Geospatial Information Technology Systems And Revenue Collection: The Case of Ilala City Council And Kinondoni Municipal Council

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Abstract

This study investigated the influence of critical success factors in boosting the performance of geospatial information technology systems (GITSs) in local government authorities. The data were collected using a questionnaire involving business centres. Analysis was done using inferential statistics to analyse both primary and secondary data. The study employed a quantitative analysis approach, which was supported by two related concepts of diffusion of innovation and institutional theories: the technological, organizational, and environmental framework; and the technology acceptance model. The model was used to describe user perceptions, and actual geospatial information technology systems utilization, to acquire the perceptions of local government authorities, users and business license taxpayers. The study results revealed that technological, organizational, support, environmental, project management, and individual aspects are the significant critical success factors for enhancing the performance of geospatial information technology systems in local government authorities revenue collection, but their ranking is in the order T,O,P,S,E,I. The significance of this study is that it provides a credible approach, based on sound principles, for determining the most important factors that influence the performance of the applications of geospatial information technology systems within local government authorities.

Keywords: *GITS performance improvement, CSF, TOSEPI, OSR collection, local government*

1. Introduction

1.1 Background of the Study

Geospatial information technology system (GITS) is a powerful tool that can be used to identify, quantify, and track revenue and taxpayers from their locations (Namangaya, 2018). It can also show the status of revenue and taxpayers; thus, it is a useful tool for monitoring revenue collection performance. The GITS is a system that embraces different technologies for data collection, processing, management, visualization, and/or mapping; to support decision-making by different stakeholders in organizations.

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In developed countries, GITSs integrate advanced systems and technologies including information systems (ISs), information technology (IT), geospatial technologies (GTs), global positioning systems (GPSs), remote sensing (RS), geographic information systems (GISs), and mobile mapping technologies (MMTs). The introduction of GITS in developing nations is relatively recent and novel, thus requiring the adoption of local methods with a clear scope, data-sharing norms, and an appropriate geodatabases for successful deployment (Haneem & Kama, 2018; Namangaya, 2018; Zabadi, 2016). The proper introduction of GITS to support LGA's functions and operations dramatically raises organizational and individual productivity, leading to significant gains in organizational and individual profitability (Yadav et al., 2019; Dwivedi et al., 2017; Arpaci et al., 2012).

According to numerous studies, GITS is only effective when it fulfils a user's specifications on time and budget; and it is financially satisfying the operations of an organization (Alwaraqi & Zahary, 2012). Moreover, GITS is only effective when utilized for some time; resulting in the desired output and benefits at all levels (Scott, 2018; Hameed et al., 2012).

In developing countries, the informal sector has long eclipsed the formal sector; a situation leading to the surprisingly low own source revenue (OSR) collection ability by LGAs of only 10% of their financial requirements. Thus, LGAs receive 90% of their funding from the central government and other external grants (CAG, 2020; URT, 2016). This dismal state of affairs is believed to stem from low and/or inefficient use of GITS in Tanzania, and it parallels the situation found in other developing countries where the use of GITS is relatively new, thus requiring local strategies for its successful implementation (Haneem & Kama, 2018; Namangaya, 2018; Zabadi, 2016).

Research shows that knowledge of the critical success factors (CSFs) for the use of GITS assists in minimizing the risk of failure at individual and organizational levels (Huang & Lai, 2012). When developing and implementing GITS, CSFs ensure that early investments are repaid over time through improved revenues (McCluskey & Huang, 2019; McCluskey et al., 2018; Namangaya, 2018; Manwaring, 2017; Collin et al., 2016; World Bank, 2015).

Li and Feeney (2014) studied the variables that impact LGAs e-services and discovered that organizational type, capability, culture, and communication services were significant variables for successful e-services. Results from other studies indicate there were 37 important factors categorized as environmental, individual, organizational, and technological that impacted the successful adoption of GITS in the Malaysian local government (Haneem & Kama, 2018). Similarly, Zabadi (2016) offers a conceptual framework for the use of GITS in the Yemeni Jordanian Telecommunications Sector and identifies organizational, technological, and individual aspects as the key determinants of GITS adoption in the sector. In North-East Africa and Egypt, studies determined that the CSFs for GITS use were external environment, organizational issues, technology issues, management attitude, and human characteristics (Eldrandaly et al., 2015). Amade et al. (2017) conducted a study in Mozambique, based on the diffusion of innovation (DOI) theory and TOE framework, to investigate factors impacting the success of the geographic information technology application, and established that technical proficiency, security, competitive pressure, financial considerations, governmental policies, donor pressure, and purpose to use; as some of the important critical success factors.

Research conducted in Tanzania by Ishengoma et al. (2019) examined critical success factors for m-Government, and learnt that the factors that strongly influenced the use of m-Government services were security, access, cost, usability, facilities, and personal attitudes.

Studies by Haneem and Kama (2018) and Zabadi (2016) prove that strong local revenue collection enables LGAs to respond better to citizens' needs. In Tanzania, initiatives have been taken by LGAs since the 1990s to establish GITS and integrate it into their functions to enhance revenue collection and implement spatial technologies (Mzava et al., 2019; Namangaya, 2018; Worrall et al., 2017; Mtalo, 2016; World Bank, 2015). Since 2006, numerous GITSs have been obtained and installed in LGAs in Tanzania, with the assistance of the World Bank, TSCP, and PO-RALG (Sausi et al., 2021; Kessy, 2019; McCluskey & Huang, 2019; McCluskey et al., 2018; Pérez-Mira et al., 2017) to support decision-making, policy, and planning. Nevertheless, despite significant investments made in GITSs by the Tanzania government, the majority of LGAs in the country only met roughly between 40%–70% of their collection goals (CAG, 2020).

Existing studies show that for GITS to be used successfully at both individual and organizational levels, CSFs that affect its performance must be identified and fine-turned (Haneem & Kama, 2018; Namangaya, 2018; Amade et al., 2017; Zabadi, 2016). However, there is little evidence of research on the study of CSFs that contribute to the improvement of GITS performance in Tanzania's LGAs (Namangaya, 2018). The goal of this study, therefore, was to investigate key CSFs contributing to the performance of GITS in Ilala and Kinondoni Councils, in Dar es Salaam, Tanzania; based on the technological organization environment (TOE) framework (Tornatzky et al., 1990), diffusion of innovation (DOI) theory (Rogers, 1962), institutional theory (Scott, 2001), and the technology acceptance model (TAM) (Davis, 1989).

