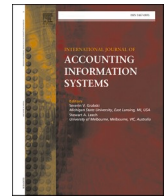




ELSEVIER

Contents lists available at [ScienceDirect](https://www.sciencedirect.com)

# International Journal of Accounting Information Systems

journal homepage: [www.elsevier.com/locate/accinf](http://www.elsevier.com/locate/accinf)

## Development and validation of an improved DeLone-McLean IS success model - application to the evaluation of a tax administration ERP

Godwin Banafo Akrong<sup>a,b,\*</sup>, Shao Yunfei<sup>a,b</sup>, Ebenezer Owusu<sup>c</sup>

<sup>a</sup> School of Management and Economics, University of Electronic Science and Technology of China, Chengdu 611731, China

<sup>b</sup> Center of West African Studies, University of Electronic Science and Technology of China, Chengdu 611731, China

<sup>c</sup> Department of Computer Science, University of Ghana, Ghana

### ARTICLE INFO

#### Keywords:

Enterprise Resource Planning systems  
DeLone & McLean IS success model  
Information systems  
Organizational climate  
Structural equation modeling

### ABSTRACT

Enterprise resource planning (ERP) is critical to an organization's success. However, the factors that contribute to the success and usage of these ERP systems have received little attention. This study developed and validation of an improved DeLone-McLean IS success model. Additionally, we examined the factors which influence ERP system usage, employee satisfaction, information quality, service quality, and system quality, as well as the factors that influence the system's overall success. The proposed model is based on a mixed-methods case study (MM-CS). The results show that the proposed model significantly measures the success of an ERP system. The organizational climate, the information quality, the system quality, and the service quality all have an impact on the usage of an ERP system. The proposed model also shows that the use of an ERP system, training and learning, and the three information (IS) quality constructs are all significant predictors of user satisfaction. The results also indicate that gender and years of ICT use on the path of ERP users have a moderating effect on the relationship between teamwork & support and use.

### 1. Introduction

Current trends in technology, have aided governments and businesses across the globe to use advance methods to generate income, simplify services for people, and reduce the workload on employees delivering these services. As a result, governments in both developing and developed countries have adopted enterprise resource planning (ERP) systems including modules for tax payer management, tax administration, and internal management processes (Chen et al. 2011).

ERP systems are business management systems that include applications for human resources, financial and accounting, sales and distribution, project management, material management, supply chain management, and quality management (Czekster et al., 2019; Junior et al., 2019). They are built to increase productivity by improving an organization's capacity to generate accurate and timely information throughout the business and all of its supply chain (Hasan et al., 2019). These attributes also support the tax ERP module, which helps in tax payer registration, accounting system, revenue accounting system, tax compliance, return filing and processing, e-government, taxes, duties, and VAT, and management reporting (AlBar & Hoque, 2019). With these features, ERP systems have

\* Corresponding author.

E-mail addresses: [godwinbanakrong@std.uestc.edu.cn](mailto:godwinbanakrong@std.uestc.edu.cn) (G. Banafo Akrong), [shaoyf@uestc.edu.cn](mailto:shaoyf@uestc.edu.cn) (S. Yunfei), [ebeowusu@ug.edu.gh](mailto:ebeowusu@ug.edu.gh) (E. Owusu).

contributed significantly by increasing productivity and improving access to timely and accurate information (Menon, 2019). ERPs have also enhanced workflow, reduced reliance on paper (Moh'd Anwer, 2019), knowledge sharing, tight control, and automation of business processes by coordinating a variety of systems (Chofreh et al., 2020).

Despite the tremendous benefits of ERP systems, businesses and governments worldwide are wary of adopting them owing to their complexity and high failure rate. A robust model for measuring ERP system success is required to assist businesses to assess the system's success. Over the decades, the DeLone and McLean (1992, 2003) IS success model has been significant in measuring the success of information systems (IS). However, a thorough literature analysis (see Table 1) reveals that researchers have used their model to measure the success of an ERP system while ignoring certain critical success criteria for its implementation. Although some of these factors are used as items to assess the constructs in their model, they have not gotten the required attention (see Fig. 4a-g). The emphasis has often been on job performance, ease of use, accuracy, comprehension, up-to-date, responsiveness, frequency of use, overall satisfaction, job effectiveness, and task innovation. We argue that overlooking the elements for measuring teamwork & support, training & learning, and role clarity do not help in defining the system's overall success at the individual or the organizational level because these attributes play an integral role in successes. Thus, in this current study we propose that these attributes must be included as key components in the evaluation of the success of an ERP and the result of the study clearly supports that postulate.

Recently, Barth and Koch (2019) interviewed CEOs, CIOs, ERP consultants, and project managers who had just upgraded their companies' ERP systems. They highlighted 14 key criteria for ERP success, with support and ERP teamwork ranking in the top five. They affirm that support was required due to the inability to build internal know-how in some areas. *Teamwork*, for instance, as we postulate, is found unavoidable since ERP adoption and upgrading alters end-user procedures and adds new features. It is required to minimize employee opposition and promote adherence to the system. Further study by Vargas and Comuzzi (2020) indicates that when comparing the variables affecting ERP systems in the service and manufacturing industries, *support* accounts for 87 % in the service sector and 31 % in the manufacturing industry. In the service sector, role clarity and goals accounted for 91 % of success, whereas in manufacturing, they accounted for 52 % of success. User training and learning accounted for 93 % of success in the service sector and 67 % for manufacturing. Thus this study paints a clear picture that, it is critical to pay good attention to role clarity, support, teamwork, user training and learning when evaluating the success of every ERP system. Interestingly, Reitsma and Hilletofh (2018) also affirm strongly that the importance of training and learning, as well as teamwork, in the success of an ERP is a must venture. The proposed factors (training and learning, teamwork and support, and role clarity) are merged into one construct termed organizational climate in this study.

Organizational climate, according to Iljins et al. (2015), Bahrami et al. (2016) and Ryu et al. (2020), reflects the state of the organization's culture and has a direct impact on employee motivation to use an ERP. The common views of organizational rules, practices, and processes are also described as organizational climate (Reichers & Schneider, 1990). As a result, it may be ascribed to a collection of organizational climate characteristics that are seen directly or indirectly by workers and are thought to be a significant factor in affecting employee behavior. If not managed correctly, they have the potential to influence the usage and satisfaction of a tax

**Table 1**  
Reviewed literature.

Study	Region	Information System	Method	Theory base	N	Respondents
Veeramootoo et al. (2018)	Mauritian	E-filing system	Quantitative	Expectancy confirmation theory/ DeLone and McLean	645	Users
Chen et al. (2019)	Taiwan	E-government system	Quantitative	IS success model	592	Users
Wang and Teo (2020)	China	M-government	Quantitative	DeLone and McLean's model	286	Citizens
Hsu et al. (2015)	Taiwan	ERP	Quantitative	DeLone and McLean's model	151	Users
Stefanovic et al. (2016)	Serbia	E-government	Quantitative	DeLone and McLean's model	154	Employees
Chen et al. (2015)	Philippine	Online Tax Filing System	Quantitative	IS Success Model	234	Users
Costa et al. (2016)	Portugal	ERP	Quantitative	DeLone and McLean's model	155	Employees
Chiu et al. (2021)	Shanghai	Augmented reality retail applications	Quantitative	DeLone and McLean's model	426	Users
Al-Okaily et al. (2021)	Jordan	Enterprise systems	Quantitative	IS success model	208	Users
Hariguna et al. (2019)	Indonesia	E-government	Quantitative	DeLone and McLean's Model	159	Users
Roky and Al Meriough (2015)	Morocco	ERP	Quantitative	DeLone and McLean's model	60	Users
Costa et al. (2020)	Portugal	ERP	Quantitative	IS success model	221	Students
Almajali and Tarhini (2016)	Jordan	ERP	Quantitative	IS success model	175	End- users
Al-Jabri and Roztocki (2015)	Arabia	ERP	Quantitative	IS success model	104	Users
Mellouli et al. (2020)	Tunisia	E-government	Quantitative	DeLone and McLean's model	121	Employees
Ruivo et al. (2014)	Portuguese	ERP	Quantitative	Technology organization environment (TOE) and resource-based view (RBV) theory	134	Firm executives
Al-Okaily et al. (2019)	Jordan	Accounting Information System	Quantitative	DeLone and McLean's model	117	Chief Finance Officer

ERP system by employees of a company. Organizational climate should be included in the evaluation of the success of such systems by improving on the DeLone and McLean (1992; 2003) IS success model, to help understand the impact these climate factors have on the overall success of the IS system. The present study therefore, proposes an improved model based on the traditional DeLone and McLean (1992; 2003) IS success model for measuring the overall success of an ERP system that takes organizational climate values into account and may be used to assess the success of a tax ERP. We also evaluated the factors that influence the use of a tax ERP system, employee's user satisfaction, information quality, service quality, and system quality, as well as the factors that influence the system's overall success.

The study adds to literature by investigating the influence of organizational climate variables (training & learning, teamwork & support, and role clarity) which has been debated by several researchers by modifying the popular DeLone and McLean's IS success model to accommodate that. The result of the study indeed confirms that these variables are significant in measuring the success of ERP systems.

The next section conducts a literature study and develops hypotheses based on the proposed model. The third section discusses the methodological approaches utilized in the study. Section 4 summarizes the results. Section 5 presents a detailed discussion of the findings, and the conclusion is drawn in section 6.

## 2. Literature review and development of hypotheses

### 2.1. Related models

DeLone and McLean (1992) defined six factors of IS success: *system quality*, *information system*, *use*, *user satisfaction*, *individual impact*, and *organizational impact*; however, these factors were independent of success metrics. Seddon and Kiew (1996) argued that people are more concerned about usefulness than use in DeLone and McLean (1992) model. Seddon and Kiew (1996) further proposed a TAM-like model (Davis, 1989). Seddon and Kiew (1996) suggest that while *use* is discretionary, the variable *use* is acceptable, but when *use* is obligatory, *usefulness* becomes a superior measure of IS success. DeLone and McLean (2003) disagreed with Seddon and Kiew (1996), citing that even under obligatory systems, there is still a degree of flexibility to *use*, as shown in Fig. 1.

DeLone and McLean (2003) revised their model in light of Pitt et al. (1995) suggestion to add *service quality* as a component. *Individual* and *organizational impacts* were combined to create a *net benefit* to facilitate the measurement of benefits at various levels. *Net benefit* was introduced in response to recommendations by Myers and Tonks (1997) and Seddon et al. (1999). The next modification addressed the *use* construct. DeLone and McLean (2003) argued that although *use* precedes *user satisfaction* in a procedural sense, a positive experience with *use* directly results in increased *user satisfaction*. Additionally, they suggested that an increase in *user satisfaction* results in an increase in *intention to use*, which has an influence on *use*. Six variables were added to the revised model. As shown in Fig. 2, the *intention to use* and *use* constructs replaced the initial *use* construct and the *individual impact*, and the *organizational impact* was integrated into a single *net benefit* construct.

### 2.2. The proposed model

For the study, we modified the DeLone and McLean IS success model by incorporating *organizational climate* values and evaluating their impact on the variables that contribute to the adapted ERP system success and use (Fig. 3 shows the proposed model based on DeLone and McLean (1992, 2003)). *Training & Learning* describes the coaching provided, the development of skills, and the learning process users participate in to master the tax ERP systems use. *Teamwork & support* refers to a tax ERP user's capacity to get prompt and decisive assistance from coworkers, service providers, and the IT department. The degree to which goals and objectives, priorities, responsibilities, and information about most departments, as well as the implemented tax ERP system, are clearly spelled out is measured by *role clarity*. The proposed model examined the influence of the three different organizational climate values (*Training & Learning*, *Teamwork and Support*, and *Role Clarity*) on *system quality*, *information quality*, *service quality*, *use*, *user satisfaction*, and *net benefit* (individual and organizational impact).

Based on the exploratory qualitative research conducted in the three study areas, the three organizational climate values were

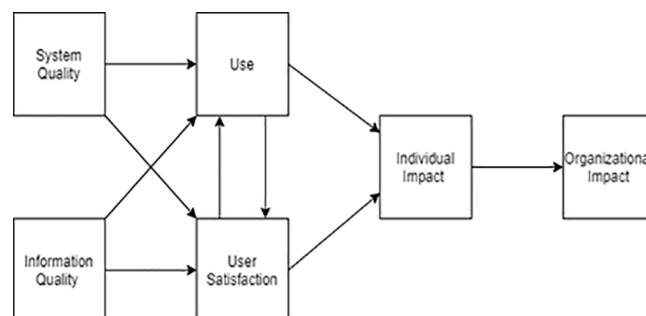


Fig. 1. DeLone and McLean IS success model (1992).

