

FACTORS AFFECTING SUCCESSFUL IMPLEMENTATION OF GOVERNMENT FINANCIAL MANAGEMENT INFORMATION SYSTEM (GFMIS) IN JORDAN PUBLIC SECTOR: A PROPOSED FRAMEWORK

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Abstract: *GFMIS was initiated by the Government of Jordan (GoJ) in 2010 to replace a 'closed' financial management system that was previously used by the government and its agencies. Despite its potentials to enhance the government's financial management efficiencies and effectiveness, GFMIS has encountered several user-related issues, in which if not addressed appropriately, will affect use behaviour, intention to use, continuous usage, the level of satisfaction of the system users, and ultimately the success of GFMIS. In addressing these issues, this paper proposes a framework to investigate factors influencing the successful implementation of GFMIS from the perspective of Jordanian public employees. The proposed framework adapts DeLone and McLean's information system (IS) success model; the most cited model to explain IS success, by linking use behaviour, user satisfaction, and net benefit. Via far-reaching literature survey, this paper presents an empirically-based conceptual discussion to address the identified GFMIS research problems. The proposed framework theorises that information quality, system quality, service quality, user resistance, training, and user involvement are the factors that potentially enhance the net benefit of GFMIS in Jordanian public sector, and consequently guarantee successful GFMIS implementation. This study extends the current body of knowledge in IS implementation by clarifying issues related to theoretical and practical aspects of GFMIS research. Also, the study assists stakeholders and policymakers of developing nations on ensuring successful GFMIS. To provide more meaningful insight, the proposed framework will be empirically solidified via collection and analysis of the relevant data.*

Keywords: GFMIS, IS Success Model, Net Benefits, GoJ.

Introduction

In 2009, the Jordanian government commenced its second fiscal reform project (FRP II), which was an offshoot of the United States Agency for International Development (USAID) project. The initiative comprises of six project components, in which one of the projects was the government financial management information system (GFMIS). GFMIS consolidates accounting and financial information from all ministries, departments, and agencies (MDAs) under single network (server) that is controlled and managed by Ministry of Finance (MoF) (USAID, 2014; Youssef & Alsharari, 2017). Besides, GFMIS was designed to completely automate budget preparation, budget execution, and financial reporting (Dener, Watkins, & Dorotinsky, 2011; Shannak, 2015). Therefore, the adoption of GFMIS has tremendously improved the government's and employees' performance (Shannak, 2015).

Nevertheless, GFMIS implementation has encountered several user-related issues that require immediate attention (USAID, 2014). These issues, if not handled properly, would adversely affect use behaviour, intention to use, continuous use, and ultimately, user satisfaction of the system (Petter, DeLone, & McLean, 2013). Among the challenges faced by GFMIS users in Jordan are; inadequate incentives, lack of support, resistance to change, lack of awareness, education level of the system users, and insufficient provision of system's training (Shannak, 2015; USAID, 2014; USAID, 2013). Moreover, the increased number of users over time placed even greater burden to the GFMIS system. Thus, the system needs further hardware upgrade to correspond to the increased number of users (USAID, 2014).

These challenges ultimately affect use and user satisfaction of this system. This concern corresponds to the claim that the use and user satisfaction remain to be the two most essential criteria in determining IS success 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 eventually use the system.

Despite considerable studies focusing on GFMIS in Jordan (e.g., Sawalha & Abu-Shanab, 2015; Shannak, 2015; Youssef & Alsharari, 2017), researchers have yet to study the effects of technological-related factors (i.e., information quality, system quality, and service quality) on the GFMIS use, user satisfaction, and ultimately the net benefit. Extending the present knowledge on GFMIS, this paper aims to examine the interrelationship among the technological-related factors, GFMIS use, user satisfaction, and net benefit. The findings of the study would facilitate greater understanding of the factors that determine user behaviour and user satisfaction, especially from an individual level perspective.

