisfaction on the achievement of the net benefits of GFMIS usage. It is pertinent to note that despite high GFMIS usage, the failure to engage employees in the decisions related to their daily work, could hinder the realisation of the expected net benefits.

In conclusion, GFMIS user involvement would enhance the relationship between user satisfaction and GFMIS net benefits because the employees may give more attention to participation in GFMIS and feel uneasy if they had no direct involvement.

6.6 Research Implications

The quality of life of the people and businesses in developing countries can be potentially improved via the implementation of e-government systems (Dwivedi et al., 2015), which can serve as an effective mechanism for reforming PFM in order to improve transparency and boost government efficiency. The usage of e-government systems, like GFMIS, can enhance the relationship between the people, businesses and MDAs via effective and profitable 24/7 information and knowledge delivery, which can significantly reduce physical waiting time.

This study aims to determine the factors affecting the successful implementation of GFMIS by adapting the IS success model. The results of the present study provide two main critical implications: (1) theoretical implications to IS success literature and theory; and (2) practical implications to practitioners in the area of e-government. The implications are derived from the findings and discussion presented in the earlier sections. The following sections deliberate on the implications further.

6.6.1 Theoretical Implications

Although GFMIS offers many advantages that can improve the government's financial functions and employees' performance in the Jordanian public sector, the expected benefits of the system, are however, not often fully accomplished. This study investigated the success of GFMIS from the perspective of public employees. The successful implementation of the system was measured through three distinct indicators, namely, system use, user satisfaction, and net benefits. For this purpose, the IS success model was used.

This study enriches the extant body of work on IS success model by testing the model on a new e-government system. To the best of the researcher's knowledge, GFMIS success has yet to be investigated using the IS success model; therefore, the outcomes of this study add significant value to the current body of knowledge concerning this theoretical model. Also, to the researcher's knowledge, prior research has identified a number of factors related to IS success. While few studies have expanded the IS success model, the present study extends further by incorporating three relevant variables, namely, user resistance, training, and user involvement, into the model, as this study is designed to fill those important vacuums in IS success literature.

Specifically, the main theoretical gaps addressed in the present study are training and user involvement effects in explaining the relationship between use/user satisfaction and net benefits. In addition, the direct impact of user resistance on GFMIS use/user satisfaction among government employees was also examined. The results show that most of these factors are significant in the context of this study, thus, the empirical results prove the relevance of those constructs in extending the IS success model.

The rationale behind incorporating these factors is that training has generally been recognised as one of the CSFs for IS implementation. Specifically, as training of employees has become a critical component for the successful e-Government initiatives in Jordan, it needs to be integrated within the implementation of e-Government so as to increase the overall implementation success of the e-Government system (AL-Naimat et al., 2013; Tbaishat & Khasawneh, 2015).

User involvement is one of the suggested additions to the IS success model because this variable may explain IS success. In addition, several studies identified user involvement as a success factor that has consistently been found to influence IS success and can be incorporated into the IS success model (Petter et al., 2013; Rouibah et al., 2009). The current findings thus enrich existing literature on IS success by outlining the facilitating role of user involvement. Despite the acknowledgment made in past studies on the effects of organisational factors on the role of overall quality factors, IS usage and user satisfaction (Cappetta et al, 2015; Sappri & Baharudin, 2016; Sappri et al., 2016), very few have investigated the correlations between these key factors. Hence, this present study fills the gap by outlining the substitutive relationship between employee involvement and IS success factors.

On the other hand, user resistance is considered as one of the factors that leads to the failure of IS in developing countries (Dwivedi et al., 2015). This is because resistance to use the IS might cause underutilisation of the system which may affect the level of use and user satisfaction (Adeleke, 2016; Haddara & Moen, 2017). As a result, it could threaten the benefits of the system, thereby leading to the system's failure (Zhang et al., 2005). Therefore, the present study delivers a significant theoretical contribution to the domain of knowledge in the IS success field, specifically on the e-government IS.

Regarding the use construct, several studies have dropped this construct while investigating mandatory-based IS (e.g., Choi et al., 2014; Sappri et al., 2016; Sappri & Baharudin, 2016; Surya & Gaol, 2018). They claimed that use will not be statistically significant for mandatory-based systems, which is in line with an argument by Seddon (1997) and Gable et al. (2008) that in a completely mandatory environment, use is an antecedent (and consequence) of IS-Impact and not a dimension. However, even if GFMIS is a mandatory-based IS, the present study incorporated the use construct into the research model and found that the construct plays a significant role in determining the success of GFMIS in Jordan. Thus, the present study results oppose Seddon (1997) and Gable et al.'s (2008) propositions. Finally, the results of this study prove that IS success model can explain the reason for GFMIS success in the Jordanian context.

6.6.2 Practical Implications

These empirical results are not only important to theory but also to practice, given the huge cost of e-government IS. Hence, this study provides the GoJ and software developers with insightful practical evidence that is critical to better understand users' behaviour on any IS project apart from promoting more effective adoption of the system amongst government agencies.

The results suggest that if the software developers, implementing companies, and the GoJ aspire to make GFMIS more successful, they first need to provide higher service quality to the users (e.g., higher quality of responsiveness, assurance, empathy, and reliability), and make GFMIS more preferable to the users by improving the desirable characteristics of its output (e.g., useful, reliable, sufficient, up-to-date, and precise information). Furthermore, future strategy developments should consider the impacts of system quality or else the strategy would be deemed as lacking.

Also, the negative impact of user resistance on GFMIS use and user satisfaction indicates that the GoJ should endeavour to mitigate users' resistance and encourage employees to use GFMIS, ultimately improving their overall satisfaction. Hence, there is a need to minimise user resistance to enable the attainment of the net benefits of GFMIS usage and lessen the risks of failure. Towards this end, the GoJ is responsible for providing strategies that can help reduce or overcome user resistance, such as the provision of adequate GFMIS training as part of top management support. This is because training is a key organisational tool that contributes to IS success (Hwang et al., 2012). In order to overcome knowledge restrictions and enable the effective usage of IS innovations, employees need to obtain new knowledge. According to Dezdar and

Ainin (2011), proper system training can help improve employee confidence and lessen resistance to IS usage. Training has also been proven to improve employee productivity and facilitate the full utilisation of the IS, thus helping organisations to achieve the full benefits of the system (Liu, 2011; Vatanasakdakul et al., 2017).

In addition, to enable employees to attain optimum net benefits from the usage of GFMIS, high training is required. Such training will equip employees with the needed knowledge to use GFMIS efficiently, and hence, lead to greater improvements in their job performance. As a result, the GoJ should provide a high training for GFMIS users through the allocation of an appropriate training budget. The budget should include allocations for software implementation, particularly if the GoJ intends to implement GFMIS in other government institutions. Training must include MDA management, for which additional costs should be assigned. The GoJ should also ascertain user commitment and engagement in training. Employees need to understand the significance of training toward improving their personal and work satisfaction, besides identifying the objectives and benefits of the training.

Results also imply that the relationship between use/user satisfaction and net benefits is stronger (i.e., more positive) for employees with a high level of involvement compared to employees with a low level of involvement. Therefore, the GoJ should consider a more active role of users in GFMIS or any future IS-related project. User involvement facilitates a positive approach to GFMIS usage which can maximise the individual's net benefits while interacting with GFMIS or other related IS. The GoJ's role in driving employee involvement denotes the provision of information and sharing of knowledge that can be effectively implemented in various employee settings, hence improving the net benefits of GFMIS usage and minimising employee resistance.

Generally, the present study provides implications for software developers and implementing companies (e.g., IntraCom Middle East and Africa; INTRASOFT International), and for international authorities (e.g., IMF, USAID, and World Bank), which are responsible for developing and implementing such IS in other developing countries. The results of the study would be beneficial to these parties because they shed light on the most impactful factors that affect GFMIS success. In particular, software developers and global authorities can use the advantages and disadvantages of GFMIS to fulfil expectations and identify the key quality factors for GFMIS, which in turn, could lead to the system's improvement. According to Chen et al. (2015), e-government success is mainly hindered by issues related to service quality as opposed to the quantity of existing e-government systems. This present study suggests that more effort is needed towards improving the service quality of GFMIS. In addition, system breakdowns and downtimes paint a negative perception of the quality of GFMIS. Therefore, there is a need for global authorities and developing nations to invest more resources to improve the system's technical infrastructure to boost the perception of its usefulness as well as user satisfaction. The current findings are also beneficial for developing nations that are using similar financial and accounting systems, to enable them to examine the pros and cons of implementing GFMIS in their respective countries towards improving their existing IS usage.

The findings also clarify the most crucial GFMIS features and functions by associating them to the quality dimensions, besides specifying the most relevant success factors. In particular, the findings facilitate the development of high quality IS that is attractive to users, hence ensuring its acceptance and appropriate usage, and ultimately, the attainment of the desired benefits.