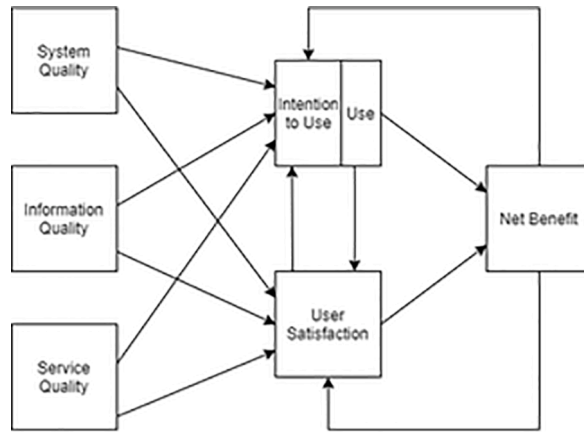


Fig. 2. Updated DeLone and McLean IS success model (2003).

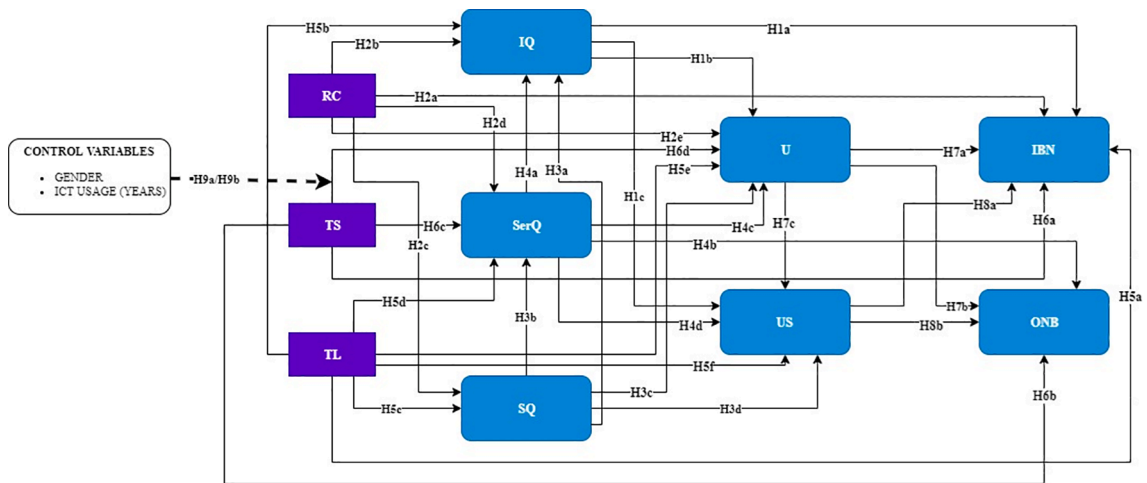


Fig. 3. Conceptual research model.

chosen for the present study. Following the complete implementation of the adopted tax ERP system, the exploratory qualitative study revealed that climate variables among workers had evolved. These identified climate variables have been highlighted as having a significant impact on the adoption and success of an ERP system (Alsharari et al., 2020; Banaeianjahromi & Smolander, 2019; Barth & Koch, 2019; Bhatt et al., 2021; Gavali & Halder, 2020; Nkasu, 2020; Osnes et al., 2018; Vargas & Comuzzi, 2020; Yadav & Joseph, 2020). As a result, they must be fully examined and incorporated in the evaluation of a ERPs success and use.

Also, the original DeLone and McLean IS success model included these climate values in their six constructs, but they were only assessed using a few items in each construct (see Fig. 4a-g). The adopted organizational climate values for the present study have garnered minimal attention when researchers are assessing the success of an information system, according to a review of literatures that used the DeLone and McLean IS success model (see Table 1). As a result, we proposed that organizational climate be completely included as a construct in the original DeLone and McLean IS success model, as they have been proven to have an impact on the implementation and assessment of an IS success. Organizations that want to measure the success of their deployed information systems (IS) at both the individual and organizational levels will be missing out if these organizational climate values are not taken into account.

DeLone and McLean (2003) updated model combined *use* and *intention to use*. Since the enterprise resource planning (ERP) system used in the study was mandatory for employees, the proposed model maintained just the *use* construct. By excluding the *intention to use* construct from the proposed model, the influence of *use* on *user satisfaction* is measured without regard for the influence of *user satisfaction* on *use*. According to DeLone and McLean (1992), both *individual impact* and *organizational impact* result in a *net benefit*. This concept was included in the proposed model to enable the analysis of success on both the individual and organizational levels, although the study placed a greater emphasis on the individual level. Additionally, the proposed model included the influence of *service quality* and *system quality* on *information quality*, allowing for measurement of *information quality* impact on *individual impact* (IBN). We further suggested that *system quality* has an influence on *service quality* and, finally, that *service quality* has an impact on *organizational*

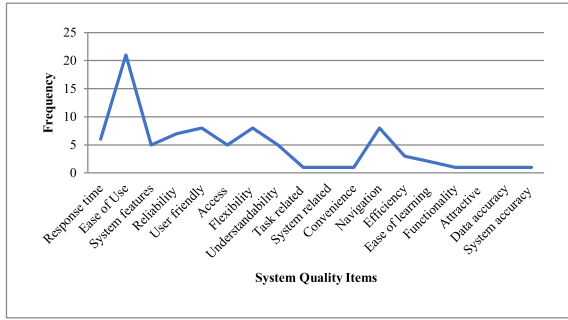


Fig.4. (a) System Quality Items

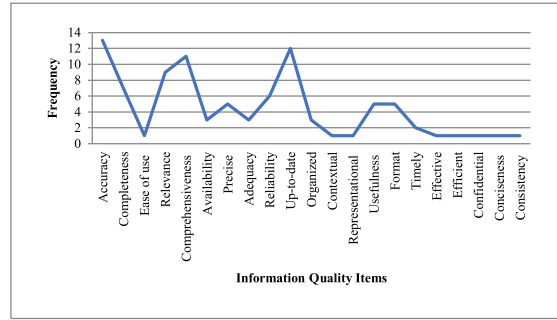


Fig.4. (b) Information Items

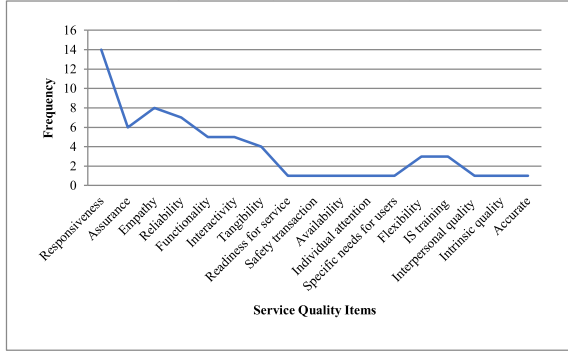


Fig. 4. (c) Service Quality Items

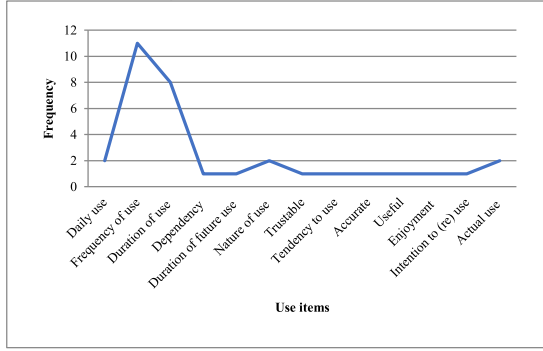


Fig.4. (d) Use Items

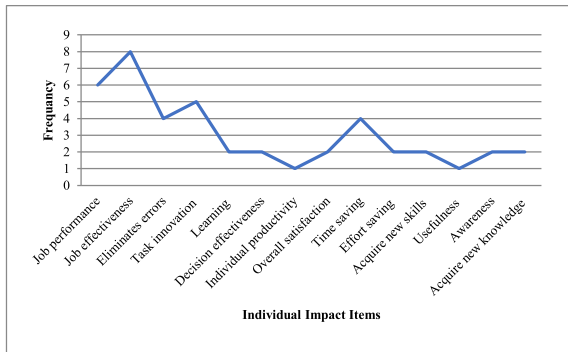


Fig. 4. (e) Individual Impact Items

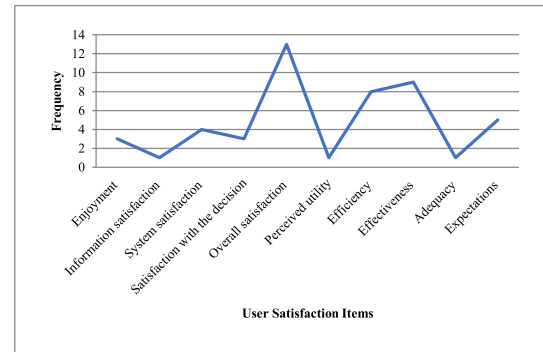


Fig.4. (f) Use Satisfaction Items

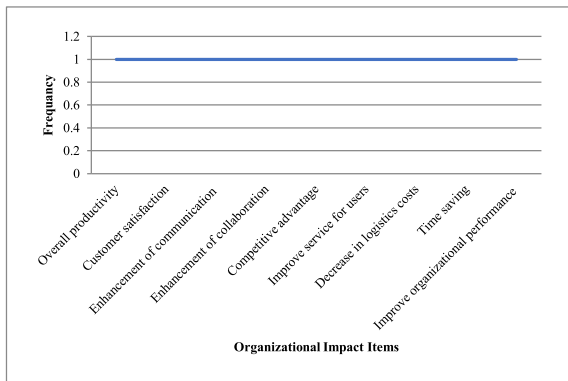


Fig.4. (g) Organizational Impact Items

Fig. 4. (a) System Quality Items. (b) Information Items, (c) Service Quality Items. (d) Use Items, (e) Individual Impact Items. (f) Use Satisfaction Items, (g) Organizational Impact Items.

impact (ONB). The sociodemographic variables “gender” and “years of ICT use” explored the moderating impact of *teamwork and support (TS)* on the use of the study’s obligatory tax ERP system.

### 2.3. Hypotheses development

#### 2.3.1. Information quality (IQ)

Information quality refers to the standard of information produced by an information system. This refers to the data that a tax ERP system may produce while being utilized by employees. Thus, it encompasses metrics focused on the quality of the information produced by the system and its usefulness to the user. Additionally, information quality is strongly related to the content of ERP systems. It has been established that the information quality of an implemented ERP has a significant positive influence on user satisfaction (Arain et al., 2019; Doleck et al., 2019; Hariguna et al., 2019; Sharma & Sharma, 2019; Wang et al., 2019; Albashrawi & Motiwalla, 2020; Wang & Teo, 2020; Al-Okaily et al., 2021; Chiu et al., 2021). Likewise, other studies have established that information quality affects ERP system use if the information generated from an implemented information system is accessible, relevant, timely, secure, reliable, exact, comprehensive, sufficient, and comprehensible (Sebetci & Çetin, 2016; Stefanovic et al., 2016; Tam & Oliveira, 2016; Kuo, 2018; Aldholay et al., 2019; Chen, 2020). Also, the study by Chen et al. (2019) shows that high information quality is positively associated with individual impact variables such as work effectiveness, efficiency, and performance. Therefore, the following hypotheses (H1a-c) are advanced:

- H1a.** Information quality of an ERP influences individual impact.
- H1b.** Information quality of an ERP influences the use of an ERP system.
- H1c.** Information quality of an ERP influences user satisfaction.

#### 2.3.2. Role clarity (RC)

Role clarity refers to a person’s understanding of how an organization expects them to carry out a job. It is assessed by goals, priorities, duties, and understanding of most departments (Furnham & Goodstein, 1997). Role, job, organization, and supervision were used to capture organizational climate in Li et al. (2020) study. They discovered that role clarity is associated with higher work satisfaction and effectiveness. This emphasizes the relationship between role clarity and individual impact. According to Samie et al. (2015), role clarity improves staff efficiency. Clarifying the relationship between the organization’s objectives and performance, providing employees with the latest information needed to do their duties, and defining their roles appear essential for improving employee role clarity and efficiency. Role clarity is also strongly associated with the three IS quality constructs of a tax ERP system. When users of an ERP system are given a clear objective and their duties towards the implemented system are well defined, they tend to know who to contact for system support and assurance (Adil et al., 2021; Yadav & Rangnekar, 2015). Also, role clarity improves information quality and service quality by enabling users to appreciate the system’s features, speed, accuracy, and flexibility (Demoulin & Coussement, 2020; Mukherjee & Malhotra, 2006; Pahi et al., 2020). The system’s users may appreciate the system’s information’s relevancy, timeliness, dependability, and security (Chen et al., 2021; Gavidia et al., 2021; Schnackenberg et al., 2021). Role clarity is also considered to have an impact on ERP system use which leads to the daily use and frequent use of the system. We, therefore, advanced the following hypotheses:

- H2a.** Role clarity is positively related to individual impact.
- H2b.** Role clarity is positively related to information quality.
- H2c.** Role clarity is positively related to system quality.
- H2d.** Role clarity is positively related to service quality.
- H2e.** Role clarity is positively related to the use of an ERP.