1.2 Theories Governing the Study

As mentioned above, the TOE framework, DOI theory, institutional theory, and the TAM model were used to examine critical success factors that influence the performance of GITS within selected LGAs in Dar es Salaam Region (Scott, 2001; Tornatzky et al., 1990; Davis, 1989; Rogers, 1962). The theories, framework, and model were employed to determine any correlation between CSFs and GITS performance in local governments. The TOE framework takes into account factors that influence the performance of GITS at the organizational level, whereas the DOI theory addresses the performance of GITS at the individual level. The TAM model was used to investigate users' opinions of the utilization of GITS in revenue collection; while the institutional theory was employed to comprehend external elements that might affect GITS performance. The DOI theory was utilized to look at some of the variables relating to individual characteristics that were not included in the institutional theory, even though the institutional theory encompasses both organizational and individual elements that influence GITS performance in LGAs' revenue collection. The study explored only a small subset of the variables mentioned in the two theories; and the model in this study because the number of variables used could be altered as technology develops (Kašćelan et al., 2018).

1.2.1 Technological Organization Environment Framework

Technological, organizational and environmental (TOE) factors that influence the use of information systems within an organization are contained in the TOE framework, which Tornatzky et al. (1990) established. In this study, organizational characteristics of firm size, rules, and human resource competencies, which that have been found to affect GITS performance in local governments, were used from the TOE framework. The TOE framework viewpoints are effectively used by scholars of information systems to confirm that organizational factors affect GITS performance in local governments (Tornatzky et al., 1990); and this has been validated in other IT environments such as electronic services (Kašćelan et al., 2018), electronic procurements (Suleiman, 2015), electronic learning (Alone, 2017), electronic and mobile commerce, human resources information systems, electronic data exchange, and enterprise resources planning systems (Arpaci et al., 2012).

1.2.2 Diffusion of Innovation Theory

The diffusion of innovation theory (DOI) was developed to clarify how a new idea spreads over time through a particular person or group, and the steps taken in their decision-making process regarding it (Rogers, 1962). The theory suggests key attributes such as relative advantage, compatibility, complexity, trialability, and observability that play roles in an individual's attitude towards innovation (Rogers, 1995). Based on this theory, this study examined trialability, compatibility, and complexity characteristics to ascertain how they affected GITS performance. The theory's fundamental flaw is its emphasis on using innovation, and its omission of external environmental constructs (Sayginer & Ercan, 2020; Evwiekpaefe et al., 2012).

The DOI theory alone cannot provide full understanding of the CSFs that affect GITS' performance in revenue collection at both organizational and personal levels. To better comprehend the utilization of GITS in local government, Wang et al. (2010) and Zhu et al. (2006) merged the DOI theory and TOE framework to better understand the use of GITS in organizations. The determining factors of GITS and cloud computing have also been studied using a combination of the DOI theory and the TOE framework (Sayginer & Ercan, 2020; Amade et al., 2017). Consequently, the approach adopted in this study combined the DOI theory and TOE framework to account for both individual and organizational factors that affect the performance of the analysed GITS applications in LGAs.

1.2.3 Institutional Theory

The institutional theory aims to gain a deeper understanding of the more resilient aspects of the social structure; thus, it considers the process by which structures—including schemes, beliefs, attitudes, norms, culture, and behaviours of individuals and organizations—are strongly influenced by various networks and interactions (Scott, 2001).

The institutional theory infers to the culture and behaviour of the working staff, which tend to attract or discourage customers from paying revenue. A positive attitude of customers tends to encourage revenue and tax-paying (Dick-Sagoe & Tingum, 2021; Zhao et al., 2018). Thus, the theory adds external pressure—such as rules/laws and policies—to the external environment of the TOE framework to better explain the success of GITS in organizations. Since the theory addresses the role of institutions, it is vital to take into account the impact of decisions and the social and cultural factors within an organization.

The drawback of the institutional theory is that it can only be implemented at the organizational level; and not at the individual level. Numerous researches integrate the TOE framework and the institutional theory (Soares-Aguiar & Palma-Dos-Reis, 2008; Gibbs & Kraema, 2004). The institutional theory, DOI theory and the TOE framework were integrated by Li (2008) to explain the use of electronic procurement systems in organizations. The study by Amade et al. (2018) identified the main factors and uses of GITS in organizations in developing countries, using the DOI theory, institutional theory and the TOE framework. Similarly, this research combined the institution theory, DOI theory, and the TAM model to examine multiple factors that contribute to the performance of GITS revenue collection in designated LGAs.

1.2.4 Technology Acceptance Model

The technology acceptance model (TAM) primarily seeks to describe and forecast user acceptance in GITS use. The TAM highlights two significant features—perceived usefulness, and perceived ease of use—as key drivers that push user motivation in the usage of GITS innovation (Davis, 1989). While perceived usefulness measures how much users believe in utilizing new technology to improve their ability to execute their jobs, perceived ease of use measures how little effort is expected to be used when using a given system (Davis, 1989).

The weakness of TAM is that it only takes into account individual contextual variables, ignoring the organizational part of decision-making (Hameed et al., 2012). Hameed et al. used TAM's biggest assets—such as its capacity to generalize a variety of technologies—to deal with the perceived limitations. Other studies examined how an organization uses innovation, by integrating TAM with other GITS usage models (Teo et al., 2009; Quaddus & Hofmeyer, 2007). Numerous studies use the TOE framework and TAM to examine variables that have most influences on the use of GITS in LGAs (Haneem & Kama, 2018; Alone, 2017; Zabadi, 2016; Gangwar et al., 2015). The TAM encourages the use of newer innovations—such as artificial intelligence, bitcoin technology, network marketing, social media, and digital financial inclusion—to ease access to customers, and provide an easy platform for revenue improvement (Kamara et al., 2022; Mukuwa & Phiri, 2020; Oladele, 2020; Chang, 2017; Maiga, 2015; Zeng & Zhang, 2013). Other researchers have examined how customers of large mobile businesses have found it simple to use digital financial services such as M-PESA, TIGO PESA, AIRTEL MONEY, T-PESA, and HALO PESA to pay taxes and other obligations automatically throughout their financial activities (Olaoye & Akinola, 2019; Zhang & Huang, 2019; Li, 2018; Moro, 2008).