Furthermore, the results of the study would be beneficial to the policy and decision-makers in Jordan, as the findings offer several recommendations that might help them in making appropriate decisions concerning buying and implementing new e-government IS (e.g., HRMIS, e-procurement, Inventory Management System). The findings also provide insights by identifying the benefits that are attainable over the possible costs during the implementation process. Further, the findings facilitate the development of plans to promote greater use of GFMIS and ultimately, satisfaction levels among employees. Additionally, the findings offer insights to the decision-makers in providing the necessary support to the employees in utilising GFMIS so that their needs and wants can be fulfilled.

Moreover, the outcomes of the study assist MDAs management staff to better understand their employees' interaction with the e-Government system, in general, and GFMIS, in particular, as they are expected to use those IS in response to the changes in IT. More importantly, the results provide insights into how the employees perceive the quality of GFMIS in terms of the overall quality factors and other success dimensions (i.e., user resistance, training, and user involvement), and how they perceive the effects of GFMIS on their performance. In addition, the results shed light on factors that deserve special focus to increase employees' level of use and satisfaction.

In summary, this study provides GoJ and software developers, in general, with a perceptive empirical analysis that would elevate understanding about employees' behaviour in an e-government project apart from promoting more effective adoption of the system amongst MDAs. In addition, the results could also be valuable input for countries that have similar PFM systems, considering that studies on the success models of e-Government systems are still fairly new.

6.7 Research Limitations, Recommendations and Future directions

Despite its valuable contributions as presented above, this study also has several limitations that must be recognised as they could hamper the ability to generalise its findings, which in turn, could be addressed in future studies.

Firstly, the profiles of the users were disregarded in this study despite the findings of several past inquiries which stated that apart from quality, usage and satisfaction are determined by other factors, including demographic elements. Job positions in the MDAs may also affect satisfaction and level of usage; for instance, managers or heads of departments may have different perceptions than the operational staff because the tasks carried out using GFMIS are of a distinct nature. Hence, more studies are needed to explore the influence of contextual factors, such as the users' demographic profile (gender, age, education level, and years of experience) on their perception. Perceptions may also be influenced by culture; hence, it is suggested that studies on e-government implementations should be carried out in several developing nations.

Secondly, the present study used a quantitative approach to collect the data. Therefore, more comprehensive qualitative studies should be carried out via interviews to attain further information about GFMIS success. This is in line with the suggestion made by Venkatesh, Brown, and Bala (2013) that using different data collection methods in the

IS field could result in the development of novel measures for the research model. The mixture of various data collection methods can facilitate the extension of the IS success model (Marjanovic et al., 2015). Consequently, more comprehensive research on IS success model is needed by applying different data collection methods.

Thirdly, the model in the present study is able to describe 34% of the total variance in net benefits, which means that there are other available latent variables that might likewise significantly describe the variance in net benefits. In other words, the remaining 66% of the variance in net benefits is justifiable by other factors. Hence, future studies could focus on other viable factors related to success, such as task, individual, social, project, and organisational factors.

Fourthly, the present study implemented a cross-sectional study design that does not allow causal implications and conclusions to be generalised among the population, such as done in longitudinal studies (Sekaran & Bougie, 2016). Therefore, in future studies, a longitudinal research design can be used to examine the hypothetical constructs at different points in time and to validate the results of the present study. This recommendation is in line with several studies in the IS success field. For instance, Rana et al. (2015) mentioned that more longitudinal studies are needed in the IS success field because the longitudinal assessment of sample data would allow the scholars to better explore the evidence on the real use of IS and its outcomes. In addition, Mohammadi (2015a) recommended that further studies are needed by means of longitudinal surveys as the perceptions and preferences of individuals tend to change over time when they gain more experience. Many authors from diverse fields (e.g., enterprise information systems, e-commerce, e-government) agree with this proposition (Alexandre & Isaías, 2012; Dernbecher, 2014; Lee & Lee, 2012; Sørum et al., 2012).

Fifthly, numerous definitions for IS success and their measures are available (Nguyen et al., 2015). Those definitions differ based on the stakeholders in question; the manager has a completely different view from the programmer, depending on various factors, including the budget, costs, time, performance, functionality, and security (Alexandre & Isaías, 2012; DeLone & McLean, 2003). Therefore, the success of an IS is a multi-dimensional concept that can be measured from various perspectives (Al-Debei et al., 2013; DeLone & McLean, 2004; Budiardjo et al., 2017). GFMIS aims to improve the government's and employees' performance (Shannak, 2015; USAID, 2012a). In the context of this study, the success of GFMIS was measured from the individual level of end-users. Hence, it would be useful to conduct further research of GFMIS success by considering the organisational level because organisational level provides policymakers, decision-makers, and managers a practical view to evaluate GFMIS success and effectiveness.

Finally, the findings of this study are exclusive only to the public sector in Jordan; hence, they cannot be generalised to other developing nations. Therefore, there is a need to conduct further studies in different countries to prevent the issue of research bias and non-generalisation.

6.8 Conclusion

Grounded by the literature gaps that have been underlined based on the previous reports and studies, this study examined the success of GFMIS from the employees' perspective. Specifically, by integrating the DeLone and McLean IS success model and several success factors, which complement each other, the main aim of this present empirical work is to understand the drivers of use, user satisfaction, and individual net benefits in a Jordanian e-government context. A total of 654 questionnaires were self-administrated to GFMIS users in 52 government organisations in Jordan. Specifically, the usable responses were 264, and after removing outliers, 257 questionnaires were analysed using PLS-SEM.

The empirical results verify the validity of the IS success model in the context of GFMIS. Thirteen out of 15 hypotheses are supported. The present analysis shows that information quality, system quality, and service quality have a positive impact on GFMIS use, while only information quality and service quality have a significant effect on user satisfaction. GFMIS use has a positive and direct effect on user satisfaction. Both use and user satisfaction are significant in predicting net benefits. For the other success variables used, the results demonstrate that user resistance is a key precedent of both GFMIS use/user satisfaction. It also reveals the importance of the moderating effects of training and user involvement on the relationship between use and user satisfaction and net benefits.

Contributions-wise, this study enriches the extant body of knowledge by offering an in-depth revelation of the roles of training and user involvement as moderating variables and user resistance as an independent variable. Furthermore, the present study provides important suggestions for the improvement of the e-government systems in Jordan as well as other developing nations. In particular, this study reveals the most influential dimensions for the success of GFMIS.

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APPENDICES

Appendix A. LR Matrix for e-Government Studies

No	Authors	Focus Area	Methodology	Data Collection	Respondents
1.	Al-Rawahna et al. (2018)	e-Government success	Quantitative	Questionnaire	GoJ employees
2.	Hammouri & Abu Shanab (2017)	User satisfaction	Quantitative	Questionnaire	ISTD employees
3.	Al-Refaie & Ramadna (2017)	e-Government challenges	Quantitative	Questionnaire	GoJ employees & citizens
4.	Al-Smady (2017)	User satisfaction	Quantitative	Questionnaire	Executive staff from ministries
5.	Alshibly et al., (2016)	e-Government CSFs	Mixed method	Questionnaire and Interviews	GoJ employees from ministries
6.	Sulehat & Taib (2016)	e-Government successful implementation	Qualitative	Analysing the e-Government strategy	No respondents (reviews of documents)
7.	Tadros & Alzubi (2015)	e-Government challenges	Quantitative	Questionnaire	Employees from MoHE
8.	Tbaishat & Khasawneh (2015)	e-Government users' perception	Quantitative	Questionnaire	Decision-makers (GoJ employees)
9.	Alrawabdeh (2014)	e-government implementation	Quantitative	Questionnaire	Employees of the MoICT
10.	Al-Shboul et al. (2014)	Obstacles and challenges	Qualitative	Interviews.	e-Government officials
11.	Abu-Shanab and Bataineh (2014)	e-Government challenges	Literature review	Literature review	-
12.	Alawneh et al. (2013)	User satisfaction	Quantitative	Questionnaire	Universities employees
13.	AL-Naimat et al. (2013)	e-Government CSFs	Qualitative	Interviews	GoJ employees
14.	AL-Gharaibeh & Malkawi (2013)	e-Government impact	Quantitative	Questionnaire	Employees in the MoPIC
15.	Abu-Doush et al. (2013)	e-Government evaluation	Mixed-method	Questionnaire and Interviews	Websites developers and users
16.	Kanaan & Kanaan (2013)	e-Government challenges	Qualitative	Interviews	Public sector employees
17.	Qtish & Qatawneh (2012)	e-Government impact	Quantitative	Questionnaire	ISTD managers/ directors
18.	Alkhaleefah et al. (2010)	e-Government challenges	Literature review	Literature review	-