#### 2.3.3. System quality (SQ)

System quality refers to an information system’s desired qualities, which include ease of use, system dependability, ease of learning, responsiveness to time, access, convenience, data accuracy, navigation, and system flexibility. These metrics are often used to assess an ERP system’s usability and performance characteristics. Also, a substantial study has been conducted on the relationship between system quality and information quality. The information used by IS users is often generated by information systems (IS), a problem with these systems indicates a potential for a negative impact on information quality (Sebetci, 2018; Veeramootoo et al., 2018). Additionally, Veeramootoo et al. (2018) acknowledge that the three quality constructs of IS success model are related, and that system quality is a strong predictor of information quality. Further, it has been reported that system quality affects the use and user satisfaction. The quality of an information system is determined by how end-users interact with it, and users of an ERP system tend to be satisfied based on system quality attributes such as ease of use, system reliability, ease of learning, and response time (Costa et al., 2016; Al Mulhem, 2020; Mellouli et al., 2020; Salam & Farooq, 2020). Further studies also show that system quality influences how a revenue collection ERP system is used (Doleck et al., 2019) and numerous studies in the IS literature have shown a considerable correlation between system quality and system use (Kurt, 2019; Gaardboe et al., 2017). Therefore, we proposed the following hypothesis (H3a-d).

- H3a.** The system quality of an ERP influences information quality.
- H3b.** The system quality of an ERP influences service quality.
- H3c.** The system quality of an ERP influences the use of an ERP system.
- H3d.** The system quality of an ERP influences user satisfaction.

### 2.3.4. Service quality (SerQ)

The level of service provided by the IS department and IT support staff to users is attributed to service quality. The most widely used measure of service quality is SERVQUAL, and studies indicate that the active involvement of technical personnel is linked to future usage and user satisfaction (DeLone & McLean, 2003; Irawan & Syah, 2017). This is supported by Aldholay et al. (2019) study, which concluded that service quality influences actual usage and user satisfaction, implying that greater ERP system quality in terms of efficacy, satisfaction, flexibility, and sufficient support would result in increased length and frequency of use (Stefanovic et al., 2016). It is also posited that service quality has a significant effect on information quality. This signifies that once IS users get the required assistance, there is a possibility that information availability, relevance, timeliness, security, and dependability will improve (Albshrawi & Motiwalla, 2020; Arain et al., 2019). This, in turn, affects the organization's overall performance and quality improvement (Mellouli et al., 2020). Based on these studies, we propose the following hypotheses.

- H4a.** Service quality of an ERP influences information quality.
- H4b.** Service quality of an ERP influences organizational impact.
- H4c.** Service quality of an ERP influences the use of an ERP system.
- H4d.** Service quality of an ERP influences user satisfaction.

### 2.3.5. Training & learning (TL)

Training and learning focus on the quality of coaching provided, skill development, and the learning process that information system (IS) users go through once an ERP system is implemented. Users of an information system gain from training and learning because it helps them understand the advantages of utilizing the system (Shatat & Dana, 2016). According to Costa et al. (2020) training and learning have a significant effect on individuals. They also established that training is an important component in the success of information systems (IS) and that enterprises that place a greater value on training quantity and quality are more likely to succeed in adopting ERP systems. Almajali et al. (2016) also acknowledges that there is a positive relationship between training and user satisfaction, suggesting that ERP system users need to get relevant training from inside or outside the enterprise to become acquainted with the new operating methods and terminology so that the ERP system does not frustrate them. One of the most essential tasks is for users to learn how to use an ERP system and for users to be trained to utilize the ERP system (Dezdar, 2017). Training may help all users of an ERP system adjust to changes and develop favorable attitudes about the new ERP system. This supports that training and learning have a significant effect on user satisfaction, use, and individual impact (Garg & Sharma, 2020; Nguyen et al., 2020). The quality constructs of an IS success model are also influenced by training and learning (Chohan & Hu, 2020). This shows that in the presence of quality training and corporate learning, tax ERP users value the system's information's availability, relevance, timeliness, and dependability. They also value the system's simplicity of use, features, speed, accuracy, and adaptability (Kaushik & Mishra, 2019). The users of an ERP system benefit from high-quality training and corporate learning because they know how to seek help and deal with problems when they arise. We, therefore, developed the following hypotheses.

- H5a.** Training & Learning is positively associated with individual impact.
- H5b.** Training & Learning is positively associated with information quality.
- H5c.** Training & Learning is positively associated with system quality.
- H5d.** Training & Learning is positively associated with service quality.
- H5e.** Training & Learning is positively related to the use of an ERP.
- H5f.** Training & Learning is positively related to user satisfaction.

### 2.3.6. Teamwork & support (TS)

The ability of ERP system users to operate in teams is critical (Cha et al., 2015). Sanyal and Hisam (2018) suggest that firms should provide employees with the support and teams they need to succeed. Teamwork and support are achieved by collaboration, support, and pressure (Furnham & Goodstein 1997; Hanaysha & Tahir 2016; Caesens et al., 2016). Teamwork and support have been shown to significantly improve information system usage (Costa et al., 2016). Their study indicated that top management support for ERP users affects their use of the system. Almajali et al. (2016) emphasized the need for support and teamwork while implementing an ERP system. Management must not only support the budget but also address employee queries regarding the ERP system. This leads to increased productivity, efficiency, work simplicity, overall success, and quality improvement for system users (Dezdar, 2017). Teamwork and support have a major influence on both individual and organizational impact (Attaran et al., 2019). Some current studies (Addis et al., 2019; Jeyaraj and Zadeh, 2020) concluded that teamwork and support influence ERP system service quality. A successful ERP system requires cooperation, support, and pressure from all parties involved. The following hypotheses are therefore proposed.

- H6a.** Teamwork & support is positively related to individual impact.
- H6b.** Teamwork & support is positively related to organizational impact.
- H6c.** Teamwork & support is positively related to service quality.
- H6d.** Teamwork & support is positively related to the use of an ERP system.

### 2.3.7. Use (U)

The degree to which an information system (IS) is used by its users is represented by the success dimension of use. Measuring the use of an information system is a real phenomenon that may be approached from a variety of perspectives. It is claimed that, in the event of voluntary usage, the actual use of an IS may be an appropriate success metric (Chen, 2020). However, it should be emphasized that IS are required in most companies, and the extent to which they are used is equally important (Aldholay et al., 2018; Tam &

Oliveira, 2016). In this study, the use of a tax ERP is assessed by capturing daily use and frequency of use. According to Chen et al. (2015) and Hsu et al. (2015), the amount of time spent using an information system has a significant effect on both individual and organizational impact. Individual productivity, job effectiveness, task performance, and job simplicity are all influenced by the frequency with which a tax ERP is used, whether daily or frequently, at the individual and organizational levels. The use of an ERP system has also been shown to influence user satisfaction in other studies (Isaac et al., 2019; Kuo, 2018; Stefanovic et al., 2016). This occurs when the system is effective, acceptable, and flexible, and sufficient support is available. Thus, we propose that:

**H7a.** The Use of an ERP influences individual impact.

**H7b.** The Use of an ERP influences organizational impact.

**H7c.** The Use of an ERP influences user satisfaction.

### 2.3.8. User satisfaction (US)

User satisfaction has gained adequate and strong support for significant relationships in the literature on individual impact and organizational impact of the DeLone and McLean IS success model, in addition to actual ERP system usage. According to Aldholay et al. (2018), user satisfaction has a positive effect on performance impact. Their study also indicates that when users of an information system (IS) increase, the frequency and duration of their use of the system and level of satisfaction improve in three areas: efficiency (complete tasks quickly and easily), knowledge acquisition (acquire new knowledge and skills, come up with innovative ideas), and productivity (performance and productivity). Subsequent research corroborates the positive relationship between user satisfaction and individual impact (Chen, 2020; Chiu et al., 2021; Costa et al., 2020). As confirmed by (Mellouli et al., 2020), user satisfaction has a stronger impact on organizational performance. Their study shows that this is because, in a mandatory context of information system use, user satisfaction continues to be the most important surrogate of information systems success. Thus, we propose that:

**H8a.** User satisfaction influences individual impact.

**H8b.** User satisfaction influences organizational impact.

### 2.3.9. Gender and years of ICT usage as a moderating variable

Additionally, we propose that gender and number of years using ICT would moderate the relationships between independent and dependent variables in our proposed model. As shown in previous studies, the gender of respondents has a positive relationship with IS success model constructs (Soliman et al., 2019; Kalinić et al., 2019; Taufiq & Siddiqui, 2020; Melović et al., 2021). Alshurideh et al. (2021) and Lea et al. (2020) both explored ERP systems and highlighted the necessity of accounting for individual characteristics such as gender and experience. Gender is a major mediator in ERP use. Male users of an information system (IS) were better prepared to utilize an IS platform than female users (Ameen et al., 2019). A technical support staff might enhance how users evaluated the quality of the information given on the platform. Camilleri (2019) concluded that demographic factors like gender and experience had a significant impact on users' involvement with e-government systems. It is possible to identify which relationships in the proposed model are moderated by gender and the number of years of ICT use by evaluating the moderating impact of these two variables. Thus, we hypothesized that:

**H9a.** Gender moderates the relationship between teamwork & support and the use of an ERP.

**H9b.** The number of years of ICT usage moderates the relationship between teamwork & support and the use of an ERP.

## 3. Research method and results

The mixed-method case study (MM-CS) technique was utilized in this research. A parent mixed methods approach is used, with the qualitative component consisting of a nested case study. Exploratory qualitative research was conducted at the Ghana Revenue Authority (GRA) offices in three regions. The result showed how employees utilized the implemented tax ERP system (dubbed ERPx) and also identified the appropriate design approach for the research model. In five months later, we deployed questionnaire to 600 ERPx users in person. The Ghana Revenue Authority (GRA) was used as case. The GRA's goal is to guarantee that the tax regulations are followed to give the Ghanaian government a steady source of income. As a result, they have implemented a tax ERP system to aid their operations. Three regions of Ghana were selected for the study because they had the better working force, and their units were in charge of managing the tax module that were in use.

### 3.1. Measurements of the variables

The survey consists of questions that examined the success of ERPx. This corresponded to the interview questions (the administrators interviewed were coded as AD1 and AD2). The questionnaire was designed to utilize survey items used in previous studies to minimize response error (see Table 1). ERPx success was measured using ten constructs. Three of the ten constructs were categorized as organizational climate values (*training and learning, teamwork and support, and role clarity*) (Furnham & Goodstein 1997; Patterson et al. 2004). *Information quality (IQ), service quality (SerQ), system quality (SQ), use (U), and user satisfaction (US)* are the remaining constructs (Petter et al. 2008). The individual impact and organizational impact were used to determine the net benefit.

A seven-point Likert scale was employed, with strongly agree (7), agree (6), slightly agree (5), neither agree nor disagree (4), slightly disagree (3), disagree (2), and strongly disagree (1). The study used five items to assess information quality, including the following statements: "ERPx ensures information availability" and "ERPx provides relevant information." Four items were used to assess system quality and user satisfaction with statements such as "using ERPx is easy for me" and "using ERPx speeds up my job processes". "I find the ERPx interface to be simple to use" and "my experience with ERPx has been satisfactory." Based on prior

research, we allocated two items to the service quality and use constructs. They included statements such as “I always get support for ERPx when I need it” and “I frequently use ERPx for my job.” Three items were used to quantify the individual impact and organizational impact. These items included statements such as “using ERPx increases my workplace productivity” and “using ERPx increases the organization’s overall success.”

For organizational climate, role clarity was measured with five items. With examples, statements such as “I have clear goals and objectives for my job” and those about training and learning, as well as teamwork and support, were assessed using four items each. Additionally, they included example statements such as “I have received the training necessary to utilize ERPx,” and “I get the necessary support when confronted with ERPx challenges.” The interview questions elicited the same factors as those found in the study questionnaire. With questions such as “How well has ERPx aided in the filing and processing of tax returns?” “How readily accessible are ERPx services for your organization?” and “What are some of the advantages of using ERPx in areas such as task performance, efficiency, effectiveness, and overall success?” Table 2 shows the dimensions of the constructs used for the study.

### 3.2. Data collection procedure

Interviews, observations, focus groups, and questionnaires were used to gather data for the study because we foresaw that to gather quality data for the study, we had to adopt multi-faceted approach. Two main deputy administrators who had been responsible for the GRA ERPx implementation, were interviewed to get a better knowledge of the deployed ERPx and to help conceptualizing the study model. The interview questions were open-ended and focused on the factors that influenced the adaptation and modification of the proposed model. Direct observation assisted in understanding the user’s behavior throughout the thirty days period. To collect information on the usage, function, challenges, and benefits of the ERPx, a focus group method was employed. The proposed research model was validated using survey data and findings from an initial interview. The survey incorporated the seven dimensions of IS success as defined by DeLone and McLean (1992; 2003) and Petter et al. (2008). Furnham and Goodstein (1997) and Schneider et al. (1996; 2002) method was used to modify the organizational climate variables.