The current study uses the TAM model to apply perceived usefulness and ease of use, to get the perspectives of LGA users, together with those of business license taxpayers, on the usage of GITS in collecting OSR. The DOI and institutional theories, TOE framework, and TAM model were merged to further understand factors influencing the performance of GITS in LGAs at both individual and organizational levels.

The literature that combines DOI, the institutional theory, TOE framework, and the TAM model to analyse the contribution of CSFs in improving the GITS performance in LGA revenue collection is limited. In addition, there is limed knowledge of CSFs factors that influence the utilization of GITS for boosting OSR collection in Tanzania. This study, therefore, sought to combine the DOI and institutional theories, TOE framework, and the TAM model to identify factors that significantly influence the performance of GITS in LGA's revenue collection.

This article conceptualizes CSFs as independent variables that influence the performance of GITS. Six major categories of CSFs and their key components, as presented in Figure 1, summarize the factors and processes of interest. Figure 1 shows that the independent variables (CSFs) associated with GITS performance are the technological, organizational, support, environmental, project, and individual factors; while GITS performance is treated as the dependent variable. These variables work together to influence how well GITS are used in the LGAs under investigation. Each independent variable was analysed to determine its contribution to GITS performance in the local government revenue collection.

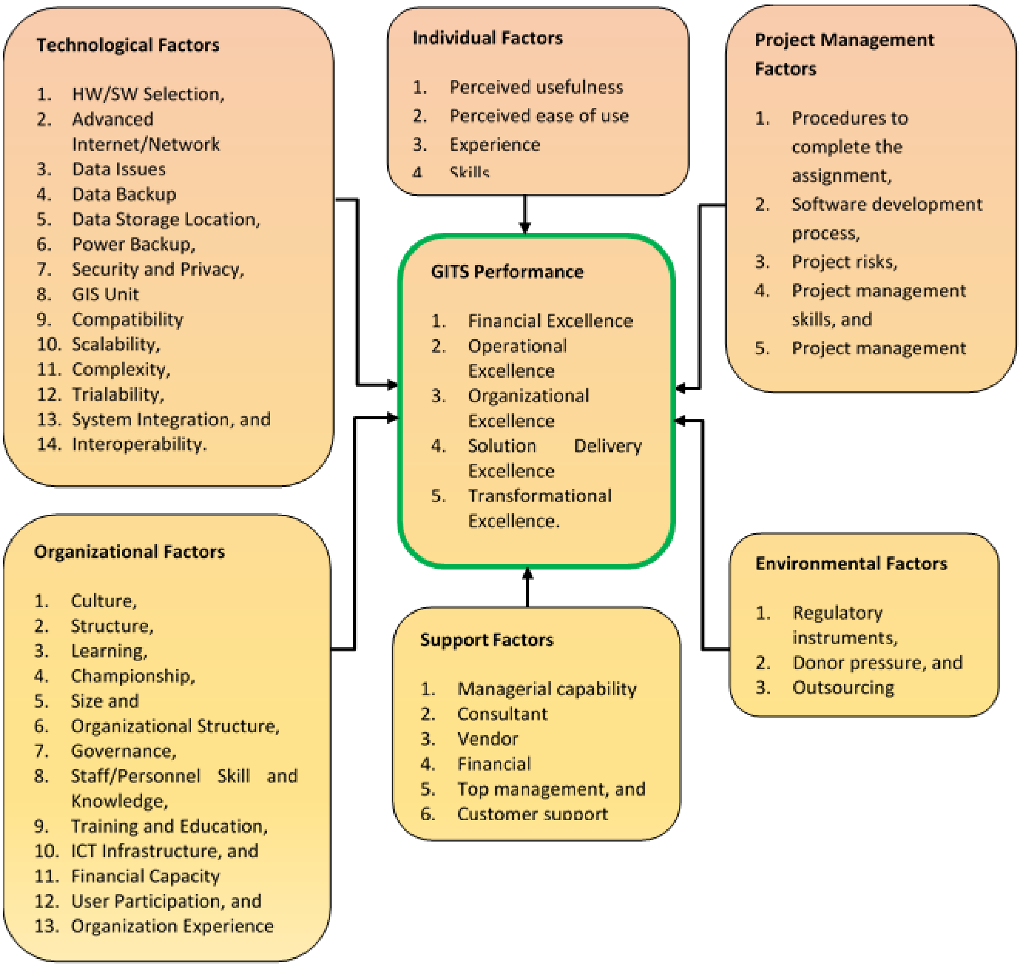

Figure 1: Factors Influencing the Performance of GITS in LGA
Source: Authors Construct (2020)

Technological factors describe the properties of a technology in a local government authority: such properties comprise costs, equipment, methods, and functionalities that use technology (Masser & Craglia, 2020; Kessy, 2019; Haneem & Kama, 2018; Namangaya, 2018). Organizational factors are procedures taken by an organization to facilitate the creation of the organizational environment as presented by the majority of IT applications in the context of LGAs (Ishengoma et al., 2019; Haneem & Kama, 2018). Supporting factors are those that make the established GITS sustainable. These factors include financial issues, consultants, managerial capability, customer support, vendors, and top management (Chalu, 2021; Diatmika & Widhiyani, 2021; Nallaperumal & Thangaman, 2020).

The environmental variables include internal and external pressure that influences the performance of GITS. These forces include rules and regulations that govern data (Haneem & Kama, 2018; Amade et al., 2017; Hameed, 2017; Mrutu & Mganga, 2016; Wang & Feeney, 2016), and project management factors that ensure that the GITS projects satisfy project requirements that enable problem completion within a specified time. These include skills, knowledge, techniques, and tools (Al-waraqi & Zahary, 2018; Albrecht, 2017; Dwivedi et al., 2017). The individual factors are the personnel technological usage patterns that influence the performance of GITS in an organization (Sichone, 2019; Bano, Zowghi, & Da Rimini, 2018; Evwiekpaefe et al., 2018; Haneem & Kama, 2018; Dwivedi et al., 2017; Collin et al., 2016; Zabadi, 2016; Venkatesh et al., 2003; Tornatzky et al., 1990).