Appendix B. e-Government CSFs/Challenges

CSFs/Challenges	Sources
Adequate funding	Alshibly et al. (2016); AL-Naimat et al. (2013); Al-Shboul et al. (2014); Tadros and Alzubi (2015).
IT infrastructure	Abu-Shanab and Bataineh (2014); Al-Rawahna et al. (2018); Alshibly et al. (2016); AL-Gharaibeh and Malkawi (2013); AL-Naimat et al. (2013); Al-Shboul et al. (2014); Sulehat and Taib (2016).
User resistance	Abu-Shanab and Bataineh (2014); Alawneh et al. (2013); AL-Naimat et al. (2013); Alrawabdeh (2014); Al-Shboul et al. (2014); Tbaishat and Khasawneh (2015).
Training	Abu-Doush et al. (2013); AL-Gharaibeh and Malkawi (2013); Alkhaleefah et al. (2010); AL-Naimat et al. (2013); Alshibly et al. (2016); Tbaishat and Khasawneh (2015).
Technology barriers	Abu-Shanab and Bataineh (2014); Al-Rawahna et al. (2018); Al-Refaie and Ramadna (2017).
Clear strategy	AL-Naimat et al. (2013); Al-Shboul et al. (2014).
Management support	Alshibly et al. (2016); AL-Naimat et al. (2013); Al-Shboul et al. (2014); Sulehat and Taib (2016).
User awareness	Abu-Doush et al. (2013); Alawneh et al. (2013); AL-Naimat et al. (2013); Al-Shboul et al. (2014); Kanaan and Kanaan (2013).
User satisfaction	Al-Smady (2017); Hammouri and Abu Shanab (2017).
User involvement	AL-Gharaibeh and Malkawi (2013); Alshibly et al. (2016).
Employee skills	Alawneh et al. (2013); Al-Shboul et al. (2014); Sulehat and Taib (2016); Tadros and Alzubi (2015).

Appendix C. LR Matrix for GFMIS Studies

No.	Study	Country	Focus Area	Methodology
1.	Youssef & Alsharari (2017)	Jordan	GFMIS implementation	Qualitative
2.	Oyinlola et al. (2017)	Nigeria	IFMIS impact	Quantitative
3.	Mugwe & Ngugi (2017)	Kenya	IFMIS impact	Mixed-method
4.	Harelimana (2017)	Rwanda	IFMIS impact	Mixed-method
5.	Laizer & Suomi (2016)	Tanzania	IFMIS evaluations	Qualitative
6.	Mburu & Ngahu (2016)	Kenya	IFMIS impact	Quantitative
7.	Cherotich & Bichanga (2016)	Kenya	Effective implementation	Quantitative
8.	Shannak (2015)	Jordan	Implementation issues, current status	Qualitative
9.	Wangari & Ambrose (2015)	Kenya	IFMIS impact	Mixed-method
10.	Sawalha & Abu-Shanab (2015)	Jordan	Users Acceptance	Quantitative
11.	Lundu & Shale (2015)	Kenya	effective implementation	Mixed-method
12.	Kahari et al. (2015)	Kenya	Successful implementation	Quantitative
13.	Njihia & Makori, (2015)	Kenya	Effective implementation	Mixed-method
14.	Odolo & Gekara (2015)	Kenya	IFMIS Effect and affect	Quantitative
15.	Ibrahim & Dauda (2014)	Nigeria	IFMIS impact	Mixed-method
16.	Njonde & Kimanzi (2014)	Kenya	IFMIS effectiveness	Mixed-method
17.	Selfano et al. (2014)	Kenya	IFMIS impact	Mixed-method
18.	Karanja & Ng'ang'a (2014)	Kenya	Implementation challenges	Quantitative
19.	Minani (2012)	Tanzania	IFMIS impact	Quantitative

Appendix D. LR Matrix for IS Success Model

No.	Study / Details	Country	Model(s) used with *IS success model*	IQ → U	IQ → US	SY.Q → U	SY.Q → US	SE.Q → U	SE.Q → US	U → US	U → NB	US → NB
1.	Agbabiaka (2018)	Nigeria	Public Value		Insig.		Insig.		(+)*			(+)*
2.	Aldholay et al. (2018a)	Yemen	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
3.	Aldholay et al. (2018b)	Yemen	-	(+)*		(+)*		(+)*		(+)*	(+)*	(+)*
4.	Al-Khafaji and Azeez (2018)	Iraq	-	Insig.	Insig.	Insig.	Insig.	Insig.	(+)*		(+)*	(+)*
5.	Al-Sulami and Hashim (2018)	Iraq	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
6.	Kurt (2018)	Italy	-	Insig.	(+)*	(+)*	(+)*				(+)*	(+)*
7.	Martins et al. (2018)	Portugal	-	(+)*	(+)*	(+)*	Insig.	(+)*	(+)*	(+)*	(+)*	(+)*
8.	Putra et al. (2018)	Indonesia	-		(+)*		(+)*		(+)*			
9.	Rana and Dwivedi (2018)	UK	Seddon model		(+)*					(+)*		
10.	Pringgandani et al. (2018)	Indonesia	-		Insig		Insig		Insig			(+)*
11.	Soegoto and Luckyardi (2018)	Indonesia	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
12.	Surya and Gaol (2018)	Indonesia	-		(+)*		(+)*		Insig.			(+)*
13.	Widjaja et al. (2018) (external users)	Mongolia	Seddon model		(+)*		(+)*		Insig.			(+)*
14.	Widjaja et al. (2018) (internal users)	Mongolia	Seddon model		(+)*		Insig.		Insig.			(+)*
15.	Wirawan and Napitupulu (2018)	Indonesia	-	Insig.	Insig.	(+)*	(+)*	Insig.	Insig.	Insig.	(+)*	(+)*
16.	Wirawan et al. (2018)	Indonesia	-		(+)*		Insig.		Insig.			
17.	Wang et al. (2018)	Taiwan	Value-Based Adoption		(+)*		(+)*					(+)*
18.	Sutjahyo et al. (2018)	Indonesia	TAM							(+)*	(+)*	(+)*
19.	Dos Santos et al. (2017)	Indonesia	-									
20.	Gaardboe et al. (2017)	Denmark	-	Insig.	(+)*	(+)*	(+)*			Insig.	Insig.	(+)*
21.	Monika and Goal (2017)	Indonesia	-	(+)*	Insig.	Insig.	(+)*	Insig.	(+)*	(+)*	(+)*	(+)*
22.	Al-Nassar (2017)	Jordan	-						(+)*			
23.	Kim-Soon et al. (2017)	Malaysia	-		(+)*		Insig.					
24.	Budiardjo et al. (2017)	indonesia	ECM		(+)*		(+)*					

No.	Study / Details	Country	Model(s) used with *IS success model*	IQ → U	IQ → US	SY.Q → U	SY.Q → US	SE.Q → U	SE.Q → US	U → US	U → NB	US → NB
25.	Irawan and Syah (2017)	Indonesia	-		(+)*		(+)*		(+)*			(+)*
26.	Laumer et al. (2017)	Germany	-		(+)*		(+)*		(+)*			
27.	Rumambi et al. (2017)	Indonesia	HOT-Fit		(+)*		Insig.		(+)*			(+)*
28.	Tam and Oliveira (2017)	Portugal	-	(+)*	(+)*	(+)*	(+)*	Insig.	(+)*	(+)*	(+)*	(+)*
29.	Zuama et al. (2017)	Indonesia	-	Insig.	(+)*	(+)*	(+)*	(+)*	(+)*		(+)*	(+)*
30.	Wie and Widjaja (2017)	(Indonesia)	-		(+)*		(+)*		(+)*			
31.	Wie and Widjaja (2017) /	(Japan)	-		(+)*		(+)*		(+)*			
32.	Wie and Widjaja (2017)	(South Korea)	-		(+)*		(+)*		(+)*			
33.	Vancauter et al. (2017)	Belgium	-		(+)*		(+)*		(+)*	(+)*	Insig.	(+)*
34.	Namisango et al. (2017)	Uganda	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*		(+)*	(+)*
35.	AL Athmay et al. (2016)	United Arab Emirates	UTAUT		(+)*		(+)*					
36.	Glood et al. (2016)	Iraq	-	(+)*				(+)*			(+)*	
37.	Jagannathan et al. (2016)	India	ECM		(+)*		Insig.					(+)*
38.	Sappri and Baharudin (2016)	Malaysia	-		(+)*		(+)*		Insig.			(+)*
39.	Sappri et al. (2016)	Malaysia	-		(+)*		(+)*		(+)*			(+)*
40.	Wang and Yang (2016)	Taiwan	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
41.	Tam and Oliveira (2016)	Portugal	Task Technology Fit	Insig.	(+)*	Insig.	(+)*	Insig.	(+)*	(+)*	(+)*	(+)*
42.	Legner et al. (2016)	USA	-	Insig.	Insig.	(+)*	(+)*	Insig.	Insig.	(+)*	(+)*	(+)*
43.	Stefanovic et al. (2016)	Serbia	-	(+)*	Insig.	(+)*	(+)*	(+)*	Insig.	(+)*	(+)*	(+)*
44.	Weerakkody et al. (2016)	UK	-		(+)*		(+)*					
45.	Agbabiaka and Ugaddan (2016)	South Korea	Public value		(+)*		Insig.		(+)*			(+)*
46.	Chiu et al. (2016)	Taiwan	-		Insig.		(+)*		(+)*			(+)*
47.	Hsu et al. (2015)	Taiwan	-	(+)*	(+)*	(+)*	(+)*	Insig.	(+)*		(+)*	(+)*
48.	Sandjoj and Wahyuningrum (2015) (UPNVJ students)	Indonesia	TAM	Insig.	Insig.	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
49.	Sandjoj and Wahyuningrum (2015) (ST3 students)	Indonesia	TAM	Insig.	(+)*	Insig.	(+)*	(+)*	Insig.	(+)*	(+)*	(+)*
50.	Manandhar et al. (2015)	Nepal	-									
51.	Marjanovic et al. (2015)	Eastern Europe	-			(+)*	(+)*			Insig.	Insig.	(+)*