The study gathered demographic data on ERPx users. The survey was to take a maximum of five minutes to complete. The survey questionnaire was developed and evaluated by four researchers and ten ERPx users from each of the three regions using an interview, observation, and focus group method. Their assessment criteria included comprehension, redundancy, and clarity. Five hundred and fifty-five questionnaires were returned, representing a response rate of 92.5 %. We used the accidental sampling method following COVID-19 guidelines. This approach avoided prejudice. We obtained permission from management before distributing the questionnaire to ERPx users. As Hulland et al. (2018) propose, response bias tests are needed to ensure that the sample is representative. We were able to determine if response bias affected our results by comparing the mean values of survey items from the first 20 % of responses to the mean values of variables from the last 20 % of responses. There were no statistically significant differences across groups, suggesting that no response bias existed. The variance inflation factor (VIF) of the variables was also examined, and the results indicate that multicollinearity does not exist.

### 3.3. Data analysis

The data was analyzed using partial least squares structural equation modeling. When the number of experimental observations is the independent variable, partial least squares (PLS) offers comprehensible and durable equations (Hair et al., 2019). We utilized PLS because it predicts more accurately and consistently when independent variables are correlated rather than orthogonal (Leguina, 2015). As a result, we were able to examine the relationship between organizational climate constructs (teamwork and support, training and learning, and role clarity), system quality, information quality, service quality, use, user satisfaction, individual impact, and organizational impact, using the PLS. This is accomplished in two stages: first, a measurement model is generated, followed by the

**Table 2**  
Dimensions of constructs.

Constructs	Dimension	Authors
Information Quality	Availability, relevance, timeliness, security, reliability	(Iivari, 2005; Rainer and Watson, 1995)
Service Quality	Support, assurance	(Pitt et al., 1995; Chang and King, 2005)
System Quality	Ease of use, system features, speed, accuracy, flexibility	(Gable et al., 2008; Iivari, 2005; McKinney et al., 2002)
Use	Daily use, Frequency of use	(Davis, 1993; DeLone and McLean, 2002; 2003; Petter et al., 2008)
User Satisfaction	Effectiveness, satisfaction, flexibility, adequate support	(Sirsat and Sirsat, 2016; Seddon et al., 1994; Seddon and Kiew, 1996)
Net Benefit (Individual/organizational)	Individual productivity, job effectiveness, task performance, job simplification, overall success, quality improvement	(Sedera and Gable, 2004; Gable et al., 2008; Almutairi and Subramanian, 2005)
Role clarity	Clear goals, responsibilities, use of experience	(Furnham and Goodstein, 1997; Wang et al., 2016; Curmin et al., 2015; Lau, 2015)
Training & Learning	Training for development, training quality, company learning	(Furnham and Goodstein, 1997; Hanaysha and Tahir, 2016; Islam et al., 2015)
Teamwork & Support	Collaboration, support, pressure	(Furnham and Goodstein, 1997; Hanaysha and Tahir, 2016; Caesens et al., 2016)

development of a structural model (Hair et al., 2020). The moderating effects of demographic variables on the various relationships were also examined, although only gender and years of ICT use showed relevance.

## 4. Results

### 4.1. Demographic profile of respondents

The GRA workplace is male dominant (50.8 %) and female (49.2 %). The study's respondents were mostly aged 35 and above (41.1 %). Between 6 and 10 years (47.9 %) and above 10 years (41.8 %) of respondents used ICT. The medium taxpayer group had 43.2 % of the responses, while the audit department had 32.6 %. Greater Accra Region (Accra) (30.6 %) dominated the study.

### 4.2. The measurement model

The indicators used to measure the constructs (outer) include reliability, convergent validity, and discriminant validity. The item loadings were  $>0.5$ , indicating a high degree of reliability. As demonstrated in Table 3, all of the composite reliability (CR) and Cronbach's alpha ( $\alpha$ ) values were  $>0.7$ . The AVE values were similarly higher than 0.5. The reliability and convergent validity test results indicate that the construct variables and indicators employed in the study are valid and reliable for structural model testing. The discriminant validity is shown in Tables 4, 5, and 6. By empirical criteria, this determines the degree to which a construct is really different from other constructs. The cross-loading is shown in Table 4. The discriminant validity of the constructs is shown in Tables 5 and 6.

**Table 3**  
Measurement model.

Constructs	Items	Loadings <sup>a</sup>	AVE <sup>b</sup>	CR <sup>c</sup>	Rho_A <sup>d</sup>
System Quality (SQ)	SQ1	0.845	0.761	0.927	0.902
	SQ2	0.868			
	SQ3	0.877			
	SQ4	0.898			
Information Quality (IQ)	IQ1	0.816	0.638	0.898	0.879
	IQ2	0.842			
	IQ3	0.755			
	IQ4	0.849			
	IQ5	0.723			
Service Quality (SerQ)	SerQ1	0.888	0.771	0.871	0.704
	SerQ2	0.868			
Role Clarity (RC)	RC1	0.881	0.729	0.931	0.908
	RC2	0.862			
	RC3	0.819			
	RC4	0.855			
	RC5	0.850			
Teamwork & Support (TS)	TS1	0.858	0.757	0.926	0.896
	TS2	0.863			
	TS3	0.871			
	TS4	0.888			
Training & Learning (TL)	TL1	0.889	0.769	0.930	0.901
	TL2	0.880			
	TL3	0.867			
	TL4	0.871			
Use (U)	U1	0.943	0.888	0.941	0.874
	U2	0.942			
User Satisfaction (US)	US1	0.871	0.785	0.936	0.910
	US2	0.898			
	US3	0.884			
	US4	0.891			
Individual Impact (INB)	INB1	0.878	0.731	0.89	0.869
	INB2	0.779			
	INB3	0.901			
Organizational Impact (ONB)	ONB1	0.895	0.651	0.848	0.804
	ONB2	0.770			
	ONB3	0.743			

<sup>a</sup>All Item loadings  $> 0.5$  indicate indicator reliability.

<sup>b</sup>All Average Variance Extracted (AVE)  $> 0.5$  as indicates Convergent Reliability.

<sup>c</sup>All Composite reliability (CR)  $> 0.7$  indicates internal Consistency.

<sup>d</sup>All Cronbach's alpha  $> 0.7$  indicates indicator Reliability.

**Table 4**  
Indicator item cross-loading.

Items	IBN	IQ	ONB	RC	SQ	SerQ	TL	TS	U	US
INB1	<b>0.878</b>	0.707	0.129	0.847	0.729	0.238	0.426	0.327	0.741	0.455
INB2	<b>0.779</b>	0.469	0.063	0.422	0.474	0.203	0.282	0.111	0.426	0.172
INB3	<b>0.901</b>	0.611	0.084	0.601	0.558	0.270	0.406	0.217	0.580	0.270
IQ1	0.654	<b>0.816</b>	0.069	0.688	0.654	0.198	0.273	0.221	0.633	0.275
IQ2	0.625	<b>0.842</b>	0.036	0.655	0.613	0.202	0.263	0.146	0.622	0.407
IQ3	0.430	<b>0.755</b>	0.081	0.423	0.384	0.074	0.026	0.078	0.440	0.190
IQ4	0.635	<b>0.849</b>	0.078	0.613	0.596	0.210	0.316	0.221	0.600	0.303
IQ5	0.446	<b>0.723</b>	0.052	0.421	0.415	0.160	0.086	0.106	0.413	0.158
ONB1	0.104	0.053	<b>0.895</b>	0.093	0.100	-0.050	0.071	0.076	0.162	0.006
ONB2	0.078	0.069	<b>0.770</b>	0.089	0.107	-0.016	0.075	0.006	0.119	0.078
ONB3	0.089	0.078	<b>0.743</b>	0.095	0.108	-0.038	0.076	0.044	0.085	0.072
RC1	0.693	0.646	0.080	<b>0.881</b>	0.659	0.203	0.385	0.260	0.640	0.377
RC2	0.648	0.612	0.100	<b>0.862</b>	0.623	0.176	0.372	0.276	0.592	0.377
RC3	0.650	0.588	0.110	<b>0.819</b>	0.637	0.247	0.377	0.221	0.586	0.376
RC4	0.620	0.582	0.089	<b>0.855</b>	0.603	0.167	0.338	0.210	0.552	0.350
RC5	0.658	0.646	0.099	<b>0.850</b>	0.647	0.193	0.323	0.220	0.608	0.342
SQ1	0.540	0.513	0.097	0.591	<b>0.845</b>	0.152	0.376	0.146	0.510	0.283
SQ2	0.594	0.577	0.094	0.622	<b>0.868</b>	0.162	0.347	0.159	0.546	0.274
SQ3	0.646	0.635	0.127	0.649	<b>0.877</b>	0.205	0.309	0.168	0.605	0.337
SQ4	0.673	0.655	0.119	0.721	<b>0.898</b>	0.225	0.341	0.227	0.633	0.380
SerQ1	0.260	0.215	-0.033	0.253	0.198	<b>0.888</b>	0.267	0.130	0.293	0.160
SerQ2	0.229	0.168	-0.048	0.149	0.180	<b>0.868</b>	0.223	0.197	0.290	0.166
TL1	0.401	0.218	0.097	0.344	0.333	0.272	<b>0.889</b>	0.243	0.309	0.475
TL2	0.405	0.216	0.091	0.350	0.304	0.200	<b>0.880</b>	0.174	0.320	0.523
TL3	0.398	0.217	0.058	0.364	0.328	0.214	<b>0.867</b>	0.223	0.305	0.419
TL4	0.362	0.272	0.067	0.414	0.402	0.290	<b>0.871</b>	0.190	0.369	0.505
TS1	0.206	0.148	0.046	0.214	0.126	0.155	0.181	<b>0.858</b>	0.218	0.136
TS2	0.264	0.187	0.082	0.265	0.209	0.100	0.221	<b>0.863</b>	0.236	0.184
TS3	0.211	0.165	0.004	0.220	0.156	0.202	0.218	<b>0.871</b>	0.184	0.123
TS4	0.271	0.201	0.067	0.265	0.207	0.187	0.202	<b>0.888</b>	0.224	0.152
U1	0.695	0.664	0.148	0.645	0.631	0.342	0.359	0.232	<b>0.943</b>	0.373
U2	0.639	0.644	0.152	0.672	0.616	0.283	0.344	0.236	<b>0.942</b>	0.475
US1	0.330	0.324	0.038	0.407	0.331	0.182	0.557	0.146	0.417	<b>0.871</b>
US2	0.328	0.296	0.031	0.353	0.298	0.161	0.485	0.144	0.372	<b>0.898</b>
US3	0.357	0.345	0.067	0.409	0.355	0.167	0.436	0.198	0.415	<b>0.884</b>
US4	0.316	0.268	0.048	0.341	0.322	0.145	0.461	0.121	0.388	<b>0.891</b>

Note: System Quality (SQ); Information Quality (IQ); Service Quality (SerQ); Role Clarity (RC); Teamwork & Support (TS); Training & Learning (TL); Use (U); User Satisfaction (US); Individual Impact (INB); Organizational Impact (ONB).

**Table 5**  
Discriminant Validity (Fornell-Larcker Criterion).

	IBN	IQ	ONB	RC	SQ	SerQ	TL	TS	U	US
IBN	0.855									
IQ	0.715	0.799								
ONB	0.113	0.078	0.805							
RC	0.767	0.721	0.112	0.854						
SQ	0.707	0.686	0.126	0.744	0.872					
SerQ	0.279	0.219	-0.046	0.231	0.216	0.878				
TL	0.446	0.264	0.089	0.421	0.392	0.280	0.877			
TS	0.276	0.203	0.059	0.279	0.203	0.185	0.236	0.870		
U	0.708	0.694	0.159	0.699	0.661	0.332	0.373	0.249	0.942	
US	0.376	0.349	0.051	0.427	0.369	0.186	0.550	0.172	0.450	0.886

\*The Diagonal is the square root of the AVE of the latent variables and indicates the highest in any column or row.

#### 4.3. Measurement of structural model (inner)

In measuring the structural model proposed for the study, we considered the significance of the path coefficient (hypotheses), the level of the  $R^2$  values, and the predictive relevance  $Q^2$ . Bootstrapping and the PLS algorithm was used to assess the quality of the structural model. Bootstrapping is a resampling method that uses a large number of subsamples from the original dataset. The significance of the path within the structural model was determined using 5000 subsamples for this study. In order to assess the model's fitness, we used the standardized root mean square residual (SRMR) and root mean square residual covariance (rms Theta) (Hair et al., 2020). The SRMR was 0.067, and the rms Theta was 0.128. The obtained value of 0.067 shows a good fit for the model. The model's rms Theta value of 0.128 indicates that it is well-fitting.