In achieving the objective of the current study, an updated IS success model by DeLone and McLean's (2003) is adopted and expanded. The model has been extensively adopted to explain the successful implementation of various IS solutions by linking use behaviour, user satisfaction, and net benefit (Petter, DeLone, & McLean, 2008, 2013; Urbach & Muller, 2012). The model has

attracted substantial revisions and extensions ever since it was created (Agbabiaka & Ugaddan, 2016; DeLone & McLean, 2016).

Even though some prior studies have examined various factors (e.g., information quality, system quality, service quality, training, user involvement, and user resistance) that potentially influence IS usage, no known research has incorporated these factors in a single model. Hence, the present study intends to incorporate these factors in a single model to assess the intricate relationships among those factors and its impact to net benefits of GFMIS as perceived by the Jordanian public sector's employees.

More specifically, this study extends the IS success model by incorporating three relevant variables (i.e., training, user involvement, and user resistance). This study anticipates training as a viable moderator to explain: (i) the relationship between GFMIS use and net benefit, and (ii) the relationship between user satisfaction and net benefit. To expand the model further, this study proposes user involvement as a moderating factor between user satisfaction and net benefit. Finally, this present study anticipates a direct relationship between user resistance and GFMIS user satisfaction.

This paper comprises of five interlinking sections. The discussion in this section has signified vital issues relating to the GFMIS success that leads to the research objective. The subsequent sections elaborate relevant literature review, the determinants of successful GFMIS using IS success model, and the proposed research framework. The third section illustrates the proposed research method followed by an instrument development. Meanwhile, the final section offers the conclusion of the study.

Literature Review

Considering the discerned issues indicated in the previous section, this section reviews the extant literature to substantiate the issues raised and then addresses them accordingly. This section comprises of the following discussions:

- DeLone & McLean's IS success model,
- Key determinants of successful GFMIS using IS success model, and
- Proposed research framework.

DeLone & McLean's IS Success Model

IS success model (DeLone & McLean, 1992) was initially introduced to provide a comprehensive and extended definition of IS success. Chiu, Chao, Kao, Pu, and Huang (2016), and Petter and McLean (2009) posited that this phenomenon was invoked from 1981-1987, which led to the creation of IS success classification by DeLone and McLean (1992). Despite various models available in measuring the success of ISs, IS success model becomes the most prominent model because it offers a well-established guideline and comprehensive framework (Bossen, Jensen, & Udsen, 2013).

Later, DeLone and McLean (2003) proposed a revised IS success model in responses to the strengths, weaknesses, and criticisms reported in the earlier model (e.g., Pitt, Watson, & Kavan, 1995; Seddon, 1997; Seddon, Staples, Patnayakuni, & Bowtell, 1999). The primary difference between the original and an updated model is the inclusion of service quality, which represents the

significance of service and support in a given successful IS (Urbach & Müller, 2012). In addition, intention to use has been made to measure use, while individual impact and organisational impact are collapsed into one construct “net benefits”. Wang and Liao (2008) suggested that research based on e-Government system (IS applications) can be done using the updated IS success model. Thus, it is imperative to conduct a research on the success of IS in the developing nations, like Jordan, by adopting and expanding the updated IS success model to explain the variations in end-user satisfaction and successful use of GFMIS in the context of Jordan.

Key Determinants of Successful GFMIS Using IS Success Model

Relationship between Information Quality and Use

Information quality encompasses the necessary features of an IS output (Petter et al., 2008). It concerns the information quality as produced by the system and its usefulness to the user (Urbach & Müller, 2012). Information quality is crucial construct in the IS success model due to its positive effect on usage (Wang & Wang, 2009) and has a substantial impact on organisational performance (Petter et al., 2013).