The underlying premise of the conceptual framework is that, if LGAs positively consider and implement these CSFs, all currently established GITS, as well as those still in development, will successfully carry out the designated functions, and LGAs will realize their full potential value that has been constrained only by the calibre of the GITS technological components. This study identified the following six performance ingredients as constituting GITS performance: financial, operational, organizational, solution delivery, and transformational excellence (Mohamad et al., 2022; Yamin, 2015).

1.3 Strategy for Assessing GITS Performance

In this study, the dependent complex variable—believed to be influenced by separate TOSEPI CSFs that are the subject of our analysis—is GITS performance, whose components have been outlined in the preceding section. The main presumption, supported by current literature, is that once the most important CSFs in a GITS setup of a certain LGA are identified, the LGA management will use the information to establish guidelines on how to control the important CSFs to enhance the overall performance of their GITS. A successful GITS deployment connotes financial excellence, operational excellence, solution delivery excellence, and transformational excellence (Mohamad et al., 2022; Yamin, 2015).

A review of literature on the factors influencing GITS performance and field data identified six factors that may influence the use of GITS in LGAs in the study area. The six factors identified—which are presented in the conceptual framework, and abbreviated as TOSEPI—were modelled using multiple regression analysis to find out whether they influence GITS performance.

2. Methodology

2.1 Study Area

The Ilala Municipal Council (IMC) has 3 divisions, 36 wards, and 159 streets; while the Kinondoni Municipal Council (KMC) has 20 wards and 106 streets (IMC, 2019; KMC, 2018). The study was conducted in four (4) streets (*mitaa*), and four (4) wards; of which two (2) were from each council. These are Mtambani A in Jangwani Ward, and Madenge in Buguruni Ward from IMC; Bonde la Mpunga in Msasani Ward, and Minazini in Makumbusho Ward, from KMC. The IMC and KMC are located in Dar es Salaam Region. The IMC (also referred to as Ilala City Council (ICC) and KMC are among the 5 councils forming the Dar es Salaam Region. The other councils include Kigamboni Municipal Council, Temeke Municipal Council and Ubungo Municipal Council (Figure 2).

The selection of the study region was influenced by the necessity for extensive spatial coverage for data collection to make valid generalizations for the entire councils, and to give an in-depth understanding of the research objectives. Additionally, the two study areas were picked because the LGAs (IMC and KMC) had used GITS to enhance revenue collection and mainstream geospatial technologies for a sizable amount of time: as such they had experiences with some of the difficulties associated with using the GITS technology in revenue collection. Also, the IMC and KMC were among councils in the country that had under-collected OSRs for many years, which made them the best candidates for the research of individual and organizational level factors influencing GITS performance in these LGAs.

2.2 *Sampling Frame and Sample Size*

The sample area for this study included Buguruni, Jangwani, Makumbusho, and Msasani in Kinondoni Municipal Council. In total, 246 respondents were chosen depending on the degree of confidence and precision from 4 streets: Mtambani A, Madenge, Bonde la Mpunga, and Minazini. Data was drawn from individual business centres in an investigation carried out between September and November 2020.

Respondents from business centres were gathered from each respective LGA's Municipal Council (MC) of the revenue-collecting section. Also, any person who owned a business and had a business license, or a representative who worked for the business centre/business owner, was a respondent. Following this, wards in each LGA were ranked in ascending order according to the number of business centres that were paying business license fees in 2020. The researcher purposely chose one street from each of the top and bottom two wards in Ilala and Kinondoni, based on the same standards. Therefore, four streets—Bonde la Mpunga (Msasani), Minazini (Makumbusho), Mtambani A (Jangwani), and Madenge (Buguruni)—were studied.

2.3 *Data Collection Methods*

A case study design approach was used to gather the data needed to indicate CSFs that have an impact on the GITS performance in the OSR collection of LGAs. The objective of the data collection was to identify the TOSEPI variables that influence the functionality of the GITS. The data was gathered using a questionnaire.