No.	Study / Details	Country	Model(s) used with *IS success model*	IQ → U	IQ → US	SY.Q → U	SY.Q → US	SE.Q → U	SE.Q → US	U → US	U → NB	US → NB
52.	Hsiao et al. (2015)	Vietnam	-		(+)*		(+)*					
53.	Mohammadi (2015a)	Iran	TAM		(+)*		(+)*		(+)*			
54.	Mohammadi (2015b)	Iran	TAM		(+)*		(+)*		(+)*			
55.	Roky and Al Meriouh (2015)	Morocco	-	Insig.	(+)*	Insig	Insig	(+)*	Insig		(+)*	Insig
56.	Son et al. (2015)	South Korea	-		(+)*		(+)*		(+)*			(+)*
57.	Rana et al. (2015)	India	-		(+)*		(+)*					
58.	Chen et al. (2015)	Philippine	Trust theory		(+)*		Insig.		Insig.			(+)*
59.	Hassan and Seyal (2015)	Brunei	-	Insig.	(+)*	Insig.	(+)*	Insig.	(+)*	(+)*	Insig.	(+)*
60.	Wu and Chen (2015)	Taiwan	-									
61.	Rouibah et al. (2015)	Kuwait	-		(+)*		(+)*		(+)*			
62.	Mardiana et al. (2015)	Indonesia	TAM & UTAUT									
63.	Montesdioca and Maçada (2015)	Brazil	-		(+)*		(-)*		Insig.			
64.	Edrees and Mahmood (2014)	Bahrain	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
65.	Choi et al. (2014)	Korea.	-		Insig.		Insig.		(+)*			
66.	Rana et al. (2014)	India	Seddon model		(+)*		(+)*		(+)*			
67.	Chang (2014)	Taiwan	-	(+)*	(+)*	(+)*	(+)*				(+)*	(+)*
68.	Dernbecher (2014)	Germany	-	Insig.	(+)*	(+)*	(+)*	Insig.	Insig.	(+)*	(+)*	(+)*
69.	wang and Lu (2014)	Taiwan	-									(+)*
70.	Tsai et al. (2014)	Taiwan	TAM		Insig.		(+)*		Insig.			
71.	Alali and Salim (2013)	Middle East countries	TAM		(+)*		(+)*		(+)*			
72.	VictorChen et al. (2013)	China	-	(+)*	Insig.	(+)*	Insig.	(+)*	(+)*	(+)*	(+)*	(+)*
73.	Chen et al. (2013) (Taiwan)	(Taiwan)	-		(+)*		(+)*		Insig.			
74.	Chen et al. (2013) (Thailand)	(Thailand)	-		(+)*		Insig.		Insig.			
75.	Al-Debei et al. (2013)	Jordan	-		(+)*		(+)*		Insig.	(+)*	(+)*	(+)*
76.	Rana et al. (2013a)	India	Seddon model		(+)*		(+)*					
77.	Rana et al. (2013b)	India	Seddon model		(+)*		(+)*					

No.	Study / Details	Country	Model(s) used with *IS success model*	IQ → U	IQ → US	SY.Q → U	SY.Q → US	SE.Q → U	SE.Q → US	U → US	U → NB	US → NB
78.	Hollmann et al. (2013)	European countries	-		(+)*		(+)*		(+)*			(+)*
79.	Poelmans et al. (2013)	uK	-		(+)*		(+)*		Insig.			
80.	Lwoga (2013)	Tanzania	-		(+)*		(+)*		Insig.			
81.	Chen (2013)	Taiwan	-		(+)*		(+)*		(+)*			
82.	Balaban et al. (2013)	Europe & USA	-	Insig.	Insig.	(+)*	Insig.	(+)*	(+)*	(+)*	Insig.	(+)*
83.	Wang (2013)	Canada	-				(+)*		(+)*			
84.	Dwivedi et al. (2013)	UK	-	(+)*	(+)*	(+)*	(+)*	Insig.	Insig.	(+)*		
85.	Susanto et al. (2012)	Indonesia	-				(+)*		(+)*			
86.	Ramayah and Lee (2012)	Malaysia	-		(+)*		(+)*		(+)*			
87.	Ramayah et al. (2012)	Malaysia	TAM & ECM		Insig.							Insig.
88.	Su and Sun (2012)	China	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*		(+)*	(+)*
89.	Tona et al. (2012)	Sweden	-	Insig.	(+)*	(+)*	(+)*			Insig.	(+)*	(+)*
90.	Alexandre and Isaías (2012)	Portugal	-	Insig.	(+)*	Insig.	(+)*				(+)*	(+)*
91.	Eom (2012)	USA	Seddon model		(+)*		(+)*					
92.	Hou (2012)	Taiwan	-							(+)*	(+)*	(+)*
93.	Lee & Lee, 2012	South Korea	-	Insig	Insig	Insig	(+)*	(+)*	Insig		Insig	(+)*
94.	Khayun & Ractham (2011)	Thailand	-	Insig.	(+)*	(+)*	Insig.	(+)*	(+)*	(+)*	Insig	(+)*
95.	Urbach et al. (2011)	Germany	-	Insig.	Insig.	Insig.	(+)*	Insig.	Insig.	(+)*	(+)*	(+)*
96.	Petter & Fruhling (2011)	USA	-	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*	(+)*
97.	Floropoulos et al. (2010)	Greek	Seddon model		(+)*		Insig		(+)*			
98.	Urbach et al. (2010)	Germany	-	Insig	(+)*	Insig	(+)*	Insig	Insig	(+)*	(+)*	(+)*

Notes: (+)*: Positive significant relationship; (-)*: Negative significant relationship; Insig.: Insignificant relationship; Blank cell: the relationship was not tested.

Appendix E. Demographic Characteristics of the Respondents

Samples Description	Frequency	Percentage (%)
Gender		
Male	183	71
Female	74	29
Missing	0	0
Total	257	100
Age		
20 - 29	14	5.4
30 - 39	100	38.9
40 - 49	102	39.7
50 and above	32	12.5
Missing	9	3.5
Total	257	100
GFMIS experience		
Less than 1 year	32	12.5
1 to 2 years	49	19.1
3 to 4 years	119	46.3
5 to 6 years	47	18.3
7 to 8 years	10	3.9
Missing	0	0
Total	257	100
Highest qualification		
PhD	9	3.5
Master Degree	20	7.8
Bachelor Degree	214	83.3
Diploma	14	5.4
Missing	0	0
Total	257	100
MDAs		
1- Parliament	3	1.2
2- Prime ministry	2	0.8
3- legislation and opinion bureau	1	0.4
4- Joint procurement department	1	0.4
5- Ombudsman bureau	1	0.4
6- Audit bureau	5	1.9
7- Ministry of public sector development	3	1.2
8- Civil service bureau	1	0.4
9- Ministry of political and parliament affairs	2	0.8
10- Royal medical services	3	1.2
11- Jordan royal geographic center	1	0.4

Samples Description	**Frequency**	**Percentage (%)**
12- Ministry of interior	10	3.9
13- Civil statues and passport department	3	1.2
14- Public security	4	1.6
15- Civil defense	3	1.2
16- Gendarmerie forces	3	1.2
17- Ministry of justice	10	3.9
18- The judicial council	1	0.4
19- Supreme judge department	4	1.6
20- Ministry of foreign affairs	4	1.6
21- Department of Palestinian affairs	2	0.8
22- Ministry of finance	28	10.9
23- General budget department	11	4.3
24- Customs department	15	5.8
25- Department of land and survey	3	1.2
26- General supply department	2	0.8
27- Income and sales tax department	17	6.6
28- Ministry of industry, trade and supply	13	5.1
29- Companies control department	1	0.4
30- Ministry of planning and international cooperation / national planning council	2	0.8
31- Ministry of planning and international cooperation / department of statistics	5	1.9
32- Ministry of tourism and antiquities	2	0.8
33- Department of antiquities	3	1.2
34- Ministry of municipal affairs	7	2.7
35- Ministry of energy and mineral resources	5	1.9
36- Ministry of public works and housing	7	2.7
37- Government tenders' department	2	0.8
38- Ministry of agriculture	5	1.9
39- Ministry of water and irrigation	3	1.2
40- Jordan valley authority	5	1.9
41- Ministry of environment	7	2.7
42- Ministry of education	16	6.2
43- Ministry of higher education and scientific research	4	1.6
44- Ministry of health	8	3.1
45- Ministry of social development	4	1.6
46- Ministry of labor	4	1.6
47- Ministry of culture	2	0.8
48- Department of the national library	1	0.4
49- Ministry of youth	2	0.8
50- Ministry of transport	3	1.2
51- Meteorology department	1	0.4