A considerable number of studies (e.g., Aldholay, Isaac, Abdullah, & Ramayah, 2018; Laumer, Maier, & Weitzel, 2017; Stefanovic, Marjanovic, Delić, Culibrk & Lalic, 2016) reported a positive consequence of information quality on the use of ISs. In the Jordanian context, Al-Shibly (2014) argued that to increase the net benefit of the system, organisations need to develop an IS with preferable technological factors, which, in turn, will influence employees usage behaviour. Owing to the above discussion, the present study proposes that:

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

Relationship between Information Quality and User Satisfaction

Rana and Dwivedi (2018) and Wang and Yang (2016) have indicated a positive relationship between information quality and user satisfaction. The quality of the information made available strengthens users’ confidence and assists them in using the IS towards achieving organisational benefits (Bradford & Florin, 2003). Furthermore, the fundamental core of IS is to manage information and to provide employees with the information they need (Petter, DeLone, & McLean, 2012). Moreover, information quality represents a crucial element that enhances user satisfaction and information relevance (DeLone & McLean, 2016). Given the above explanation, the present study postulates that:

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

Relationship between System Quality and Use

To ensure the success of an e-Government system, authorities involved need to guarantee better usability and user-friendliness of an IS application (Stefanovic et al., 2016). IS applications that adequately meet users’ requirements ensure a higher level of satisfaction that later promotes greater use of the IS applications (Ghobakhloo & Tang, 2015). In short, this study predicts that higher system quality leads to greater use of the system (DeLone & McLean, 2016) as proposed in the following hypothesis:

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

Relationship between System Quality and User Satisfaction

As DeLone and McLean (1992; 2003) posited, any IS that contains quality features, e.g. timeliness, accurate, and efficient ensures greater user satisfaction and thus to continue using the IS. In this respect, system quality does not only guarantee ease of use, system reliability, and flexibility of a given system (DeLone & McLean, 2016; Petter et al., 2013), but do also enhance individual user's satisfaction (Laumer et al., 2017; Tam & Oliveira, 2017). Existing studies (see, for example, Wang, Zhang, Song, & Ren, 2014) discovered a positive relationship between system quality and user satisfaction. Given the above discussion, the present study postulates that:

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

Relationship between Service Quality and Use

Service quality denotes the quality of support received by the system users while dealing with IS department and IT support personnel (Urbach & Müller, 2012). As DeLone and McLean (2003) argued, service quality has a considerable effect on customer satisfaction. Hence, lack of service quality and poor user support potentially lead to loss of customers and a decrease in sales. Also, Chiu et al. (2016) found that the system's guide service and prompt replies to users' questions have a positive effect on the intention to use of a given IS. In the context of mandatory systems, positive interactions with IS personnel promote higher user satisfaction in using the system (Gorla, Somers, & Wong, 2010). This is because users are getting more motivated to learn and explore the features and functions available in the system (Hsu, Yen, & Chung, 2015). In response to the preceding discussion, the present study postulates that:

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

Relationship between Service Quality and User Satisfaction

Floropoulos, Spathis, Halvatzis, and Tsipouridou (2010) noted that IS, characterised with excellent service quality, is an essential tool for improving work effectiveness and service quality, simplifying and standardising IS functions, as well as improving decision-making processes. Subsequently, a higher level of service quality will enhance IS usage. Considerable prior works had established evidence on the positive effect of service quality on user satisfaction (see, for example, Gorla & Somers, 2014; Mohammadi, 2015; Wang & Wang, 2009). Hence, the present study proposes that:

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

Relationship between User Resistance and User Satisfaction

In a closed system, people tend to think of being inhibited by the system, which unavoidably leads to system resistance (Zhang, Lee, Huang, Zhang, & Huang, 2005). Hence, user resistance in IS

becomes an adversative reaction, or the disapproval of users to perceived change resulted from the implementation of a new IS (Kim & Kankanhalli, 2009). User resistance is a crucial factor to deal with owing to the variations in technical and social systems outcomes (Haddara & Moen, 2017). Users who resist to the new IS potentially cause budget overruns, an extension of project duration, and underutilisation of the new system, which subsequently affect user satisfaction (Adeleke, 2016; Haddara & Moen, 2017). In a similar respect, Jiang, Muhanna, and Klein (2000) found that user resistance negatively affects acceptance across various system types. Likewise, Choi, Yun, Kim, and Park (2014), who assessed the effect of doctors' resistance on the success of the Drug Utilisation Review system, reported a negative association between doctors' resistance and user satisfaction. Following similar arguments, the present study postulates that:

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

Relationship between Use and User Satisfaction

In the IS success model, "use" and "user satisfaction" are highly interconnected (DeLone & McLean, 2003). Ideally, positive experience while using IS potentially leads to greater user satisfaction in a causal sense. Similarly, increased "user satisfaction" will lead to increased "intention to use," and, thus, "use" (DeLone & McLean, 2003). Conversely, use of the poor-quality system would cause more dissatisfaction and negative net benefits (DeLone & McLean, 2003). Hence, user satisfaction mainly concerns on the degree of user satisfaction with the outcomes of their experience using the system (Petter et al., 2008). Evidence from the past studies have shown that the model of intention to use/usage was beneficial in finding a positive influence on user satisfaction (e.g., Aldholay et al., 2018; Rana & Dwivedi, 2018; Stefanovic et al., 2016; Wang & Liao, 2008; Wang & Wang, 2009). Thus, the present study hypothesises that:

H8 : There is a positive relationship between use and user satisfaction on the use of GFMIS in Jordanian public sector.

Relationship between Use and Net Benefit

System usage is commonly accepted as a valuable proxy measure of IS success (Doll & Torkzadeh, 1988). While system use is an outcome of better technological factors, system usage behaviour is an important predictor of net benefit in the organisation. DeLone and McLean (2003) argued that increased IS use yields greater benefits. The above argument leads to the next hypothesis:

H9 : There is a positive relationship between use and net benefit on the use of GFMIS in Jordanian public sector.

Relationship between User Satisfaction and Net Benefit

In the present study, user satisfaction means the difference between the actual and expected benefits (Chiu et al., 2016). While, net benefit indicates the level to which IS is contributing to the successful performance of an individual (Gable, Sedera, & Chan, 2008), such as time-saving, increased productivity, improved job performance, and jobs get easier (Urbach, Smolnik, & Riempp, 2010). Several studies (see, for example, Balaban, Mu, & Divjak, 2013; Stefanovic et al., 2016; Wang & Liao, 2009) remarked strong support of user satisfaction on net benefit.

Following prior studies, 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 (Holsapple, Wang, & Wu, 2005; Stefanovic et al., 2016). Hence, the benefits obtained from the system likely increases as a result of greater employees satisfaction on the e-government system as described by the following hypothesis:

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

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

Floropoulos et al. (2010) posited that despite its potential benefits, e-government programs are not well-accepted without adequate provision of training to its users. An effective training program on a system is expected to improve its usage and user satisfaction (El-Hoby & Ibrahim, 2017). Having a greater understanding of how the system functions, the tendency of system use likely increases and subsequently transforms into a net benefit. Norfazlina, Akma, Adrina, and Noorizan (2016) suggested that training program should be provided by the organisation to mitigate the problem associated with the complexity of IS and high task demands that exceed the users' attention so that it would not adversely affect user satisfaction and the consequent net benefit.

Review of existing literature also underscores the moderating role of training in the IS research field. Ahearnea, Jelinekb, and Rapp (2005), for example, signified that the use of Sales Force Automation tools could enhance employee effectiveness and efficiency under the conditions of adequate training. In contrast, Rouibah, Hamdy, and Al-Enezi (2009) found an indirect effect of training availability on user satisfaction. Meanwhile, Norfazlina et al. (2016) indicated that the IS user satisfaction could enhance net benefit (as measured by task productivity) under conditions of user training. Therefore, this study proposes that:

H11 : Training moderates the relationship between use and net benefit of GFMIS in Jordanian public sector.