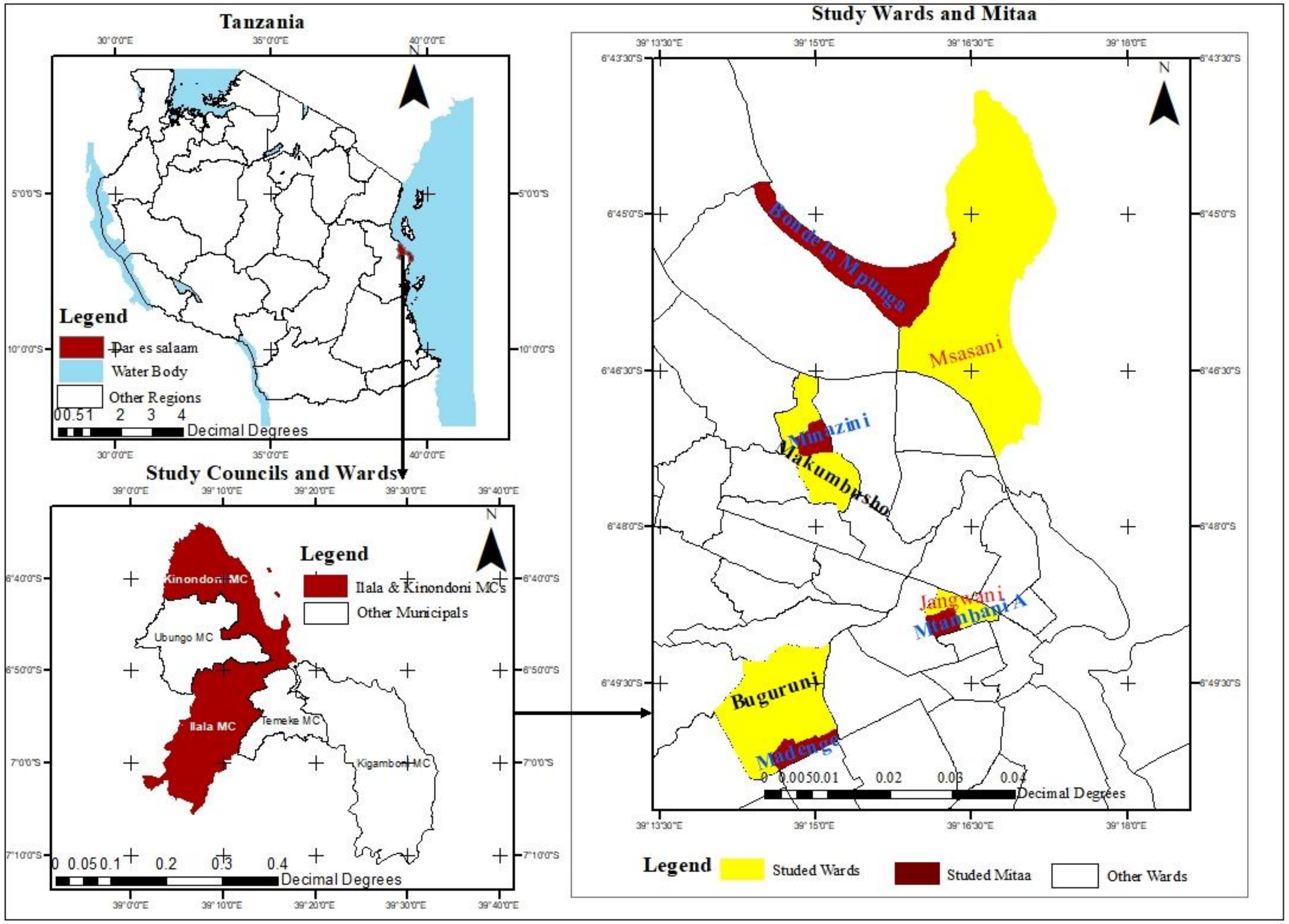

Figure 1: Location of the Study Area
Source: Authors Construct (2020)

Research information was mainly gathered from 246 respondents who were business entities, or their representatives, who had paid business license OSR in IMC and KMC. A non-probability (purposive) sampling method was used to select the respondents from business entities in the study area. This type of sampling was considered suitable to allow the researcher to select a sample that would fulfil the purpose of the study.

Both open- and closed-ended questions were used on the questionnaire. A self-administration technique was used by the researcher and her assistants to issue a total of 246 questionnaires. This helped the researcher to collect information that was difficult to obtain through face-to-face interviews, such as taxpayers' personal experiences and difficulties using the GITS to renew and pay for a business license, request a control number, carry out assessment, and enable billing; and tracking customer compliance. The study was carried out between October 2020 and November 2020.

Additional data was collected on the technological, organizational, support, environmental, project, and individual factors that contributed to a successful performance of the GITS. The respondents were asked to rank the CSFs that might be utilized to enhance GITS performance in LGA revenue collection using a Likert 5-scale, with 1 denoting 'Strongly Disagreed', 2 denoting 'Disagreed', 3 denoting 'Neutral', 4 denoting 'Agreed', and 5 denoting 'Strongly Agreed'. The constraint of this method was that, in a few cases, some respondents were not willing to fill in the questionnaire; where it was hence necessary to replace them.

A validity and reliability test was done to confirm the investigation's constructions and guarantee that the results of the questionnaire's fields were valid and reliable. The pre-test of the questionnaire, which involved nine (9) respondents chosen from four designated *streets*, took place before the collection of field data. Pre-test results were used to assess the feasibility of the investigation, the validity and reliability of the survey instrument, and the reliability of the participants who would provide the data for the main study.

2.4 Data Analysis

A range of methodologies for quantitative data analysis were used to determine CSFs for GITS performance in LGAs. The data collected from the study area was processed and analysed using the Statistical Package for Social Sciences (SPSS-26) software to extract important information from the questionnaires, and offer responses to the study's main research objectives. Inferential statistics were used to link between CSFs and GITS performance. Correlation coefficients between the independent and dependent variables were determined to estimate the linear relevance of the two features. The association between the CSFs and GITS performance in revenue collection in IKMC was explained by the multiple regression analysis. The approach of the study was based on a modified stock valuation model using earnings (Ohlson, 1995). Accordingly, the following is the specification for the study's model:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad (1)$$

Where: X = critical success factors; Y = GITS performance. Six data points (technological, organizational, support, environment, project management, and individual) were used to assess the critical success factors: X_1 represents technological factors; X_2 represents organizational factors; X_3 represents support factors; X_4 represents environment factors; X_5 represents project management factors; X_6 represents individual factors; β = regression coefficient; and ε = error term for the model.

The following three assumptions were considered:

i) More than 50% of the independent variables should be explained by the modal summary's coefficient of determination.
ii) The significant value (p-value) is calculated at a 5% level of significance and 95% confidence level in the ANOVA, and coefficient regression should be $p < 0.05$.
iii) The value of predictions or independent variables should be $p \leq 0.05$; at a 5% level of significance, and 95% confidence level.

3. Results and Discussion

3.1 Relationship between TOSEPI Factors

Correlation analysis was employed to assess the significance of the link between the independent and dependent variables in the conceptual research model, and the strength of their relationship. The coefficient of correlation generated in the study shows how closely one independent variable responds to changes in another independent variable. Strongly correlated independent variables will adversely affect the outcome that was being sought. In Table 1, a correlation value $r = 1$ indicates that the two variables examined were strongly linearly correlated, while a correlation value $r = 0$ meant they were not correlated at all. Therefore, it is recommended that correlation analysis be used as a preliminary test before using regression or any other complex model for solving problems. A negative correlation value means that an increase in one variable results in a linear decrease in the value of the variable. Table 1 displays the correlation analysis of the CSFs.

The variables in the correlation matrix are the TOSEPI factors considered to explain GITS performance in LGAs. Such factors include technological factors, organizational factors, support factors, environmental factors, project management factors, individual factors, and GITS performance.

The investigation examined whether the hypothesis or prediction was consistent with the collected data. Wong and Hiew (2007) define the correlation coefficient value (r) range of 0.10–0.299 as weak, 0.30–0.49 as medium, and 0.50–1.0 as strong. However, Field (2018) suggests that correlation should not go beyond 1.0 to avoid multicollinearity.