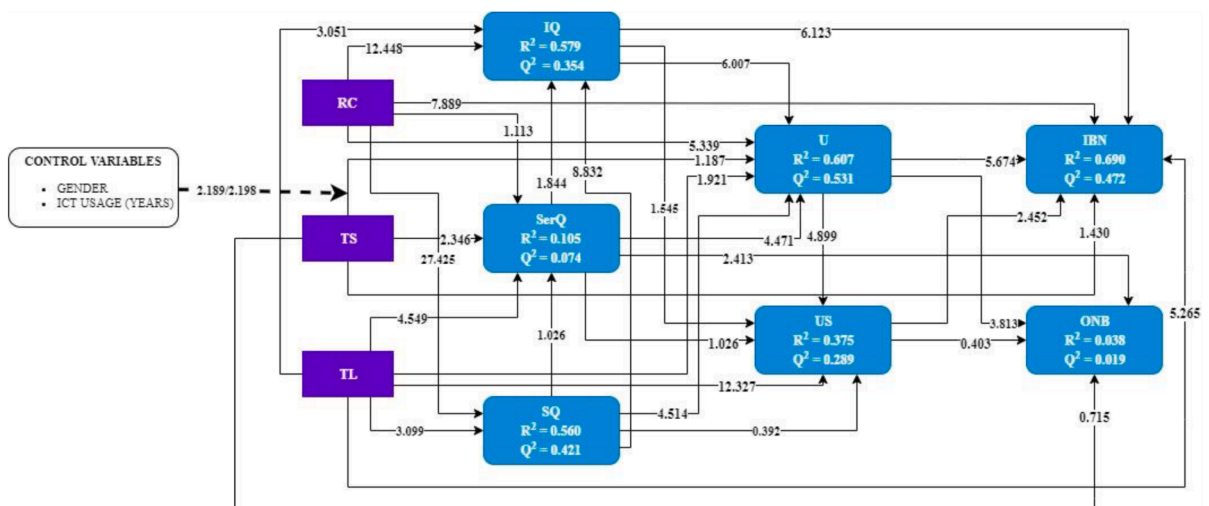
**Table 6**  
Discriminant Validity (HTHT).

	IBN	IQ	ONB	RC	SQ	SerQ	TL	TS	U	US
IBN										
IQ	0.807									
ONB	0.134	0.106								
RC	0.842	0.792	0.139							
SQ	0.795	0.754	0.158	0.821						
SerQ	0.364	0.27	0.06	0.287	0.268					
TL	0.505	0.272	0.111	0.465	0.437	0.349				
TS	0.295	0.218	0.076	0.307	0.222	0.235	0.264			
U	0.801	0.781	0.187	0.784	0.743	0.423	0.419	0.28		
US	0.404	0.376	0.084	0.469	0.404	0.232	0.603	0.189	0.504	

The path estimations for the proposed model are shown in Fig. 5. Role clarity, system quality, training & learning, and service quality account for 57.9 % of the variance in information quality, according to the findings of this study. Role clarity, teamwork & support, system quality, and training & learning also accounted for 10.5 % of the variance in service quality. Role clarity and training & learning accounted for 56 % of the variance in system quality. However, 60.7 % of the variance in the use construct was explained by information quality, role clarity, teamwork & support, training & learning, system quality, and service quality. Use, training & learning, system quality, service quality, and information quality all contributed to the variance in user satisfaction (37.5 %). In this study, information quality, role clarity, use, user satisfaction, teamwork & support, and training & learning accounted for 69 % of the variance in individual impact. 3.8 % of the variance in organizational impact attributed to user satisfaction, use, service quality, and teamwork & support.

Table 7 shows the standardized coefficients of the pathways in the proposed model after establishing their reliability, convergent validity, and discriminant validity. To estimate the path coefficient using SmartPLS, 5000 samples were generated using bootstrap sampling. The variance inflation factor (VIF) of the variables was also examined, and the results indicate no concerns with multicollinearity. To test the correlations, we used standardized beta, t-values, and p-values. Specifically, role clarity has a significant influence on individual impact ( $\beta = 0.365$ ,  $t = 7.889$ ,  $p = 0.000$ ), information quality ( $\beta = 0.490$ ,  $t = 12.448$ ,  $p = 0.000$ ), system quality ( $\beta = 0.704$ ,  $t = 27.425$ ,  $p = 0.000$ ), and Use ( $\beta = 0.260$ ,  $t = 5.339$ ,  $p = 0.000$ ). H2a-H2c, as well as H2e, is thus accepted. H2d was rejected because role clarity has no significant impact on service quality ( $\beta = 0.070$ ,  $t = 1.113$ ,  $p = 0.266$ ).

Individual impact ( $\beta = 0.170$ ,  $t = 5.265$ ,  $p = 0.000$ ), information quality ( $\beta = -0.094$ ,  $t = 3.051$ ,  $p = 0.002$ ), system quality ( $\beta = 0.095$ ,  $t = 3.099$ ,  $p = 0.002$ ), user satisfaction ( $\beta = 0.455$ ,  $t = 12.327$ ,  $p = 0.000$ ), and service quality ( $\beta = 0.201$ ,  $t = 4.549$ ,  $p = 0.000$ ) were all significantly influenced by training & learning. H5a-H5d and H5f were therefore accepted. H5e was rejected because training & learning had no significant impact on use ( $\beta = 0.058$ ,  $t = 0.921$ ,  $p = 0.055$ ). On the other hand, teamwork & support had no significant influence on individual impact ( $\beta = 0.036$ ,  $t = 1.430$ ,  $p = 0.153$ ) or organizational impact ( $\beta = 0.034$ ,  $t = 0.715$ ,  $p = 0.475$ ), nor on use ( $\beta = 0.033$ ,  $t = 1.187$ ,  $p = 0.235$ ). H6a-H6b and H6d were therefore rejected. Service quality is statistically influenced by teamwork & support ( $\beta = 0.105$ ,  $t = 2.346$ ,  $p = 0.019$ ) thus H6c was accepted. Information quality statistically influences individual



**ORGANIZATIONAL CLIMATE:** ROLE CLIMATE (RC); TEAMWORK & SUPPORT (TS); TRAINING & LEARNING (TL) **DELONE AND MCLEAN:** INFORMATION QUALITY (IQ); SERVICE QUALITY (SerQ); SYSTEM QUALITY (SQ); USE (U); USER SATISFACTION (US); INDIVIDUAL IMPACT (IBN); ORGANIZATIONAL IMPACT (ONB)

Fig. 5. Path model (N = 555).

**Table 7**  
Hypothesis.

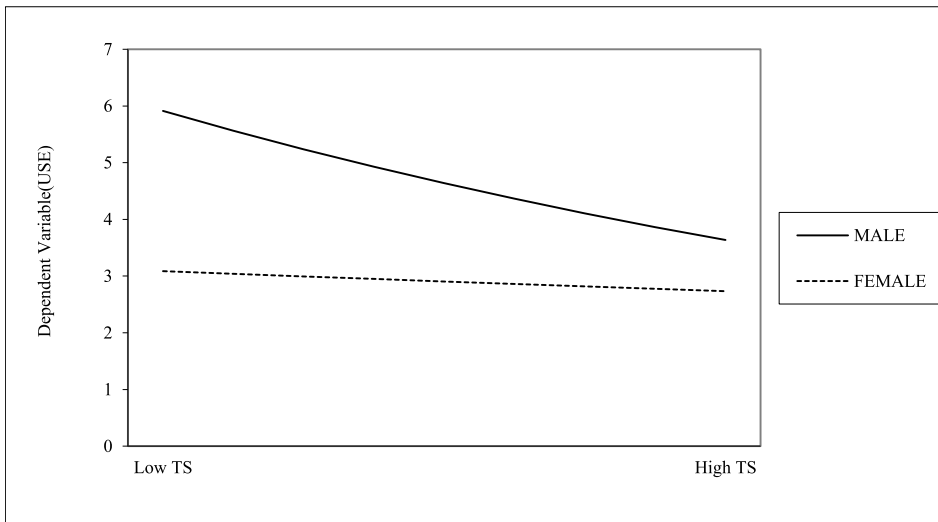
Hypotheses	Relationship	Std. Beta	Std. Error	t-value	P values	Decision	f <sup>2</sup>	q <sup>2</sup>	95 % CI LL	95 % CI UL
H1a	IQ → IBN	0.267	0.044	6.123	0.000	Accepted	0.177	0.055	0.200	0.350
H1b	IQ → U	0.328	0.055	6.007	0.000	Accepted	0.058	0.043	0.200	0.440
H1c	IQ → US	0.072	0.048	1.545	0.122	Rejected			-0.000	0.160
H2a	RC → IBN	0.365	0.046	7.889	0.000	Accepted	0.006	0.055	0.300	0.460
H2b	RC → IQ	0.490	0.039	12.448	0.000	Accepted			0.400	0.570
H2c	RC → SQ	0.704	0.026	27.425	0.000	Accepted			0.700	0.750
H2d	RC → SerQ	0.070	0.063	1.113	0.266	Rejected	0.895	0.005	-0.000	0.190
H2e	RC → U	0.260	0.049	5.339	0.000	Accepted	0.005	0.043	0.200	0.360
H3a	SQ → IQ	0.347	0.039	8.832	0.000	Accepted	0.242	0.099	0.300	0.430
H3b	SQ → SerQ	0.064	0.062	1.026	0.305	Rejected	0.002	0.005	-0.000	0.190
H3c	SQ → U	0.183	0.041	4.514	0.000	Accepted	0.058	0.043	0.100	0.260
H3d	SQ → US	-0.020	0.052	0.392	0.695	Rejected			-0.000	0.080
H4a	SerQ → IQ	0.057	0.031	1.844	0.065	Rejected	0.242	0.099	-0.000	0.120
H4b	SerQ → ONB	-0.116	0.047	2.413	0.016	Accepted			-0.000	-0.000
H4c	SerQ → U	0.138	0.031	4.471	0.000	Accepted	0.058	0.043	0.100	0.200
H4d	SerQ → US	-0.038	0.037	1.026	0.305	Rejected			-0.000	0.030
H5a	TL → IBN	0.170	0.032	5.265	0.000	Accepted	0.177	0.055	0.100	0.240
H5b	TL → IQ	-0.094	0.031	3.051	0.002	Accepted	0.242	0.099	-0.000	-0.000
H5c	TL → SQ	0.095	0.031	3.099	0.002	Accepted	0.925	0.526	0.000	0.160
H5d	TL → SerQ	0.201	0.044	4.549	0.000	Accepted	0.002	0.005	0.100	0.290
H5e	TL → U	0.058	0.030	1.921	0.055	Rejected	0.058	0.043	-0.000	0.120
H5f	TL → US	0.455	0.037	12.327	0.000	Accepted			0.400	0.530
H6a	TS → IBN	0.036	0.025	1.430	0.153	Rejected	0.177	0.055	-0.000	0.090
H6b	TS → ONB	0.034	0.048	0.715	0.475	Rejected			-0.000	0.130
H6c	TS → SerQ	0.105	0.045	2.346	0.019	Accepted	0.002	0.005	0.000	0.190
H6d	TS → U	0.033	0.028	1.187	0.235	Rejected	0.058	0.043	-0.000	0.090
H7a	U → IBN	0.229	0.040	5.674	0.000	Accepted	0.177	0.055	0.200	0.310
H7b	U → ONB	0.199	0.052	3.813	0.000	Accepted			0.100	0.300
H7c	U → US	0.256	0.052	4.899	0.000	Accepted			0.200	0.360
H8a	US → IBN	-0.076	0.031	2.452	0.014	Accepted	0.177	0.055	-0.000	-0.000
H8b	US → ONB	-0.021	0.056	0.403	0.687	Rejected			-0.000	0.090
H9a	Gender*TS → U	0.093	0.041	2.189	0.029	Accepted			0.000	0.170
H9b	ICT*TS → U	-0.059	0.028	2.198	0.028	Accepted			-0.000	0.000

\*\*p < 0.01, \*p < 0.05; R<sup>2</sup> (IQ = 0.579, SerQ = 0.105, SQ = 0.560, US = 0.375, U = 0.607, ONB = 0.038, IBN = 0.690); Q<sup>2</sup> (IBN = 0.472, ONB = 0.019, IQ = 0.354, SQ = 0.421, SerQ = 0.074, U = 0.531, US = 0.289). Effect size impact indicator are according to Cohen (1988), f<sup>2</sup> values 0.35 (large), 0.15 (medium), and 0.02 (small) Predictive relevance (q<sup>2</sup>) of Predictor Exogenous Latent Variables as according to Henseler et al. (2019), q<sup>2</sup> values: 0.35 (large), 0.15 (medium), and 0.02 (small).