H12 : Training moderates the relationship between user satisfaction and net benefit of GFMIS in Jordanian public sector.

Moderating Effect of User Involvement on the Relationship between User Satisfaction and Net Benefit

Existing literature has indicated that system use can be improved through a higher level of user involvement in IS development and deployment (Ghobakhloo & Tang, 2015). User involvement has been used in prior studies related to input and output design (Zaied, 2012) and system testing and evaluation (Sappri, Baharudin, & Raman, 2016). Several studies had reported the influence of user involvement on IS usage (Rouibah et al., 2009; Sappri et al., 2016). Meanwhile, Sappri and Baharudin (2016) argued that users who involve in IS would develop a positive attitude and perception of its usefulness, thereby increasing their satisfaction towards the system. On another study, Sappri et al. (2016) found that user involvement moderates positively on the relationship between user satisfaction and net benefit. Following Sappri et al. (2016), the present study proposes that:

H13 : User involvement moderates the relationship between user satisfaction and net benefit of GFMIS in Jordanian public sector.

Proposed Research Framework

Based on the exposition in the preceding sections, this work offers a conceptual model that incorporates all factors affecting net benefit in a single research framework as depicted in Figure

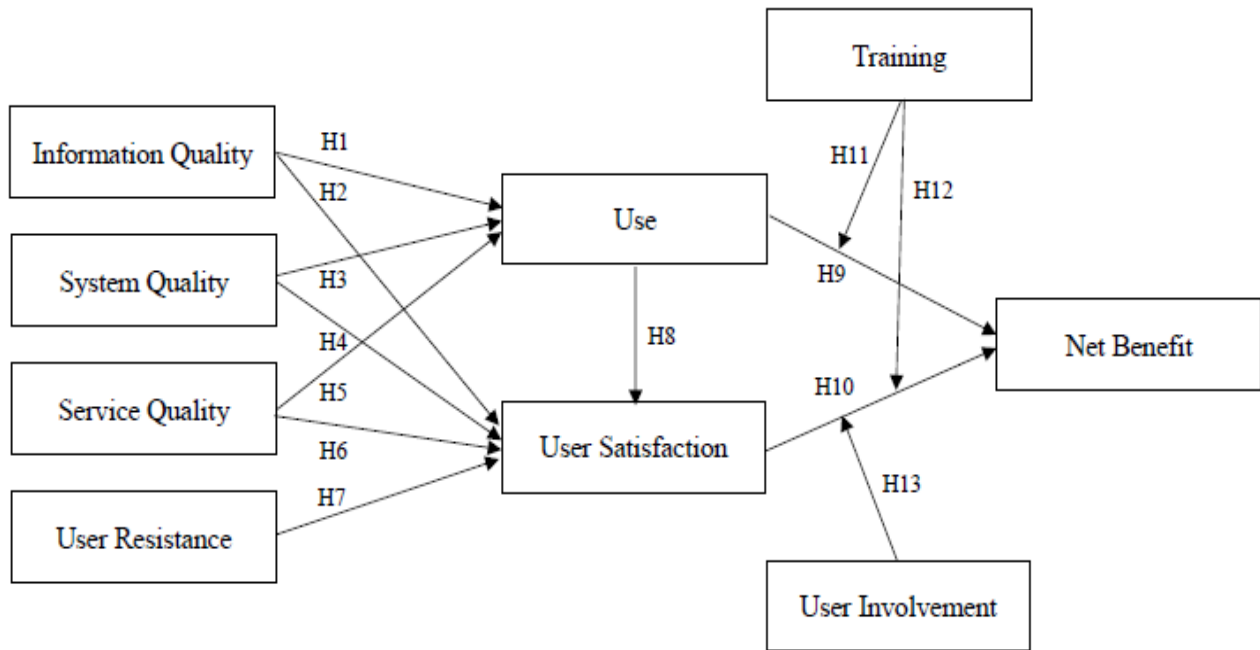


Figure 1: The Proposed Conceptual Research Framework

The proposed conceptual framework expands the updated IS success model by incorporating three relevant variables. First, the literature review indicates none of the existing studies on GFMIS and the studies adapting an updated IS success model that has 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 the training is among the critical success factors for an IS implementation (Hwang, 2014; Hwang, Lin, & Lin, 2012), this study anticipates training as a viable moderator to explain the relationships between GFMIS use and user satisfaction on the net benefit. Secondly, to expand the model further, this study proposes user involvement as a moderating factor between user satisfaction and net benefit. As Sappri and Baharudin (2016) mentioned, users who involve in IS have positive attitude and perception of its usefulness, thereby increasing their satisfaction towards the system. In a similar vein, other researchers also emphasise the importance of both top management and employees at different stages of IS implementation (Ghobakhloo & Tang, 2015; Sappri et al., 2016). Finally, the present study examines the direct relationship between user resistance and user satisfaction. Such test is a salient effort as resistance to use of IS causes underutilisation of the system, thus, affecting 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).

Proposed Method

The propositions and model set out above will be tested empirically. This study is going to employ a quantitative research approach to examine the structural relationship among the variables indicated in the research model; information quality, system quality, service quality, user resistance, training, user involvement, use, user satisfaction, and net benefit. The hypotheses of this study will be tested using Partial Least Squares (PLS) path modelling. This study proposes a cross-sectional design by obtaining the data from the respondents at once. The collected data will be statistically subjected to analysis and interpretation to generate conclusion or make necessary inferences 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, 2013).