Table 1: Correlation Matrix of the TOSEPI Factors

		Technological Factors	Organizational Factors	Support Factors	Environment Factors	Project Management Factors	Individual Factors	GITS Performance
Technological Factors	Pearson Correlation	1						
	Sig. (2-tailed)							
	N	246						
Organizational Factors	Pearson Correlation	.908**	1					
	Sig. (2-tailed)	.000						
	N	246	246					
Support Factors	Pearson Correlation	-.035	-.075	1				
	Sig. (2-tailed)	.585	.244					
	N	246	246	246				
Environment Factors	Pearson Correlation	-.379**	-.315**	.118	1			
	Sig. (2-tailed)	.000	.000	.065				
	N	246	246	246	246			
Project Factors	Pearson Correlation	.037	.061	.150*	.149*	1		
	Sig. (2-tailed)	.565	.338	.019	.020			
	N	246	246	246	246	246		
Individual Factors	Pearson Correlation	.215**	.205**	-.291**	.212**	-.033	1	
	Sig. (2-tailed)	.001	.001	.000	.001	.603		
	N	246	246	246	246	246	247	
GITS Performance	Pearson Correlation	**.605****	**.542****	**.176****	**.533****	**.165**	**.270****	**1**
	Sig. (2-tailed)	.000	.000	.006	.000	.008	.000	
	N	246	246	246	246	246	246	246

Source: Field Data (2020).

Table 1 shows the highest correlation coefficient was 0.344, which is less than 1.0, indicating there was no multicollinearity problem; while the lowest correlation coefficient was 0.187. Therefore, the general results in the table indicate that the relationship is mainly weak.

Furthermore, Table 1 shows the correlation results for the research variables. As can be seen, there was a positive correlation between the independent and dependent variables. Technological factors were (r = .605, p < 0.05), organizational factors (r = .542, p < 0.05), support factors (r = .176, p < 0.05), environmental factors (r = .533, p < 0.05), project management factors (r = .165, p < 0.05); whereas the individual factors were (r = .270, p < 0.05). As a result, the study hypotheses were supported, indicating that technological factors, organizational factors, support factors, environmental factors, project management factors, and individual factors: all had statistically significant effects on the performance of GITS in LGAs.

3.2 Multicollinearity Test on Independent Variables

To prevent inaccurate data, the regression analysis procedure was used to analyse multicollinearity between independent variables. It was crucial to look for multicollinearity since it could increase the variance of parameter estimates by including multilinearity, rendering them statistically useless on their own. Additionally, multicollinearity causes issues with calculating the coefficients of independent variables and their interpretation. To identify multicollinearity among explanatory hypotheses, the tolerance rate and variance inflating factors (VIF) were employed. Here, the tolerance factor (TF) should be at least 0.1 (10%) to make the factor viable; and the VIF should not be greater than 10. The multicollinearity results in Table 2 show that there are no issues with multicollinearity among the explanatory factors.

Table 2: Multicollinearity between Independent Variables

Coefficients[a]			
		Collinearity Statistics	
Model		*Tolerance*	*VIF*
1	Technological Factors	.158	6.314
	Organizational Factors	.172	5.816
	Support Factors	.843	1.186
	Environment Factors	.699	1.430
	Project Management Factors	.942	1.062
	Individual Factors	.745	1.341

Note: [a] Dependent Variable: GITS Performance

Source: Field Data (2020)

3.3 Relationship between the CSFs and GITS Performance

Regression analysis was used to study the relationship between the independent and dependent variables, where the GITS performance was used as a dependent variable; and technological, organizational, environment, support, and individual factors were used as independent variables.

Table 3: Model Summary

			Model Summary[a]		
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.775[b]	.601	.591	3.18329	.518

Note: **a.** Predictors (constant): Individual factors, project management factors, organizational factors, support factors, environment factors, technological factors
b. Dependent variable: GITS Performance

Source: Field Data, (2020).

In the model summary (Table 3), the coefficient of determination (r^2) explains 60.1% of the independent variables. This is consistent with the initial assumption, which stated that the coefficient of determination in the model summary should explain the independent variables to a greater extent than 50%. This suggests that only 60.1% of the qualities that have an impact on the dependent variable can be explained by independent factors.

The coefficient of determination is noteworthy since features not included in the independent variables account for 39.9% of the variations. The Durbin-Watson data also stays in the range of 0–4. Numbers 0–2 indicate positive autocorrelation, whereas numbers 2–4 indicate negative autocorrelation. The statistic for Durbin-Watson is 0.518, as shown in Table 3; which is within the permissible range of 0–2. Therefore, there was no correlation between serial errors and the model's ability to accurately represent data.

An ANOVA test was run to determine the significance and validity of the regression model that was fitted to the data. The regression model was determined to be statistically significant based on the findings, as shown by $F(6, 239) = 60.015$, $p<.05$. This supports the second supposition, which stated that the significant value (p value) in the ANOVA and coefficient regression should be p=0.000-0.05 at a 5% level of significance, and a 95% confidence level. Table 4 displays the ANOVA results.

Table 4: ANOVA Results for Explaining the Significance and Validity of the Model

ANOVA[a]						
Model		**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1	Regression	3648.907	6	608.151	60.015	.000[b]
	Residual	2421.861	239	10.133		
	Total	**6070.768**	**245**			

Note: **a.** Dependent Variable: GITS Performance
b. Predictors: (constant), individual factors, project management factors, organizational factors, support factors, environment factors, technological factors

Source: Field Data (2020).

Regarding the values of the regression model coefficients shown in Table 5, the multiple regression model's solutions employing environmental factors, project management factors, and individual factors of GITS performance produced the following model.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \varepsilon \qquad (2)$$

$$Y = 0.450 + 0.210X_1 + 0.137X_2 + \ 0.112X_3 + +0.102X_4 + 0.113X_5 + 0.290X_6 \qquad (3)$$

Where: X_1 is technological factors, X_{12} is organizational factors, X_3 is support factors, X_4 is environmental factors, X_5 is project management factors, and X_6 is individual factors, β = regression coefficient, and ε = error term for the model.