impact ( $\beta = 0.267$ ,  $t = 6.123$ ,  $p = 0.000$ ) and use ( $\beta = 0.328$ ,  $t = 6.007$ ,  $p = 0.000$ ), thus H1a-H1b were accepted. However, H1c was rejected since information quality had no significant impact on user satisfaction ( $\beta = 0.072$ ,  $t = 1.545$ ,  $p = 0.122$ ). Information quality ( $\beta = 0.347$ ,  $t = 8.832$ ,  $p = 0.000$ ) and use ( $\beta = 0.183$ ,  $t = 4.514$ ,  $p = 0.000$ ) are both statistically influenced by system quality. As a result, H3a and H3c were accepted. H3b and H3d were also rejected since system quality had no significant impact on service quality ( $\beta = 0.064$ ,  $t = 1.026$ ,  $p = 0.305$ ) or user satisfaction ( $\beta = -0.020$ ,  $t = 0.392$ ,  $p = 0.695$ ). Organizational impact ( $\beta = -0.116$ ,  $t = 2.413$ ,  $p = 0.016$ ) and use ( $\beta = 0.138$ ,  $t = 4.471$ ,  $p = 0.000$ ) are also significantly influenced by service quality. As a result, H4b-H4c is accepted. H4a and H4d were rejected because information quality ( $\beta = 0.057$ ,  $t = 1.844$ ,  $p = 0.065$ ) and user satisfaction ( $\beta = -0.038$ ,  $t = 1.026$ ,  $p = 0.305$ ) are not significantly influenced by service quality. Individual impact ( $\beta = 0.229$ ,  $t = 5.674$ ,  $p = 0.000$ ), organizational impact ( $\beta = 0.199$ ,  $t = 3.813$ ,  $p = 0.000$ ), and user satisfaction ( $\beta = 0.256$ ,  $t = 4.899$ ,  $p = 0.000$ ) were all shown to be significantly influenced by use. As a result, H7a-H7c is accepted. Individual impact is significantly influenced by user satisfaction ( $\beta = -0.076$ ,  $t = 2.452$ ,  $p = 0.014$ ). As a consequence, H8a was granted acceptance. Because user satisfaction has no impact on organizational impact ( $\beta = -0.021$ ,  $t = 0.403$ ,  $p = 0.687$ ), H8b was rejected. Finally, the moderating effect of gender and years of ICT use has an impact on the relationship between teamwork & support and ERPx use (see Fig. 6 (a) and 6(b)). Gender ( $\beta = 0.093$ ,  $t = 2.189$ ,  $p = 0.029$ ) and years of ICT use ( $\beta = -0.059$ ,  $t = 2.198$ ,  $p = 0.028$ ) showed a moderating effect on the relationship between teamwork & support and ERPx use, indicating that H9a-H9b was accepted. When teamwork & support are low, both female and male ERPx users are more likely to use the system; conversely, when teamwork & support are high, both male and female ERPx users are less likely to use the system. Also, among users who have been using ICT for >10 years and 6–10 years, low teamwork & support leads to minimal ERPx usage, while high teamwork and support result in higher ERPx use.

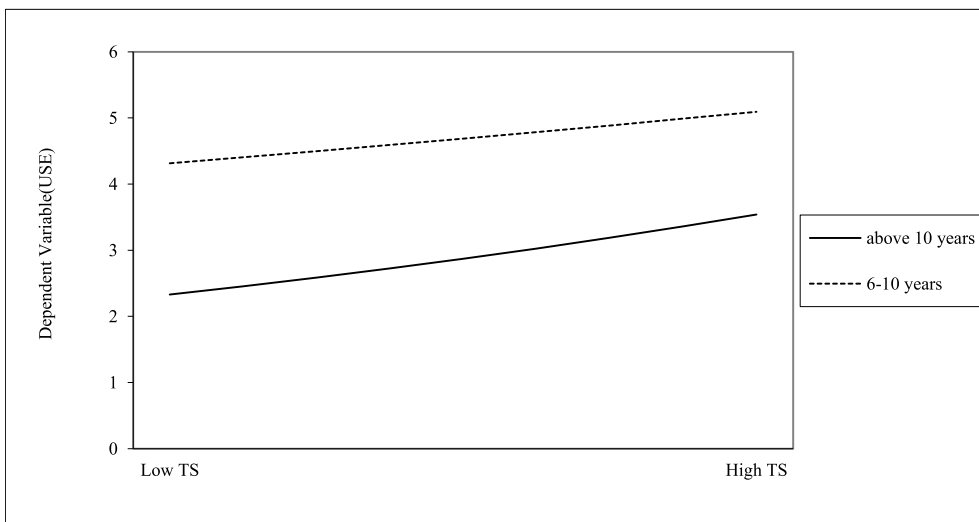
## 5. Discussion

The purpose of the study was to propose an ERP success model that considers organizational climate values and can be used to evaluate the success of a tax ERP system. The factors that influence ERP system use, user satisfaction, information quality, service quality, system quality, individual impact, and organizational impact were examined. Although some hypotheses were rejected, as indicated in Table 7, the majority of hypotheses empirically support the evaluation of the proposed revenue collection ERP system's



(a)

Fig. 6. (a) Moderating effect of Gender



(b)

Fig. 6. (b) Moderating effect of Years of ICT usage

Fig. 6. (a) Moderating effect of Gender, (b) Moderating effect of Years of ICT usage.

success. The proposed organizational climate values had a significant impact on the DeLone and McLean IS success model’s assessment of a deployed ERP system in a revenue sector.

The proposed organizational climate variables were assessed as the primary construct rather than minor elements in the various success constructs because of their significance in the IS success model. The results indicate that when ERP users are assigned clear roles and responsibilities, they are more likely to utilize the system daily or frequently. Allowing experienced users to use the system enables them to understand the ease of use, features, speed, accuracy, and flexibility of the system. This result is consistent with that of Samie et al. (2015), Adil et al. (2021), and Yadav and Rangnekar (2015). Users appreciate the quality of the ERP’s information since it is easily accessible, secure, and relevant to them. Thus, assigning specified goals and responsibilities to users of ERP systems, as well as engaging skilled personnel, increases productivity, enables users to work more effectively and comfortably. Having a firm grasp of one’s place within the ERP system, on the other hand, has little impact on the amount of support and assurance received while under pressure. This stands in sharp contrast with previous study (Chen et al., 2021; Gavidia et al., 2021; Schnackenberg et al., 2021). The administrators also confirm the role clarity conclusions reached in the initial interview, citing that:

*“Due to bad internet connection, ERPx is now extremely sluggish when it comes to return filing and processing, and the interface sometimes takes a long time to open. However, since employees are aware of their roles in the system and have been trained on how to utilize it, return filing and processing has been successful so far.” – (AD2).*

Training and learning are essential components of an ERP system's efficient operation. The study shows that training and learning have an impact on ERP user satisfaction. These arise as a result of users being more effective, satisfied, and appreciative of the system's flexibility as a result of the training they get. They often get sufficient assistance for system use after they acquire the necessary training and learning through corporate learning. The findings concur with those of Almajali et al. (2016) and Dezdard (2017). Additionally, training and learning influence the quality components of the information system (IS) success model. The efficacy of ERP user training enables users to enjoy the system's information, which is constantly accessible, relevant, timely, safe, and trustworthy. Users that have received adequate training and organizational learning appreciate the system's features, speed, accuracy, and flexibility. Also, they know who to call for assistance when it is required. When ERP users get quality training and learning, their productivity, job effectiveness, and task performance all increase. The findings of this study are similar to those of Garg and Sharma (2020) and Nguyen et al. (2020). Providing high-quality ERP training and learning, on the other hand, do not guarantee daily or frequent ERP use. The results on training and learning are also consistent with the comments obtained from the interview.

*“We have given adequate training to our staff since using ERPx. The vendors assist in training our senior personnel who utilize the installed system in the three pilot areas. The system has been mastered by certain internal IT professionals, and by our workers. The training and learning approach has also improved employee work performance throughout the piloted sites. Also, since they learned how to utilize the system via training, the employees have grown to appreciate the quality of the data and how simple it is to operate with ERPx. But I must emphasize, the system is mandatory. It has been great to see our staff utilize ERPx, despite some still using the old system” – (AD1)*

As established in this study, teamwork and support have an impact on the service quality provided to ERP system users by equipping them about who to contact for system support or assurance. Similar findings were obtained by Addis et al. (2019) and Jeyaraj and Zadeh (2020). Teamwork and support, on the other hand, have no significant influence on daily or frequent ERP user use, individual productivity, job effectiveness, task performance, job simplicity, or overall organizational success. In contrast to Costa et al. (2016) and Almajali et al. (2016), the level of support and collaboration inside an organization that has adopted an ERP system has a significant impact on usage. The results show that the three IS quality constructs have an impact on how an ERP system is used on a daily or regular basis. The three IS quality constructs have no impact on user satisfaction in terms of system efficacy, adaptability, or sufficient assistance. The findings show that daily or regular use of an ERP system has an impact on the satisfaction of ERP users due to the system's effectiveness, flexibility, and enough support provided. This is consistent with the results of Isaac et al. (2019), Kuo (2018), and Stefanovic et al (2016). Additionally, the study shows that the quality features of an ERP system have an impact on ERP users' willingness to use the system. They do not, however, influence how users develop a sense of satisfaction with the system; rather, daily and routine system use influences how satisfied ERP users are with the system. During the interview, the administrators also stated that:

*“Yes, ERPx has been beneficial in assisting the business in carrying out daily tasks as compared to the previous system. Internally, the system's employees benefit from excellent teamwork and support, which helps them carry out daily responsibilities” – (AD2).*

The service quality of an ERP system has an impact on the information quality of the system as well. This is because when system users get the right support and assurance on time when faced with system difficulties, the information provided by the system becomes relevant, reliable, always available, and timely. This result was expected since it is consistent with previous research (Albsharawi & Motiwalla, 2020; Arain et al., 2019). Also, the quality of the information and how an ERP system is utilized have a significant influence on individual impact. This is because when a system offers information that is relevant, timely, secure, trustworthy, and continuously available, and when it is utilized on a daily or regular basis, the probability of increased individual productivity, job effectiveness, and task performance is high. This is consistent with Aldholay et al. (2019), Chen (2020), and Kuo (2018). Again, service quality and the use of an ERP system influence the organizational impact, indicating that the support and assurance ERP users get when faced with system issues, in addition to their regular and frequent use of the system, contribute to the organization's overall performance and quality.

Finally, gender and years of ICT usage experience have a moderating effect on the relationship between teamwork & support and use. Females use an ERP system at a slightly higher rate in circumstances requiring less teamwork and support. When teamwork and support are high, however, there is a small decline in system use as a consequence. Males use the ERP system considerably more than females, but when there is a high degree of teamwork and support, males' use of the ERP system significantly decreases. Users with more than ten years of ICT expertise, as well as those with six to ten years of experience, demonstrated a decline in ERP system use, which was linked with low teamwork and support. However, when there is a high level of teamwork and support, ERP system use rises significantly.

### 5.1. Academic implications

This study proposed a model for evaluating tax ERP system success. Along with quantitative data gathering, qualitative data (interview, observation, and focus group) were collected. The interview response was utilized to support the quantitative results. All of these techniques were utilized to gather data to better understand the existing ERPx system, its challenges, and user attitudes. Both IS success theory (DeLone and McLean, 1992; 2003) and organizational climate variables are included (Furnham & Goodstein, 1997; Wang et al., 2016; Hanaysha & Tahir, 2016; Caesens et al., 2016). The study concludes that measuring a tax ERP system's success

requires a comprehensive view of organizational climate values (training and development, teamwork and support, and role clarity). The findings also show that, within an organization that has adopted a tax ERP system, role clarity has an impact on the quality constructs of an IS success model, except for service quality. It has an impact on the way tax ERP users utilize the system that is intended to have an individual impact. Training and learning were also found to have a significant impact on the three IS quality constructs of an IS success model. They also resulted in user satisfaction with the system, which in turn has an individual impact. The ERP system's service quality was influenced by teamwork and support. According to the findings, the use of a tax ERP system was facilitated by the roles of information quality, system quality, service quality, role clarity, teamwork & support, and training & learning. To ensure that users of a tax ERP system are satisfied with the system, information quality, service quality, system quality, system usability, and training & learning all play a part. This study quantifies the net benefit produced in two distinct ways. The three proposed organizational climate factors, information quality, use, and user satisfaction, accounted for the individual impact. Teamwork & support, user satisfaction, use, and service quality all contributed to organizational impact.

## 5.2. Management implications

The practical consequences of the study are to show that for companies to adopt obligatory tax ERP systems, senior management should pay careful attention to the organizational climate variables studied in this study. This is because, in addition to information, system, and service quality, the three organizational climate variables proposed in this study also affect employees' propensity to use an ERP system. Additionally, for employees to be satisfied with a tax ERP system, top management must ensure that users get quality training and learning, and they should be encouraged to use the implemented system often, rather than falling back on the old traditional modus operandi. Satisfaction is also influenced by the three IS quality constructs of a deployed ERP system, emphasizing the need for management to take these quality constructs seriously and not overlooking them during further modification. When a company adheres to these criteria, it increases its overall success and quality, while also improving work effectiveness, task performance, and job simplicity for its employees. Organizations must pay attention to the gender and years of ICT use of their employees who use tax ERP systems, as these factors moderate the relationship between teamwork and support and system use. This is because when teamwork and support are high, employees who have been open to ICT use for six years or more prefer to use the system frequently; yet, when teamwork and support are low, system utilization decreases. ERP service providers must continue to offer high-quality training and support to companies who use their systems since a deficiency in any of these areas will impact the system's usage and overall performance.