Samples Description	Frequency	Percentage (%)
52-Ministry of information and communication technology	2	0.8
Missing	0	0
Total	257	100
Work experiences		
1-5 years	70	27.2
6-10 years	115	44.7
11-15 years	40	15.6
More than 16 years	27	10.5
Missing	5	1.9
Total	257	100
Unit		
Budget and Accounting unit	63	24.5
Financial Control unit	36	14
Accounts Receivable unit	48	18.7
Payroll unit	44	17.1
Public Debt unit	19	7.4
Expenditure "Payment" unit.	14	5.4
Procurement and Supplies unit	15	5.8
Unit of Statistics and Reports	16	6.2
Other	2	0.8
Missing	0	0
Total	257	100
Job descriptions		
Bookkeepers	27	10.5
Finance officer	25	9.7
Budget officer	22	8.6
Accountant	106	41.2
Treasurer	22	8.6
Auditor	18	7
Financial controller	13	5.1
Head of the department	13	5.1
Other	6	2.3
Missing	2	0.8
Total	257	100

Appendix F. The Questionnaire

Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM)
Universiti Utara Malaysia
06010, Sintok, Kedah
Malaysia.

The Successful Factors of GFMIS in Jordan Public Sector: The Moderating Roles of Training and User Involvement

Dear Sir/Madam,

This survey is conducted by Mahmoud Kofahe from TISSA, Universiti Utara Malaysia, for his doctoral degree requirement. His research project is supervised by Dr. Haslinda Hassan and Dr. Rosli Mohamad. This study is conducted to explore the factors affecting the success of Government Financial Management Information System (GFMIS) in Jordan's public sector. The information you provide will offer more empirical evidence to the policymakers in Jordan about the success of the GFMIS, which will consequently provide several recommendations to the decision makers when deciding to introduce a new e-Government system in Jordan.

The targeted respondents for this survey are GFMIS users. If you are not an appropriate respondent, I truly appreciate if you can pass the survey to the right person.

All information that you provide in this survey will be treated in the strictest confidence. All results will be aggregated so that no individual responses will be reported in any way.

The survey is divided into ten (10) sections. There is no right or wrong answer. I truly appreciate your honest responses to all the questions and return the complete survey form to the assigned enumerator. The survey takes about 15 minutes to complete.

If you have any inquiry about this survey, please feel free to contact me on:
+962796042944 or Mkmkofahi@yahoo.com

Thank you for your cooperation to take part in the survey.

Best Regards,
Mahmoud Khaled Kofahe
PhD Candidate,
TISSA-UUM
Universiti Utara Malaysia,
Sintok, Kedah, Malaysia.

***Definition*: GFMIS is an integrated information system which connects all financial and accounting operations of various ministries, government departments, and budget institutions with the Ministry of Finance.**

Please respond the following by ticking (√) on the appropriate box.

A. Current Status of GFMIS Use

A1. Are you GFMIS user?

- ☐ Yes (procced)
- ☐ No (stop here and return the survey to the right person)

A2. How many years have you been using GFMIS?

- ☐ Less than 1 year
- ☐ 1 to 2 years
- ☐ 3 to 4 years
- ☐ 5 to 6 years
- ☐ 7 to 8 years

A3. Please indicate the extent to which you use each of the following functions/modules.

		Strongly disagree 1						Strongly agree 7
a.	I often use GFMIS in Budget Preparation and Implementation.	☐	☐	☐	☐	☐	☐	☐
b.	I often use GFMIS in Project Management.	☐	☐	☐	☐	☐	☐	☐
c.	I often use GFMIS in Procurement Management.	☐	☐	☐	☐	☐	☐	☐
d.	I often use GFMIS in Cash Management.	☐	☐	☐	☐	☐	☐	☐
e.	I often use GFMIS in Receivables and Revenue Management.	☐	☐	☐	☐	☐	☐	☐
f.	I often use GFMIS in Payment Management.	☐	☐	☐	☐	☐	☐	☐
g.	I often use GFMIS in Financial & Accounting Processes/General Ledger.	☐	☐	☐	☐	☐	☐	☐

B. Net Benefits

The following statements seek about benefits and the successful performance that you have obtained from GFMIS.

		Strongly disagree 1						Strongly agree 7
a.	GFMIS saves my time.	☐	☐	☐	☐	☐	☐	☐
b.	GFMIS makes my job easier to accomplish tasks.	☐	☐	☐	☐	☐	☐	☐
c.	GFMIS is useful for my job.	☐	☐	☐	☐	☐	☐	☐
d.	GFMIS enables me to accomplish tasks more quickly.	☐	☐	☐	☐	☐	☐	☐
e.	GFMIS improves my job performance.	☐	☐	☐	☐	☐	☐	☐
f.	Using GFMIS increases my productivity.	☐	☐	☐	☐	☐	☐	☐
g.	Using GFMIS enhances my job effectiveness.	☐	☐	☐	☐	☐	☐	☐

C. User Satisfaction

The following statements aim to understand your feelings of pleasure or displeasure regarding GFMIS.

		Strongly disagree 1						Strongly agree 7
a.	I am satisfied that GFMIS support my work.	☐	☐	☐	☐	☐	☐	☐
b.	GFMIS has met my expectations.	☐	☐	☐	☐	☐	☐	☐
c.	I am satisfied that GFMIS meets my knowledge needs.	☐	☐	☐	☐	☐	☐	☐
d.	I am satisfied that GFMIS meets my information processing needs.	☐	☐	☐	☐	☐	☐	☐
e.	I am satisfied with GFMIS efficiency.	☐	☐	☐	☐	☐	☐	☐
f.	I am satisfied with GFMIS effectiveness.	☐	☐	☐	☐	☐	☐	☐
g.	Overall, I am satisfied with GFMIS.	☐	☐	☐	☐	☐	☐	☐

D. Information Quality

Questions in this section assess your perceptions on the desirable characteristics of the GFMIS outputs.

		Strongly disagree 1						Strongly agree 7
a.	GFMIS provides precise information.	☐	☐	☐	☐	☐	☐	☐
b.	GFMIS provides accurate information.	☐	☐	☐	☐	☐	☐	☐
c.	GFMIS provides sufficient information.	☐	☐	☐	☐	☐	☐	☐
d.	GFMIS provides reliable information.	☐	☐	☐	☐	☐	☐	☐
e.	Information content of the GFMIS fits my job needs.	☐	☐	☐	☐	☐	☐	☐

E. System Quality

The following statements seek your perceptions on the desirable characteristics of GFMIS itself.

		Strongly disagree 1						Strongly agree 7
a.	GFMIS is easy to use.	☐	☐	☐	☐	☐	☐	☐
b.	GFMIS is reliable.	☐	☐	☐	☐	☐	☐	☐
c.	GFMIS is flexible.	☐	☐	☐	☐	☐	☐	☐
d.	GFMIS's response time is acceptable.	☐	☐	☐	☐	☐	☐	☐
e.	GFMIS is user friendly.	☐	☐	☐	☐	☐	☐	☐
f.	GFMIS is stable.	☐	☐	☐	☐	☐	☐	☐

F. Service Quality

The following statements seek to assess your perceptions on the quality of support related to GFMIS received from the Information System (IS) department.

		Strongly disagree 1						Strongly agree 7
a.	IS department staff provides me with a fast services.	☐	☐	☐	☐	☐	☐	☐
b.	IS department staff is empowered to resolve my problems.	☐	☐	☐	☐	☐	☐	☐
c.	IS department staff is available when I need them.	☐	☐	☐	☐	☐	☐	☐
d.	IS department staff understands my specific needs.	☐	☐	☐	☐	☐	☐	☐
e.	When I have a problem, IS department staff shows the sincere interest in solving it.	☐	☐	☐	☐	☐	☐	☐

G. User Resistance

The following statements assess your perceptions on GFMIS in terms of workload, time consuming and lack of benefits.

		Strongly disagree 1						Strongly agree 7
a.	I don't favour GFMIS because its leads to time consuming.	☐	☐	☐	☐	☐	☐	☐
b.	I don't favour GFMIS because its increases my workload.	☐	☐	☐	☐	☐	☐	☐
c.	I don't favour GFMIS because it's hard to realise the intended potential benefits from it.	☐	☐	☐	☐	☐	☐	☐

H. User Involvement

The following statements aim at understanding level of your participation in post-implementation process of GFMIS.