Table 5: Regression Model Coefficients[a]

Model	Coefficients[a] Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1 (Constant)	.450	1.765		9.320	.000
Technological Factors	.210	.057	.520	5.064	.000
Organizational Factors	.137	.055	.067	.680	.497
Support Factors	.112	.024	.154	3.472	.001
Environment Factors	.102	.019	-.257	5.256	.000
Project Management	.113	.057	-.083	1.983	.048
Factors: Individual Factors	-.290	.043	-.299	6.320	.000

Note: **a** Dependent Variable: GITS Performance
Source: Field Data (2020)

Additionally, Table 5 provides the value of the t statistic and its *p*-value for each variable that was included in the model, as well as unstandardized β and standardized coefficients (*Beta*) regression coefficients. The GITS performance (Y) is equal to the value of the constant term 0.450 if the contribution of each factor in equation (2) is taken to be zero. When absolutely no effort is made to increase the contribution of independent variables, this circumstance represents the worst-case scenario. On the other hand, when all indicators are set to 1, the GITS performance will equal 0.834, which represents the best-case situation when the component factor contributions are maximized. The individual factor contribution is obtained by setting the value of the factor to 1, and setting the value of all other factors to 0. Table 6 summarizes the net GITS performance and the contribution of each factor.

Table 6: Summary of Individual Factor Contribution to GITS Performance

	Unstandardized Coefficients B	Std. Error	Sig.
Technological Factors	.210	.057	.000
Organizational Factors	.137	.055	.497
Project Management Factors	.113	.057	.048
Support Factors	.112	.024	.001
Environment Factors	.102	.019	.000
Individual Factors	-.290	.043	.000

Source: Field Data, (2020)

The findings showed a strong 0.000-valued association between technological factors and GITS performance. The findings showed a strong 0.497 correlation between organizational factors and an increase in GITS performance. The outcomes showed, with a value of 0.001, a strong association between support factors and enhanced GITS performance. According to the results, environmental variables and GITS performance were substantially correlated with each other, with a value of 0.000. The findings revealed a strong association between key aspects of project management and enhanced GITS performance, as shown by the value of 0.048.

The findings also support the third hypothesis of regression analysis, which states that there was a significant relationship between individual components and GITS performance, as shown by the value of 0.000, which is within the range of p=0.00-0.05. Five factors (TF, OF, PF, SF, and EF) have the strongest contributions, with TF making the most of them; and the IF making the smallest contribution to the GITS performance according to the factor ranking table. The ranking of the CSFs' contributions was as follows: technology factors at number one, organizational factors at number two, project management factors at number three, support factors at number four, environmental elements at number five, and individual factors at number six (T-O-P-S-E-I). These variables all contributed to the CSFs in the order listed above.

The fact that the sum of the contributions from the six elements, plus the constant term does not equal 1 or 100%, suggests that other factors were not used in the equation. However, the factors that were not included had a weaker influence on the GITS performance. The results of the T-O-P-S-E-I analysis are discussed in the sections that follow.

3.1.1 Influence of Technological Factors

The findings indicate that technological factors have a significant influence on the improvement of the GITS performance. This hypothesis acquired strong support as shown in Table 1 (r = .605, $p < 0.05$), which indicates a 5% significant level. Therefore, it is acknowledged that technological aspects affect GITS's performance. This findings demonstrate that technological factors strongly influence GITS performance because often such GITS are fraught with errors and usability that limit use. The error and cavities in use need to be fixed before using the system to improve GITS performance. Similarly, the study discovered that when an innovation is compatible with the current business processes, organizations and individuals would be willing to use and integrate it within a firm to easily share and transfer data within LGAs. Also, the study revealed the importance of compatibility of GITS usage with social media online accessibility standards, and e-services.

Similarly, the study holds that internet connectivity, speed, dependability, and availability are crucial aspects to take into account before using GITS for revenue collection; thus, it is crucial to allocate funds for investing in internet infrastructure. The performance of GITS was also found to be greatly impacted by GIS functionality. If a GITS lacks GIS functionality, it will be challenging to track new businesses, trace taxpayers, and OSRs. The GIS functionality is crucial for enabling the development of GIS technology to enable LGAs address fundamental GIS governance challenges.

3.1.2 Influence of Organizational Factors

The results show that organizational factors significantly impact GITS performance. Table 1 indicates r = .542, $p < 0.05$, which denotes a 5% significant level; demonstrating the high support this hypothesis received. The performance of a GITS is therefore acknowledged to be influenced by organizational factors. The results suggest that one of the most important factors influencing GITS implementation in LGAs is cost. The financial budget required for embracing GITS was important and might encourage LGAs to utilize and implement GITS through online accessibility requirements. Significant financial capacity is needed to enable LGAs to successfully implement and operate GITS; and to invest in the necessary ICT infrastructures, ongoing training, personnel employment, as well as the provision of the services to customers without charge.

The findings show that organizational culture has a considerable impact on organization management policies that enhance GITS performance. Culture has a significant role in the ability of an organization to successfully implement innovations like social media and smart grid technology. The study found that LGA users who have the knowledge and resources need to use the GITS effectively to maximize OSR collections. In addition, LGAs that have the resources required to train and educate the staff they should so to improve GITS performance. Before putting the system into place, it is important to solve inefficiencies and ensure that the personnel are well-trained and motivated to assist in removing barrier issues related to staff, such as resistance to authority and apprehension of change.

3.1.3 Influence of Support Factors

The results further show a substantial correlation between support factors and GITS performance. According to Table 1, (r =.176, p<0.05), which denotes a 5% significant level, implying that this hypothesis received a good support. Therefore, it is acknowledged that support factors have an impact on GITS performance. The results show that top managements must give appropriate resources during the design and implementation of GITS. This is because senior management has authority over decision-making processes, and serves as the foundation for improving GITS performance. The top management of local government authorities must be aware of the costs associated with implementing GITS, as well as other significant costs, such as on training. When LGA's top management allocates funds for continued training and education to enable staff to use GITS, this encourages staff to use GITS, and improves GITS performance in revenue collection. Conversely, a lack of top-level management backing will cause inefficient funding, and hence the subsequent lack of support, which will lead to poor usage and collapse of GITS.