## 5.3. Limitations and future work

This study proposed an improved version of the DeLone and McLean model of information systems success and validated this model in the setting of a tax ERP system. Thus, studies in additional IS quality dimensions such as training & learning and role clarity effect on organizational impact are needed. Also, the proposed model's IS quality constructs' interrelationships must be explored. Finally, the effect of user satisfaction on tax ERP system usage may be investigated. This study is limited to the public sector (Ghana Revenue Authority) and similar settings and therefore the results may not be applicable to countries outside the scope or private sector businesses. Future studies may involve comparing tax ERP systems in other West African regions to those in Europe and Asia.

## 6. Conclusions

In addition to the organizational climate variables (training and learning, teamwork and support, and role clarity) included in this study, several other factors have been shown to affect ERP system success over time. However, the reviewed literature indicates that these organizational climate factors have not received enough consideration when evaluating IS success. Modern tax collecting, administration, and compliance have all been affected by technology. To assess the success of tax ERP systems, an IS success model should incorporate organizational climate variables. Hence, in addition to the DeLone and McLean IS success model, this study proposed a model that incorporated organizational climate values including training & learning, teamwork & support, and role clarity. The study also examined the variables that affect internal users' usage of a tax ERP system, user satisfaction, information quality, service quality, system quality, and net benefit. The model was evaluated on the main tax revenue agency in Ghana. The findings show that the proposed organizational climate variables and DeLone and McLean IS success model components adequately evaluate a tax ERP system's success. Organizational climate, information quality, system quality, and service quality all influence the use of tax ERPs. Use, training & learning, and the three quality constructs were shown to be significant drivers of user satisfaction in the proposed model. Role clarity and training & learning impacted system quality. The proposed organizational climate factors and system quality also impacted the service quality of a tax ERP system, respectively. System quality, service quality, training & learning, and role clarity influenced information quality. Organizational climate factors, information quality, use, and user satisfaction all influenced individual impact. User satisfaction, use, service quality, and teamwork & support, on the other hand, influenced organizational impact. Based on these findings, the DeLone and McLean IS success model was modified to accommodate organizational climate variables such as training & learning, teamwork & support, and role clarity. Gender and years of ICT use moderated the relationship between teamwork & support and ERP use.

## Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

## References

- Addis, S., Divedi, A., Beshah, B., 2019. Quality management as a tool for job satisfaction improvement in low-level technology organizations: the case of Ethiopia. *Prod. Plann. Control* 30 (8), 665–681.
- Adil, A., Kausar, S., Ameer, S., Ghayas, S., Shujja, S., 2021. Impact of organizational socialization on organizational citizenship behavior: mediating role of knowledge sharing and role clarity. *Curr. Psychol.* 1–9.
- Al Mulhem, A., 2020. Investigating the effects of quality factors and organizational factors on university students' satisfaction of e-learning system quality. *Cogent Educ.* 7 (1), 1787004.
- AlBar, A.M., Hoque, M.R., 2019. Factors affecting cloud ERP adoption in Saudi Arabia: an empirical study. *Inf. Dev.* 35 (1), 150–164.
- Albashrawi, M., Motiwalla, L., 2020. An integrative framework on mobile banking success. *Inf. Syst. Manage.* 37 (1), 16–32.
- Aldholay, A., Abdullah, Z., Isaac, O., Mutahar, A.M., 2019. Perspective of Yemeni students on use of online learning: Extending the information systems success model with transformational leadership and compatibility. *Inf. Technol. People* 33 (1), 106–128.
- Aldholay, A.H., Isaac, O., Abdullah, Z., Ramayah, T., 2018. The role of transformational leadership as a mediating variable in DeLone and McLean information system success model: the context of online learning usage in Yemen. *Telematics Inform.* 35 (5), 1421–1437.
- Al-Jabri, I.M., Roztocky, N., 2015. Adoption of ERP systems: Does information transparency matter? *Telematics Inform.* 32 (2), 300–310.
- Almajali, D.A., Tarhini, A., 2016. Antecedents of ERP systems implementation success: a study on Jordanian healthcare sector. *J. Enterprise Inf. Manage.* 29 (4), 549–565.
- Almutairi, H., Subramanian, G.H., 2005. An empirical application of the DeLone and McLean model in the Kuwaiti private sector. *J. Comput. Inf. Syst.* 45 (3), 113–122.
- Al-Okaily, M., Abd Rahman, M.S., Ali, A., 2019. Factors affecting the acceptance of mobile payment systems in Jordan: the moderating role of Trust. *J. Inf. Syst. Technol. Manage.* 4 (15), 16–26.
- Al-Okaily, A., Al-Okaily, M., Ai Ping, T., Al-Mawali, H., Zaidan, H., 2021. An empirical investigation of enterprise system user satisfaction antecedents in Jordanian commercial banks. *Cogent Bus. Manage.* 8 (1), 1918847.
- Alsharari, N.M., Al-Shboul, M., Alteneiji, S., 2020. Implementation of cloud ERP in the SME: evidence from UAE. *J. Small Bus. Enterprise Dev.* 27 (2), 299–327.
- Alshurideh, M.T., Al Kurdi, B., Salloum, S.A., 2021. The moderation effect of gender on accepting electronic payment technology: a study on United Arab Emirates consumers. *Rev. Int. Bus. Strategy* 31 (3), 375–396.
- Ameen, N., Willis, R., Abdullah, M.N., Shah, M., 2019. Towards the successful integration of e-learning systems in higher education in Iraq: a student perspective. *Br. J. Educ. Technol.* 50 (3), 1434–1446.
- Arain, A.A., Hussain, Z., Rizvi, W.H., Vighio, M.S., 2019. Extending UTAUT2 toward acceptance of mobile learning in the context of higher education. *Univ. Access Inf. Soc.* 18 (3), 659–673.
- Attaran, M., Attaran, S., Kirkland, D., 2019. The need for digital workplace: increasing workforce productivity in the information age. *Int. J. Enterprise Inf. Syst. (IJEIS)* 15 (1), 1–23.
- Bahrami, M.A., Barati, O., Ghoroghchian, M.S., Montazer-Alfaraj, R., Ezzatabadi, M.R., 2016. Role of organizational climate in organizational commitment: the case of teaching hospitals. *Osong Public Health Res. Perspect.* 7 (2), 96–100.
- Banaeianjahromi, N., Smolander, K., 2019. Lack of communication and collaboration in enterprise architecture development. *Inf. Syst. Front.* 21 (4), 877–908.
- Barth, C., Koch, S., 2019. Critical success factors in ERP upgrade projects. *Ind. Manage. Data Syst.* 119 (3), 656–675.
- Bhatt, N., Guru, S., Thanki, S., Sood, G., 2021. Analysing the factors affecting the selection of ERP package: a fuzzy AHP approach. *IseB* 19 (2), 1–42.
- Caesens, G., Marique, G., Hanin, D., Stinglhamber, F., 2016. The relationship between perceived organizational support and proactive behaviour directed towards the organization. *Eur. J. Work Organizational Psychol.* 25 (3), 398–411.
- Camilleri, M.A., 2019. The online users' perceptions toward electronic government services. *J. Inf. Commun. Ethics Soc.* 18 (2), 221–235.
- Cha, J., Kim, Y., Lee, J.Y., Bachrach, D.G., 2015. Transformational leadership and inter-team collaboration: exploring the mediating role of teamwork quality and moderating role of team size. *Group Organiz. Manage.* 40 (6), 715–743.
- Chang, J.C.J., King, W.R., 2005. Measuring the performance of information systems: a functional scorecard. *J. Manage. Inf. Syst.* 22 (1), 85–115.
- Chen, H.J., 2020. Clarifying the impact of surprise in e-learning system design based on university students with multiple learning goals orientation. *Educ. Inf. Technol.* 25 (6), 5873–5892.
- Chen, Y.H., Chien, S.H., Huang, S.J., 2011. Factors influencing business adoption of online tax payment services. *電子商務學報* 13 (4), 969–988.
- Chen, Y.C., Hu, L.T., Tseng, K.C., Juang, W.J., Chang, C.K., 2019. Cross-boundary e-government systems: determinants of performance. *Government Information Quarterly* 36 (3), 449–459.
- Chen, J.V., Jubilado, R.J.M., Capistrano, E.P.S., Yen, D.C., 2015. Factors affecting online tax filing—An application of the IS Success Model and trust theory. *Comput. Hum. Behav.* 43, 251–262.
- Chen, S., Wang, W., Cheng, J., Teng, D., 2021. Activating the benefit of diversity through team role clarity and implicit coordination. *Small Group Res.* 52 (4), 379–404.
- Chiu, C.L., Ho, H.C., Yu, T., Liu, Y., Mo, Y., 2021. Exploring information technology success of Augmented Reality Retail Applications in retail food chain. *J. Retail. Consumer Services* 61, 102561.
- Chofreh, A.G., Goni, F.A., Klemes, J.J., Malik, M.N., Khan, H.H., 2020. Development of guidelines for the implementation of sustainable enterprise resource planning systems. *J. Cleaner Prod.* 244, 118655.
- Chohan, S.R., Hu, G., 2020. Strengthening digital inclusion through e-government: cohesive ICT training programs to intensify digital competency. *Inf. Technol. Dev.* 1–23.
- Costa, C.J., Ferreira, E., Bento, F., Aparicio, M., 2016. Enterprise resource planning adoption and satisfaction determinants. *Comput. Hum. Behav.* 63, 659–671.
- Costa, C.J., Aparicio, M., Raposo, J., 2020. Determinants of the management learning performance in ERP context. *Heliyon* 6 (4), e03689.
- Curnin, S., Owen, C., Paton, D., Trist, C., Parsons, D., 2015. Role clarity, swift trust and multi-agency coordination. *J. Contingencies Crisis Manage.* 23 (1), 29–35.
- Czekster, R.M., Webber, T., Jandrey, A.H., Marcon, C.A.M., 2019. Selection of enterprise resource planning software using analytic hierarchy process. *Enterprise Inf. Syst.* 13 (6), 895–915.
- Davis, F.D., 1989. Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quart.* 319–340.
- Davis, F.D., 1993. User acceptance of information technology: System characteristics, user perceptions and behavioral impacts. *Int. J. Man Mach. Stud.* 38 (3), 475–487.
- DeLone, W.H., McLean, E.R. Information systems success: the quest for the dependent variable. *Inf. Syst. Res.* 3(1), 60-95.
- DeLone, W.H., McLean, E.R., 2002. Information systems success revisited. In: *Proceedings of the 35th Annual Hawaii International Conference on System Sciences*, pp. 2966–2976.
- DeLone, W.H., McLean, E.R., 2003. The DeLone and McLean model of information systems success: a ten-year update. *J. Manage. Inf. Syst.* 19 (4), 9–30.
- Demoulin, N.T., Coussement, K., 2020. Acceptance of text-mining systems: the signaling role of information quality. *Inf. Manage.* 57 (1), 103120.
- Dezdar, S., 2017. ERP implementation projects in Asian Countries: a comparative study on Iran and China. *Int. J. Inf. Technol. Project Manage. (IJITPM)* 8 (3), 52–68.