		Strongly disagree 1						Strongly agree 7
a.	I highly participate in testing GFMIS.	☐	☐	☐	☐	☐	☐	☐
b.	I highly participate in planning the GFMIS installation or conversion.	☐	☐	☐	☐	☐	☐	☐
c.	I highly participate in scheduling, installation, or conversion tasks for GFMIS.	☐	☐	☐	☐	☐	☐	☐
d.	I highly participate in the actual installation and/or conversion of GFMIS.	☐	☐	☐	☐	☐	☐	☐
e.	I highly participate in scheduling GFMIS training sessions for others.	☐	☐	☐	☐	☐	☐	☐
f.	I highly participate in scheduling my own GFMIS training sessions.	☐	☐	☐	☐	☐	☐	☐
g.	I highly participate in GFMIS training sessions as a trainee.	☐	☐	☐	☐	☐	☐	☐
h.	I highly participate in GFMIS training sessions as a trainer.	☐	☐	☐	☐	☐	☐	☐
i.	I highly participate in installing, converting, or implementing GFMIS.	☐	☐	☐	☐	☐	☐	☐
j.	I highly participate in evaluating GFMIS performance.	☐	☐	☐	☐	☐	☐	☐

I. Training

The following statements seek your perceptions on GFMIS training programme.

		Strongly disagree 1						Strongly agree 7
a.	GFMIS training helps me to improve my skills.	☐	☐	☐	☐	☐	☐	☐
b.	Training helps me to be able to guide my colleagues in using GFMIS.	☐	☐	☐	☐	☐	☐	☐
c.	Training helps me to solve GFMIS-related problems for my colleagues.	☐	☐	☐	☐	☐	☐	☐
d.	Training helps me to be more confident in using GFMIS.	☐	☐	☐	☐	☐	☐	☐
e.	Training helps me to handle GFMIS effectively.	☐	☐	☐	☐	☐	☐	☐
f.	Training helps me to make fewer mistakes while handling GFMIS.	☐	☐	☐	☐	☐	☐	☐

J. Respondent's Profile

J1. Gender:

Male [ ] Female [ ]

J2. Age:

20 – 29 [ ]
30 – 39 [ ]
40 – 49 [ ]
50 and above [ ]

J3. Highest educational qualification:

PhD [ ]
Master Degree [ ]
Bachelor Degree [ ]
Diploma [ ]

J4. In which Ministry are you currently working?

……………………………………………………………………..

J5. How many years have you been working with the Ministry (as specified in J4)?

1 to 5 years [ ]
6 to 10 years [ ]
11 to 15 years [ ]
16 years and above [ ]

J6. At which unit are you currently working (you may tick more than one):

a. Budget and Accounting unit [ ]
b. Financial Control unit [ ]
c. Accounts Receivable unit [ ]
d. Payroll unit [ ]
e. Public Debt unit [ ]
f. Expenditure "Payment" unit [ ]
g. Procurement and Supplies unit [ ]
h. Unit of Statistics and Reports [ ]
i. Others (please specify: ………………………………………………….)

J7. Job description (you may tick more than one):

a. Bookkeepers [ ]
b. Finance officer [ ]
c. Budget officer [ ]
d. Accountant [ ]
e. Treasurer [ ]

f. Auditor [ ]
g. Financial controller [ ]
h. Head of the department [ ]
i. Director of financial affairs [ ]
j. Others (please specify: ……………………………………………….……….)

Thank you for completing this questionnaire

Appendix G. Measures

Construct	Items Adapted	Source
Information quality	1. GFMIS provides precise information.	Stefanovic et al. (2016)
	2. GFMIS provides accurate information.	Stefanovic et al. (2016)
	3. GFMIS provides sufficient information.	Stefanovic et al. (2016)
	4. GFMIS provides reliable information.	Stefanovic et al. (2016)
	5. Information content of the GFMIS fits my job needs.	Stefanovic et al. (2016)
System quality	1. GFMIS is easy to use.	Lai & Yang (2009): Wu & Wang (2006).
	2. GFMIS is reliable.	Lai & Yang (2009)
	3. GFMIS is flexible.	Wu & Wang (2006).
	4. GFMIS's response time is acceptable.	Wu & Wang (2006).
	5. GFMIS is user friendly.	Lai & Yang (2009); Wu & Wang (2006).
	6. GFMIS is stable.	Wu & Wang (2006)
Service quality	1. IS department staff provides me with a fast services.	Roky & Al Meriouh (2015); Pitt et al. (1995)
	2. IS department staff is empowered to resolve my problems.	Roky & Al Meriouh (2015); Pitt et al. (1995)
	3. IS department staff is available when I need them.	Roky & Al Meriouh (2015); Pitt et al. (1995)
	4. IS department staff understands my specific needs.	Roky & Al Meriouh (2015); Pitt et al. (1995)
	5. When I have a problem, IS department staff shows the sincere interest in solving it.	Roky & Al Meriouh (2015); Pitt et al. (1995)
User Resistance	1. I don't favour GFMIS because its leads to time consuming.	Choi et al. (2014)
	2. I don't favour GFMIS because its increases my workload.	Choi et al. (2014)

Construct	Items Adapted	Source
	3. I don’t favour GFMIS because its hard to realise the intended potential benefits from it.	Choi et al. (2014)
Training	1. GFMIS training helps me to improve my skills.	Wei et al. (2011)
	2. Training helps me to be able to guide my colleagues in using GFMIS.	Wei et al. (2011)
	3. Training helps me to solve GFMIS-related problems for my colleagues.	Wei et al. (2011)
	4. Training helps me to be more confident in using GFMIS.	Wei et al. (2011)
	5. Training helps me to handle GFMIS effectively.	Wei et al. (2011)
	6. Training helps me to make fewer mistakes while handling GFMIS.	Wei et al. (2011)
User Involvement	1. I highly participate in testing GFMIS.	Kappelman (1995); Sappri et al. (2016)
	2. I highly participate in planning the GFMIS installation or conversion.	Kappelman (1995); Sappri et al. (2016)
	3. I highly participate in scheduling installation or conversion tasks for GFMIS.	Kappelman (1995); Sappri et al. (2016)
	4. I highly participate in the actual installation and/or conversion of GFMIS.	Kappelman (1995); Sappri et al. (2016)
	5. I highly participate in scheduling GFMIS training sessions for others.	Kappelman (1995); Sappri et al. (2016)
	6. I highly participate in scheduling my own GFMIS training sessions.	Kappelman (1995); Sappri et al. (2016)
	7. I highly participate in GFMIS training sessions as a trainee.	Kappelman (1995); Sappri et al. (2016)
	8. I highly participate in GFMIS training sessions as a trainer.	Kappelman (1995); Sappri et al. (2016)
	9. I highly participate in installing, converting, or implementing GFMIS.	Kappelman (1995); Sappri et al. (2016)
	10. I highly participate in evaluating GFMIS performance.	Kappelman (1995); Sappri et al. (2016)
Use	1. I often use GFMIS in Budget Preparation and Implementation.	Almutairi and Subramanian (2005); Wu & Wang (2006).
	2. I often use GFMIS in Project Management.	Almutairi & Subramanian (2005); Wu & Wang (2006).

Construct	Items Adapted	Source
	3. I often use GFMIS in Procurement Management.	Almutairi & Subramanian (2005); Wu & Wang (2006)
	4. I often use GFMIS in Cash Management.	Almutairi & Subramanian (2005); Wu & Wang (2006)
	5. I often use GFMIS in Receivables and Revenue Management.	Almutairi & Subramanian (2005); Wu & Wang (2006)
	6. I often use GFMIS in Payment Management.	Almutairi & Subramanian (2005); Wu & Wang (2006)
	7. I often use GFMIS in Financial & Accounting Processes/General Ledger.	Almutairi & Subramanian (2005); Wu & Wang (2006)
User Satisfaction	1. I am satisfied that GFMIS support my work.	Floropoulos et al. (2010)
	2. GFMIS has met my expectations.	Floropoulos et al. (2010)
	3. I am satisfied that GFMIS meets my knowledge needs.	Wu & Wang (2006)
	4. I am satisfied that GFMIS meets my information processing needs.	Wu & Wang (2006)
	5. I am satisfied with GFMIS efficiency.	Wu & Wang (2006)
	6. I am satisfied with GFMIS effectiveness.	Wu & Wang (2006)
	7. Overall, I am satisfied with GFMIS.	Floropoulos et al. (2010); Wu & Wang (2006)
Net Benefits	1. GFMIS saves my time.	Stefanovic et al. (2016)
	2. GFMIS makes my job easier to accomplish tasks.	Stefanovic et al. (2016); Urbach et al. (2010)
	3. GFMIS is useful for my job.	Stefanovic et al. (2016); Urbach et al. (2010)
	4. GFMIS enables me to accomplish tasks more quickly.	Urbach et al. (2010)
	5. GFMIS improves my job performance.	Urbach et al. (2010)
	6. Using GFMIS increases my productivity.	Urbach et al. (2010)
	7. Using GFMIS enhances my job effectiveness.	Urbach et al. (2010)