In line with the previous studies on IS success (e.g., Aldholay et al., 2018; Rana & Dwivedi, 2018), this study considers survey questionnaire for data collection purpose. The questionnaire is an appropriate approach to provide an answer to the research objectives because of its wide acceptability for data collection that entails large population, which is difficult to observe directly (Keeter, 2005).

The proposed population of interest would be all GFMS users in Jordanian public sector, regardless of their occupation or job description. Therefore, the respondents of this study involve the employees who are currently working in the GoJ ministries and institutions who are using GFMS in their activities. Since the target respondents are the end users of GFMS, the unit of analysis of this study is, therefore, individual.

Instrument development

This study considers a self-administered questionnaire survey instrument as a data collection approach. The questionnaire comprises of two parts. The first part assesses users perception on all the primary constructs, namely; information quality, system quality, service quality, user resistance, user involvement, training, use, user satisfaction, and net benefits. Meanwhile, the second part requests for respondent's profile, i.e. gender, age, qualifications, experience, job description, and workplace.

The original items for each variable were adapted from published literature to ensure its content validity, but being modified accordingly to fit the specific context of GFMS in Jordanian public sector. The constructs will be measured using a 7-point interval scale.

Conclusion

The current study focuses on the success of GFMS in Jordanian public sector. The model proposed in this work is theorised based on the far-reaching survey of the existing literature. The model hypothesises that information quality, system quality, service quality, user resistance, training, and user involvement are the factors that potentially enhance use, user satisfaction, and net benefit of GFMS in Jordanian public sector, and ultimately guarantee the success of GFMS. Thus, data are to be collected from the employees in all ministries and institutions who are using GFMS.

This study extends the present literature of IS implementation and success. In this study, issues related to theoretical and practical aspects of GFMS research were explicated. Overall, it has been theoretically established that information quality, system quality, service quality, user resistance, training, and user involvement are the factors that influence GFMS success in Jordanian public

sector. On the practical aspect, the outcome of this work could be a useful guideline for various stakeholders and policymakers in a developing nation on ensuring GFMIS success. Nevertheless, since the current study is a conceptual work, the proposed model can be empirically solidified by appropriate data collection and analysis.

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