- Doleck, T., Lajoie, S.P., Bazalais, P., 2019. Social networking and academic performance: a net benefits perspective. *Educ. Inf. Technol.* 24 (5), 3053–3073.
- Furnham, A., Goodstein, L.D., 1997. The organizational climate questionnaire (OCQ). *ANNUAL-SAN DIEGO-PFEIFFER AND COMPANY* 2, 163–182.
- Gaardboe, R., Nyvang, T., Sandalgaard, N., 2017. Business intelligence success applied to healthcare information systems. *Procedia Comput. Sci.* 121, 483–490.
- Gable, G.G., Sederia, D., Chan, T., 2008. Re-conceptualizing information system success: the IS-impact measurement model. *J. Assoc. Inf. Syst.* 9 (7), 18.
- Garg, S., Sharma, S., 2020. User satisfaction and continuance intention for using e-training: a structural equation model. *Vision* 24 (4), 441–451.
- Gavali, A., Halder, S., 2020. Identifying critical success factors of ERP in the construction industry. *Asian J. Civ. Eng.* 21 (2), 311–329.
- Gavidia, J.V., Junglas, I.A., Chou, C.H., 2021. An integrated model of ERP success: the critical role of task-context alignment. *Enterprise Inf. Syst.* 1–26.
- Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M., 2019. When to use and how to report the results of PLS-SEM. *Eur. Bus. Rev.* 31 (1), 2–24.
- Hair Jr, J.F., Howard, M.C., Nitzl, C., 2020. Assessing measurement model quality in PLS-SEM using confirmatory composite analysis. *J. Bus. Res.* 109, 101–110.
- Hanaysha, J., Tahir, P.R., 2016. Examining the effects of employee empowerment, teamwork, and employee training on job satisfaction. *Procedia-Soc. Behav. Sci.* 219, 272–282.
- Hariguna, T., Rahardja, U., Aini, Q., 2019. Effect of social media activities to determinants public participate intention of e-government. *Procedia Comput. Sci.* 161, 233–241.
- Hasan, N., Miah, S.J., Bao, Y., Hoque, M.R., 2019. Factors affecting post-implementation success of enterprise resource planning systems: a perspective of business process performance. *Enterprise Inf. Syst.* 13 (9), 1217–1244.
- Henseler, J., Ringle, C.M., Sinkovics, R.R., 2019. The use of partial least squares path modeling in international marketing. In *New challenges to international marketing*. Emerald Group Publishing Limited, 20, 277–319.
- Hsu, P.F., Yen, H.R., Chung, J.C., 2015. Assessing ERP post-implementation success at the individual level: revisiting the role of service quality. *Inf. Manage.* 52 (8), 925–942.
- Hulland, J., Baumgartner, H., Smith, K.M., 2018. Marketing survey research best practices: evidence and recommendations from a review of JAMS articles. *J. Acad. Mark. Sci.* 46 (1), 92–108.
- Iivari, J., 2005. An empirical test of the DeLone-McLean model of information system success. *Data Base Adv. Inf. Syst.* 36 (2), 8–27.
- Ilijins, J., Skvarciany, V., Gaile-Sarkane, E., 2015. Impact of organizational culture on organizational climate during the process of change. *Procedia-Soc. Behav. Sci.* 213, 944–950.
- Irawan, H., Syah, I., 2017. Evaluation of implementation of enterprise resource planning information system with DeLone and McLean model approach. In: *IEEE 5th International Conference on Information and Communication Technology (ICoICT7)*, pp. 1–7.
- Isaac, O., Aldholay, A., Abdullah, Z., Ramayah, T., 2019. Online learning usage within Yemeni higher education: The role of compatibility and task-technology fit as mediating variables in the IS success model. *Comput. Educ.* 136, 113–129.
- Islam, T., Ahmed, I., Ahmad, U.N.B.U., 2015. The influence of organizational learning culture and perceived organizational support on employees' affective commitment and turnover intention. *Nankai Bus. Rev. Int.*
- Jeyaraj, A., Zadeh, A.H., 2020. Evolution of information systems research: Insights from topic modeling. *Inf. Manage.* 57 (4), 103207.
- Junior, C.H., Oliveira, T., Yanaze, M., 2019. The adoption stages (Evaluation, Adoption, and Routinisation) of ERP systems with business analytics functionality in the context of farms. *Comput. Electron. Agric.* 156, 334–348.
- Kaushik, K., Mishra, R., 2019. Predictors of E-government adoption in India: direct and indirect effects of technology anxiety and information quality. *Int. J. Bus. Inf. Syst.* 31 (3), 305–321.
- Kuo, R.Z., 2018. EMRS Adoption: exploring the effects of information security management awareness and perceived service quality. *Health Policy Technol.* 7 (4), 365–373.
- Kurt, Ö.E., 2019. Examining an e-learning system through the lens of the information systems success model: empirical evidence from Italy. *Educ. Inf. Technol.* 24 (2), 1173–1184.
- Lau, C.M., 2015. The effects of nonfinancial performance measures on role clarity, procedural fairness and managerial performance. *Pacific Account. Rev.*
- Lea, B.R., Mirchandani, D., Sumner, M., Yu, K., 2020. Personality types in learning enterprise resource planning (ERP) systems. *J. Comput. Inf. Syst.* 1–13.
- Leguina, A. **A primer on partial least squares structural equation modeling (PLS-SEM) 2015.**
- Li, Y., Huang, H., Chen, Y.Y., 2020. Organizational climate, job satisfaction, and turnover in voluntary child welfare workers. *Children Youth Services Rev.* 119, 105640.
- McKinney, V., Yoon, K., Zahedi, F.M., 2002. The measurement of web-customer satisfaction: an expectation and disconfirmation approach. *Inf. Syst. Res.* 13 (3), 296–315.
- Mellouli, M., Bouaziz, F., Bentahar, O., 2020. E-government success assessment from a public value perspective. *Int. Rev. Public Administration* 25 (3), 153–174.
- Melović, B., Šehović, D., Karadžić, V., Dabić, M., Čirović, D., 2021. Determinants of Millennials' behavior in online shopping—Implications on consumers' satisfaction and e-business development. *Technol. Soc.* 65, 101561.
- Menon, S., 2019. Critical challenges in enterprise resource planning (ERP) implementation. *Int. J. Bus. Manage.* 14 (7), 54.
- Moh'd Anwer, A.S., 2019. Towards better understanding of determinants logistical factors in SMEs for cloud ERP adoption in developing economies. *Bus. Process Manage. J.* 25 (5), 887–907.
- Mukherjee, A., Malhotra, N., 2006. Does role clarity explain employee-perceived service quality? A study of antecedents and consequences in call centres. *Int. J. Service Ind. Manage.* 17 (5), 444–473.
- Myers, M.P., Tonks, N.K., 1997. PTEN: sometimes taking it off can be better than putting it on. *Am. J. Hum. Genet.* 61 (6), 1234.
- Nguyen, H.T., Dang, T.V., Van Nguyen, V., Nguyen, T.T., 2020. Determinants of e-government service adoption: an empirical study for business registration in Southeast Vietnam. *J. Asian Public Policy* 1–16.
- Nkasu, M.M., 2020. Investigation of the effects of critical success factors on Enterprise Resource Planning (ERP) systems implementation in the United Arab Emirates. In: *Smart Intelligent Computing and Applications*, 159. Springer, Singapore, pp. 611–623.
- Osnes, K.B., Olsen, J.R., Vassilakopoulou, P., Hustad, E., 2018. ERP systems in multinational enterprises: a literature review of post-implementation challenges. *Procedia Comput. Sci.* 138, 541–548.
- Pahi, M.H., Ahmed, U., Sheikh, A.Z., Dakhan, S.A., Khuwaja, F.M., Ramayah, T. **Leadership and commitment to service quality in Pakistani hospitals: the contingent role of role clarity. SAGE Open** 2020; 10(4): 2158244020963642.
- Patterson, M., Warr, P., West, M., 2004. Organizational climate and company productivity: the role of employee affect and employee level. *J. Occup. Organiz. Psychol.* 77 (2), 193–216.
- Peter, S., DeLone, W., McLean, E., 2008. Measuring information systems success: models, dimensions, measures, and interrelationships. *Eur. J. Inf. Syst.* 17 (3), 236–263.
- Pitt, L.F., Watson, R.T., Kavan, C.B., 1995. Service quality: a measure of information systems effectiveness. *MIS Quart.* 173–187.
- Rainer Jr, R.K., Watson, H.J., 1995. The keys to executive information system success. *J. Manage. Inf. Syst.* 12 (2), 83–98.
- Reichers, A.E., Schneider, B., 1990. Climate and culture: an evolution of constructs. *Organiz. Clim. Culture* 1, 5–39.
- Reitsma, E., Hilletofth, P. **Critical success factors for ERP system implementation: a user perspective. Eur. Bus. Rev.** 2018.
- Roky, H., Al Merioui, Y., 2015. Evaluation by users of an industrial information system (XPPS) based on the DeLone and McLean model for IS success. *Procedia Econ. Fin.* 26, 903–913.
- Ruivo, P., Oliveira, T., Neto, M., 2014. Examine ERP post-implementation stages of use and value: empirical evidence from Portuguese SMEs. *Int. J. Account. Inf. Syst.* 15 (2), 166–184.
- Ryu, H.Y., Hyun, D.S., Jeung, D.Y., Kim, C.S., Chang, S.J., 2020. Organizational climate effects on the relationship between emotional labor and turnover intention in Korean firefighters. *Safety Health Work* 11 (4), 479–484.
- Salam, M., Farooq, M.S., 2020. Does sociability quality of web-based collaborative learning information system influence students' satisfaction and system usage? *Int. J. Educ. Technol. Higher Educ.* 17, 1–39.

- Samie, F., Riahi, L., Tabibi, S.J., 2015. The relationship between role clarity and efficiency of employees in management & resource development department of ministry of health and medical education of IR Iran, 2014. *Biosci. Biotechnol. Res. Asia* 12 (3), 2803–2812.
- Sanyal, S., Hisam, M.W., 2018. The impact of teamwork on work performance of employees: a study of faculty members in Dhofar University. *IOSR J. Bus. Manage.* 20 (3), 15–22.
- Schnackenberg, A.K., Tomlinson, E., Coen, C., 2021. The dimensional structure of transparency: a construct validation of transparency as disclosure, clarity, and accuracy in organizations. *Hum. Relat.* 74 (10), 1628–1660.
- Schneider, B., Brief, A.P., Guzzo, R.A., 1996. Creating a climate and culture for sustainable organizational change. *Organiz. Dyn.* 24 (4), 7–19.
- Schneider, B., Salvaggio, A.N., Subirats, M., 2002. Climate strength: a new direction for climate research. *J. Appl. Psychol.* 87 (2), 220.
- Sebetci, Ö., 2018. Enhancing end-user satisfaction through technology compatibility: an assessment on health information system. *Health Policy Technol.* 7 (3), 265–274.
- Sebetci, Ö., Çetin, M., 2016. Developing, applying and measuring an e-Prescription Information Systems Success Model from the perspectives of physicians and pharmacists. *Health Policy Technol.* 5 (1), 84–93.
- Seddon, P. B., Kiew, M.-Y., & Patry, M. A Partial Test and Development of the DeLone and McLean Model of IS Success. *ICIS 1994 Proceedings 1994*.
- Seddon, P., Kiew, M.Y., 1996. A partial test and development of DeLone and McLean's model of IS success. *Austral. J. Inf. Syst.* 4 (1).
- Seddon, P.B., Staples, S., Patnayakuni, R., Bowtell, M., 1999. Dimensions of information systems success. *Commun. Assoc. Inf. Syst.* 2 (1), 20.
- Sedera, D., Gable, G., 2004. A factor and structural equation analysis of the enterprise systems success measurement model. *Twenty-Fifth International Conference on Information Systems*.
- Sharma, S.K., Sharma, M., 2019. Examining the role of trust and quality dimensions in the actual usage of mobile banking services: An empirical investigation. *Int. J. Inf. Manage.* 44, 65–75.
- Shatat, A.S., Dana, N., 2016. Critical success factors across the stages of ERP system implementation in Sohar University: A case study. *International journal of management and applied research.* 3 (1), 30–47.
- Sirsat, S.S., Sirsat, M.S., 2016. A validation of the DeLone and McLean model on the educational information system of the Maharashtra State (India). *Int. J. Educ. Learn. Syst.* 1.
- Soliman, M.S.M., Karia, N., Moeinzadeh, S., Islam, M.S., Mahmud, I., 2019. Modelling intention to use ERP systems among higher education institutions in Egypt: UTAUT perspective. *Int. J. Sup. Chain. Mgt* 8 (2), 429.
- Stefanovic, D., Marjanovic, U., Delić, M., Culibrk, D., Lalic, B., 2016. Assessing the success of e-government systems: an employee perspective. *Inf. Manage.* 53 (6), 717–726.
- Tam, C., Oliveira, T., 2016. Understanding the impact of m-banking on individual performance: DeLone & McLean and TTF perspective. *Comput. Hum. Behav.* 61, 233–244.
- Taufiq, A., Siddiqui, D.A. 2020. Exploring the Post Implementation Impact of Enterprise Resource Planning (ERP) System on End Users' Performance with the Complementary Role of Demographic Characteristics: Evidence from Pakistan. *SSRN 3755240*.
- Vargas, M.A., Comuzzi, M., 2020. A multi-dimensional model of Enterprise Resource Planning critical success factors. *Enterprise Inf. Syst.* 14 (1), 38–57.
- Veeramootoo, N., Nunkoo, R., Dwivedi, Y.K., 2018. What determines success of an e-government service? Validation of an integrative model of e-filing continuance usage. *Government Inf. Quart.* 35 (2), 161–174.
- Wang, D., Gan, C., Wu, C., 2016. LMX and employee voice: a moderated mediation model of psychological empowerment and role clarity. *Personnel Rev.* 52, 102076.
- Wang, C., Teo, T.S., 2020. Online service quality and perceived value in mobile government success: an empirical study of mobile police in China. *Int. J. Inf. Manage.* 27 (4), 458–477.
- Wang, Y.Y., Wang, Y.S., Lin, H.H., Tsai, T.H., 2019. Developing and validating a model for assessing paid mobile learning app success. *Interact. Learn. Environ.* 27 (4), 458–477.
- Yadav, S.K., Joseph, D., 2020. Prioritising critical failure factors for the adoption of ERP system using TOPSIS method. *International Journal of Operational Research.* 39 (2), 145–159.
- Yadav, M., Rangnekar, S., 2015. Service quality from the lenses of role clarity and organizational citizenship behavior. *Procedia-Soc. Behav. Sci.* 189, 395–405.