Appendix H. Back to Back Translation

Universiti Utara Malaysia

كلية المحاسبة (TISSA-UUM)

جامعة شمال ماليزيا، ماليزيا

العوامل المؤثرة على نجاح نظام ادارة المعلومات المالية الحكومية في القطاع العام الأردني:

دور التدريب ومشاركة المستخدم كمتغيرات وسيطة

السادة الكرام:

يتمّ اجراء هذا الاستبيان من قِبل الطالب محمود الكوفحي، كلية المحاسبة، جامعة شمال ماليزيا، كجزء من متطلبات الحصول على درجة الدكتوراة. ويشرف على مشروعه البحثي د. هازليندا حسن و د. روسلي محمد. أجريت هذه الدراسة لاستكشاف العوامل التي تؤثر على نجاح نظام إدارة المعلومات المالية الحكومية (GFMIS) في القطاع العام الأردني. بالتالي ستوفر المعلومات التي تقدمها المزيد الادلة التجريبية لصناع القرار في الأردن حول نجاح هذا النظام، اضافة الى العديد من التوصيات عند اتخاذ القرارات المتعلقة بتطبيق انظمة الحكومة الالكترونية في الأردن.

المستهدفون لهذا الاستبيان هم مستخدمي نظام ادارة المعلومات المالية الحكومية، إذا لم تكن الشخص المناسب لهذا الاستبيان، فسوف اكون شاكراً إذا تمكنت من تمرير الاستبيان إلى الشخص المناسب.

إنّ جميع المعلومات التي تقدمها في هذا الاستبيان ستعامل بسرية تامة، سيتم تجميع النتائج لذلك لن يتم الإبلاغ عن أي استجابات فردية بأي شكل من الأشكال.

يحتوي هذا الاستبيان على (10) اجزاء، حيث أنه لا يوجد أجوبه صحيحه أو خاطئة، أقدّر لكم تعاونكم بالاجابة على جميع الأسئلة وإعادة الاستبيان للشخص المسؤول، يستغرق هذا الاستبيان قرابة (15) خمسة عشر دقيقة لأكماله.

إذا كان لديك أي استفسار حول هذا الاستبيان، فلا تتردد في الاتصال بي على:

Mkmkofahi@yahoo.com أو +962796042944

نشكر لكم تعاونكم على المشاركة في هذا الاستبيان.

مع خالص الشكر والتقدير،

محمود خالد كوفحي

كلية المحاسبة (TISSA)، جامعة شمال ماليزيا (UUM)، قدح، ماليزيا.

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Tunku Puteri Intan Safinaz School of Accountancy (TISSA-UUM)
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06010, Sintok, Kedah
Malaysia.

The Successful Factors of GFMIS in Jordan Public Sector: The Moderating Roles of Training and User Involvement

Dear Sir/Madam,

This survey is conducted by Mahmoud Kofahe from TISSA, Universiti Utara Malaysia, for his doctoral degree requirement. His research project is supervised by Dr. Haslinda Hassan and Dr. Rosli Mohamad. This study is conducted to explore the factors affecting the success of Government Financial Management Information System (GFMIS) in Jordan's public sector. The information you provide will offer more empirical evidence to the policymakers in Jordan about the success of the GFMIS, which will consequently provide several recommendations to the decision makers when deciding to introduce a new e-Government system in Jordan.

The targeted respondents for this survey are GFMIS users. If you are not an appropriate respondent, I truly appreciate if you can pass the survey to the right person.

All information that you provide in this survey will be treated in the strictest confidence. All results will be aggregated so that no individual responses will be reported in any way.

The survey is divided into ten (10) sections. There is no right or wrong answer. I truly appreciate your honest responses to all the questions and return the complete survey form to the assigned enumerator. The survey takes about 15 minutes to complete.

If you have any inquiry about this survey, please feel free to contact me on:
+962796042944 or Mkmkofahi@yahoo.com

Thank you for your cooperation to take part in the survey.

Best Regards,
Mahmoud Khaled Kofahe
PhD Candidate,
TISSA-UUM
Universiti Utara Malaysia,
Sintok, Kedah, Malaysia.

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Appendix I. Official Letter from OYA

OTHMAN YEOP ABDULLAH GRADUATE SCHOOL OF BUSINESS
Universiti Utara Malaysia
06010 UUM SINTOK
KEDAH DARUL AMAN
MALAYSIA

UUM Universiti Utara Malaysia

Tel: 604 928 7101/7113/7130
Faks (Fax): 604 928 7160
Laman Web (Web): www.oyagsb.uum.edu.my

UUM/OYAGSB/R-4/4/1
7 August 2018

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF RECOMMENDATION FOR DATA COLLECTION AND RESEARCH WORK

This is to certify that **Mahmoud Khaled Mahmoud Kofahe (Matric No: 901388)** is a student of Othman Yeop Abdullah Graduate School of Business, Universiti Utara Malaysia persuing his Doctor of Philosophy (PhD). He is conducting a research entitled ***"The Success Factors Government Financial Management Information System (GFMIS) in Jordanian Public Sector : The Moderating Roles of Training and User Involvement"*** under the supervision of Dr. Haslinda Binti Hassan.

In this regard, we hope that you could kindly provide assistance and cooperation for him to successfully complete the research. All the information gathered will be strictly used for academic purposes only.

Your cooperation and assistance is very much appreciated.

Thank you.

"BERKHIDMAT UNTUK NEGARA"
"KEDAH AMAN MAKMUR – HARAPAN BERSAMA MAKMURKAN KEDAH"
"ILMU, BUDI, BAKTI"

Yours faithfully

ROZITA BINTI RAMLI
Assistant Registrar
for Dean
Othman Yeop Abdullah Graduate School of Business

c.c - Supervisor
- Student's File (901388)

Appendix J. Outliers

No.	MAH_1	No.	MAH_1	No.	MAH_1	No.	MAH_1	No.	MAH_1
1	6.01752	38	7.69579	75	11.76329	112	10.28367	149	1.29480
2	11.96000	39	11.74268	76	2.19143	113	1.53641	150	3.91706
3	3.18941	40	10.82053	77	4.76641	114	5.58148	151	10.74110
4	13.58366	41	8.70864	78	6.65986	115	4.77114	152	6.85761
5	7.07386	42	2.69618	79	3.51510	116	6.79420	153	72.84834
6	12.87804	43	4.27675	80	9.65629	117	8.19186	154	4.15974
7	5.60481	44	7.57985	81	7.12231	118	8.20847	155	6.64422
8	7.11731	45	5.97959	82	5.25135	119	2.96216	156	5.58128
9	2.71519	46	2.36935	83	5.74026	120	7.05547	157	3.59161
10	15.85749	47	6.43707	84	1.65104	121	2.60533	158	10.25689
11	3.46599	48	7.80865	85	10.66455	122	64.84924	159	4.66666
12	5.74136	49	3.52827	86	6.59962	123	9.70482	160	8.45508
13	5.14777	50	5.62735	87	11.37603	124	8.31177	161	4.74365
14	2.47003	51	5.45646	88	6.39903	125	6.06008	162	4.36729
15	6.85012	52	4.19858	89	5.79930	126	3.13741	163	6.19308
16	9.31681	53	3.04353	90	7.52413	127	5.28217	164	4.78002
17	12.41727	54	3.25526	91	1.59306	128	7.18316	165	5.77534
18	15.51810	55	6.40545	92	2.68090	129	4.43683	166	9.53066
19	8.43121	56	9.90817	93	6.67384	130	7.44720	167	4.65722
20	54.93009	57	7.03984	94	6.02712	131	5.47624	168	5.63237
21	7.95633	58	3.61812	95	3.10609	132	4.57740	169	11.61371
22	7.17909	59	7.95678	96	7.95494	133	13.40505	170	6.43514
23	2.68924	60	3.00661	97	5.51803	134	3.15059	171	10.41129
24	8.87258	61	8.65673	98	8.92195	135	6.06180	172	2.93899
25	5.39627	62	3.44550	99	5.04004	136	4.17382	173	5.37767
26	4.52888	63	4.51251	100	13.12642	137	6.67440	174	3.62076
27	5.49357	64	8.90101	101	6.51701	138	9.07552	175	5.84801
28	4.61433	65	35.72181	102	3.59047	139	46.92571	176	9.79516
29	5.28073	66	5.88260	103	6.32390	140	7.82937	177	15.17166
30	4.69430	67	18.51631	104	12.70867	141	13.95346	178	9.01250
31	5.72349	68	2.86964	105	9.09762	142	18.53701	179	10.31988
32	5.50093	69	8.28133	106	8.19755	143	6.55131	180	6.49152
33	3.88840	70	4.94917	107	6.10934	144	5.92531	181	9.84796
34	4.75457	71	8.04144	108	7.70028	145	7.03257	182	4.71929
35	9.09961	72	17.14658	109	3.42090	146	3.37453	183	5.69667
36	17.69006	73	5.27341	110	9.48668	147	5.89900	184	7.66162

No.	MAH_1	No.	MAH_1	No.	MAH_1	No.	MAH_1	No.	MAH_1
37	3.23132	74	3.85033	111	13.43102	148	6.32806	185	10.38594
186	2.84585	202	2.86085	218	8.28147	234	4.65625	250	9.38670
187	2.81898	203	2.99523	219	3.89990	235	4.71295	251	6.82236
188	6.31007	204	4.14947	220	8.77938	236	6.12651	252	7.06200
189	5.10704	205	8.34354	221	9.29807	237	6.23527	253	5.57912
190	14.68580	206	4.52192	222	7.09773	238	9.87248	254	5.99811
191	2.95031	207	12.59381	223	10.52587	239	6.38239	255	4.73855
192	7.28563	208	4.79394	224	6.13965	240	7.34676	256	9.43805
193	4.74761	209	7.28463	225	4.31769	241	8.07561	257	5.03048
194	6.86189	210	4.90022	226	6.78035	242	10.11419	258	6.89239
195	10.36993	211	13.60988	227	9.36513	243	5.81246	259	5.83323
196	15.32850	212	6.56391	228	4.62299	244	4.15414	260	3.10741
197	3.72622	213	4.70155	229	4.90775	245	9.33713	261	7.33177
198	6.55358	214	3.64298	230	1.78583	246	5.12253	262	5.92343
199	1.53215	215	6.04530	231	7.36034	247	6.24881	263	3.04605
200	10.81642	216	45.04604	232	9.85964	248	42.83458	264	4.66931
201	1.88737	217	4.01043	233	7.42338	249	10.38360		

Appendix K. Individual Items Reliability: Loading for Each Indicator Before and After Individual Item Reliability

Constructs	Items	Alpha Before	Alpha After	Constructs	Items	Alpha Before	Alpha After
Net	NB1	0.685	0.686		UI3	0.861	0.866
Benefits	NB2	0.849	0.848		UI4	0.289	Deleted
	NB3	0.857	0.857		UI5	0.835	0.841
	NB4	0.819	0.819		UI6	0.858	0.857
	NB5	0.830	0.830		UI7	0.698	0.705
	NB6	0.858	0.858		UI8	0.746	0.750
	NB7	0.725	0.725		UI9	0.265	Deleted
User	US1	0.789	0.789		UI10	0.802	0.816
Satisfaction	US2	0.073	Deleted	Information	IQ1	0.802	0.803
	US3	0.477	0.483	Quality	IQ2	0.853	0.854
	US4	0.784	0.784		IQ3	0.836	0.836
	US5	0.821	0.822		IQ4	0.821	0.821
	US6	0.821	0.822		IQ5	0.757	0.756
	US7	0.797	0.795	System	SYQ1	0.695	0.696
Use	U1	0.918	0.918	Quality	SYQ2	0.878	0.878
	U2	0.906	0.906		SYQ3	0.820	0.819
	U3	0.914	0.914		SYQ4	0.889	0.889
	U4	0.897	0.897		SYQ5	0.767	0.767
	U5	0.910	0.910		SYQ6	0.874	0.874
	U6	0.926	0.926	Service	SEQ1	0.840	0.840
	U7	0.857	0.857	Quality	SEQ2	0.878	0.878
Training	T1	0.848	0.865		SEQ3	0.875	0.875
	T2	0.875	0.880		SEQ4	0.845	0.844
	T3	0.842	0.844		SEQ5	0.675	0.676
	T4	0.557	0.553	User	UR1	0.873	0.873
	T5	0.176	Deleted	Resistance	UR2	0.904	0.905
	T6	0.498	0.517		UR3	0.854	0.854
User	UI1	0.749	0.755				
Involvement	UI2	0.845	0.854				

Appendix L. Discriminant Validity - Cross Loading

	IQ	NB	SEQ	SYQ	T	U	UI	UR	US
IQ1_1	.803	.180	.125	.136	.151	.236	-.113	-.194	.162
IQ2_1	.854	.200	.150	.170	.175	.305	-.186	-.325	.229
IQ3_1	.836	.146	.189	.181	.199	.23	-.110	-.272	.251
IQ4_1	.821	.187	.172	.234	.174	.210	-.120	-.303	.244
IQ5_1	.756	.150	.120	.246	.197	.264	-.132	-.311	.251
NB1_1	.117	.686	.242	.238	.145	.360	-.183	-.221	.308
NB2_1	.189	.848	.148	.159	.195	.271	-.389	-.214	.370
NB3_1	.219	.857	.120	.111	.173	.324	-.408	-.286	.331
NB4_1	.125	.819	.137	.091	.094	.251	-.364	-.185	.226
NB5_1	.236	.830	.166	.092	.122	.353	-.386	-.213	.315
NB6_1	.166	.858	.100	.137	.193	.298	-.376	-.166	.331
NB7_1	.124	.725	.269	.221	.162	.383	-.335	-.264	.410
SEQ1_1	.099	.183	.840	.152	.061	.213	-.046	-.088	.263
SEQ2_1	.125	.161	.878	.157	.048	.228	-.023	-.068	.239
SEQ3_1	.192	.149	.875	.189	.030	.282	-.037	-.112	.279
SEQ4_1	.140	.210	.844	.157	.082	.247	-.037	-.069	.237
SEQ5_1	.215	.163	.676	.104	.054	.143	-.025	-.084	.264
SYQ1_1	.106	.146	.128	.696	.131	.310	-.137	-.211	.229
SYQ2_1	.216	.161	.165	.878	.167	.391	-.064	-.241	.215
SYQ3_1	.205	.115	.157	.819	.054	.441	-.05	-.212	.155
SYQ4_1	.251	.165	.161	.889	.146	.426	-.056	-.198	.189
SYQ5_1	.13	.149	.101	.767	.053	.366	-.105	-.212	.218
SYQ6_1	.256	.175	.200	.874	.18	.389	-.099	-.243	.285
T1_1	.158	.173	.065	.103	.865	.269	-.189	-.309	.170
T2_1	.189	.152	.063	.150	.880	.279	-.199	-.362	.190
T3_1	.235	.150	.023	.184	.844	.245	-.245	-.346	.193
T4_1	.159	.124	.075	.074	.553	.150	-.076	-.225	.194
T6_1	.074	.119	.015	.024	.517	.140	-.135	-.051	.095
U1_1	.301	.429	.215	.446	.241	.918	-.248	-.354	.399
U2_1	.281	.392	.263	.456	.285	.906	-.214	-.359	.320
U3_1	.246	.355	.262	.401	.283	.914	-.255	-.359	.320
U4_1	.293	.302	.225	.434	.291	.897	-.218	-.326	.327
U5_1	.255	.351	.304	.413	.267	.910	-.232	-.323	.314
U6_1	.318	.376	.220	.468	.279	.926	-.223	-.398	.382
U7_1	.255	.299	.250	.363	.240	.857	-.163	-.330	.337
UI1_1	-.157	-.303	-.031	-.040	-.223	-.196	.755	.294	-.156
UI2_1	-.112	-.379	.013	-.118	-.169	-.195	.854	.174	-.168

	IQ	NB	SEQ	SYQ	T	U	UI	UR	US
UI3_1	-.127	-.456	-.073	-.072	-.190	-.237	.866	.285	-.178
UI5_1	-.142	-.352	-.014	-.053	-.174	-.216	.841	.210	-.137
UI6_1	-.099	-.384	-.020	-.110	-.145	-.179	.857	.225	-.162
UI7_1	-.187	-.271	-.058	-.120	-.274	-.216	.705	.294	-.217
UI8_1	-.166	-.312	-.034	-.035	-.235	-.192	.750	.3	-.163
UI10_1	-.108	-.334	-.051	-.107	-.131	-.163	.816	.179	-.141
UR1_1	-.329	-.264	-.112	-.271	-.302	-.359	.263	.873	-.310
UR2_1	-.292	-.238	-.047	-.218	-.303	-.324	.267	.905	-.338
UR3_1	-.301	-.225	-.113	-.210	-.345	-.337	.255	.854	-.266
US1_1	.128	.318	.209	.178	.211	.291	-.199	-.243	.789
US3_1	.173	.169	.212	.179	.098	.216	-.069	-.180	.483
US4_1	.185	.306	.223	.212	.158	.306	-.192	-.272	.784
US5_1	.249	.323	.219	.198	.194	.241	-.154	-.261	.822
US6_1	.223	.412	.278	.215	.175	.307	-.175	-.292	.822
US7_1	.311	.299	.265	.206	.186	.353	-.118	-.315	.795

Note: IQ - Information Quality; NB – Net Benefits; SEQ - Service Quality; SYQ - System Quality; T - Training; U - Use; UI - User Involvement; UR - User Resistance; US - User Satisfaction.