3.1.4 Influence of Environmental Factors

The performance of GITS is significantly influenced by environmental factors. According to Table 1 ($r = .533$, $p < 0.05$), which indicates a 5% significant level, this hypothesis received good support. Therefore, it is acknowledged that environmental factors impact the performance of the GITS. Policy and regulations had the greatest influence on GITS performance in the analysis of the GITS implementation in LGAs. Regulatory instruments are utilized to enforce GITS usage guidelines and regulations within businesses. The regulatory instrument is essential to the functioning of GITS, as the findings show. Organizations and LGAs will consider the deployment of GITS to be vital if regulatory instruments enforce laws and regulations relating GITS with system security, data privacy, and data format. Additionally, the performance of GITS may be hampered by the rules and legislation that are implemented in LGAs. The bureaucratic nature of LGA regulations and laws has a detrimental effect on how successfully and efficiently LGAs function. Due to this, local governments are unable to streamline their operations and arrange their GITS, hence rendering management in LGAs to become challenging, and processes to suffer from a clear division of duties.

3.1.5 Influence of Project Management Factors

GITS performance and project management factors are significantly related. According to Table 1 ($r =.165$, $p<0.05$), which denotes a 5% significant level, means this hypothesis received good support. Therefore, it is acknowledged that project management considerations have an impact on how well GITS performs. LGAs should implement GITS initiatives using repeatable, defined, and predictable system development methodologies. By anticipating and managing important factors—including scope, cost, quality, and schedule—LGAs will be able to prevent project risks.

GITS project management factors highlight viewpoints and directions that give GITS project managers an understanding of, and more guidance on, the elements that support the success of GITS, and prevent failure. In addition, GITS project management has an impact on GITS performance because top management support, software development methods, and a set of assignment completion procedures all help to effectively assist GITS performance.

3.1.6 Influence of Individual Factors

This hypothesis received great support as demonstrated in Table 1 ($r =.270$, p 0.05), which corresponds to a 5% significant level. As a result, it is acknowledged that individual factors affect GITS performance. Individual factors influence GITS performance because personal abilities and experiences considerably impact on how well GITS performs. This indicates that users with extensive GITS experience have a beneficial impact on the system's performance. To ensure GITS sustainability, LGA staff should take into account their own experiences and skill levels. GITS utilized in LGAs with a user-friendly interface enables individual users to employ it without exerting any effort. According to the data, taxpayers can successfully pay business licenses using GITS provided that they are equipped with the necessary knowledge.

User participation considerably improves GITS performance. User engagement is one of the variables that affect GITS performance, and becomes more effective when users are involved in the development of GITS, and their expectations are met. This additionally fosters a better understanding of user requirements, increased user happiness, and improved user communication: all of which increase system utilization, system ownership, and system acceptability; and consequently enhance GITS performance. Use engagement is one of the most CSFs in research looking at GITS performance.

According to the study, the performance of GITS is impacted by payment procedures, methods, and levels. If financial institutions and payment mechanisms are not synchronized, there will always be consequences of no banking, under-banking, and delayed banking. Limited payment options, such as VISA and MasterCard, limit the amount that can be paid for business licenses globally.

4. Conclusion and Recommendations

4.1 Conclusion

The primary objective of the study was to investigate the critical success factors that affect the performance of GITS in Ilala and Kinondoni councils, Dar es Salaam, Tanzania. The study has successfully demonstrated that the TOSEPI CSFs have the greatest influence on GITS performance because they account for 60.1% of GITS performance, whereas the constant term only explains 39.9% of the improvement, through multiple regression analysis of relevant field data using the TOSEPI CSFs as independent regression variables. Thus, the TOSEPI CSFs account for the bulk of the improvement of the performance of the GITS application in revenue collection within the LGAs under study at the individual and organizational levels.

The significance of each CSF in GITS performance was also determined using the rank case procedure approach. It was discovered that there was a decreasing order of contribution that rearranged the TOSEPI factors to TOPSEI, where technological factors ranked first, organizational factors second, project management factors third, support factors fourth, environmental factors fifth, and individual factors sixth. Growing numbers indicate that the causes are contributing less. Therefore, LGAs should think about using the CSFs' rank order as the foundation for determining what changes need to be made in the way GITS are used in revenue collection. Tanzania's LGAs that use or desire to secure GITS for revenue collection must have access to the research results: TOSEPI - CSFs.

4.2 Recommendations

Based on the study findings and conclusion, the following recommendations are drawn about Tanzania LGAs, to enhance the contribution made by the six TOSEPI factors to significantly improve the overall performance of GITS:

(a) LGAs and other stakeholders—including respective ministries—need to develop, introduce, operationalize, and update policies, rules, and procedures that govern GITS's applications in LGA operations.
(b) LGAs need to improve strategies of designing new systems and purchasing new hardware and software; and ensure that staff from different departments and units are involved to capture the needs of all users.
(c) There is a need to upgrade existing GITS to include geospatial technology functionality, to enable easy locating and tracking of business centres/ taxpayers and improve the visualization of OSR data. The application of digital financial technologies, big data analytics, artificial intelligence, blockchain, and bitcoin technology are crucial to increase the performance of GITS in LGAs revenue collection.
(d) LGAs should integrate available GITS—such as LGRCIS and GoTHOMIS—with other government systems—including NIDA, ILMIS, TRA, and BRELA—to improve data consistency, sharing and reliability.
(e) LGAs need to budget for raising awareness and sensitization among taxpayers on the applications of GITS and its benefits in revenue collection. This will enhance tax compliance and, therefore, improve LGA's OSR collections.
(f) To realize the value of implemented GITS, LGAs need to collaborate with PO-RALG and other stakeholders to enhance payment procedures, methods and levels. It is also important to ensure that databases are regularly updated with data from different taxpayers and departments.

References

Al-waraqi, G. & Zahary, A. (2018). *Critical factors of GIS projects failure in Yemeni governmental agencies.* The 13th International Arab Conference on Information Technology (ACIT): December 10–13, 2012.

Albrecht, J. (2017). GIS project management. *Comprehensive Geographic Information Systems,* 3. https://doi.org/10.1016/B978-0-12-409548-9.09612-3.

Ali, O., Soar, J. & Yong, J. (2016). An investigation of the challenges and issues influencing the adoption of cloud computing in Australian regional municipal governments. *Journal of Information Security and Applications*, 27–28, 19–34. https://doi.org/10.1016/j.jisa.2015.11.006.

Alone, K. (2017). Adoption of e-learning technologies in education adoption of e-learning technologies in education institutions/organizations: A literature review. (October).

Alwaraqi, G. & Zahary, A. (2012). Critical factors of GIS projects failure in Yemeni governmental agencies. *The* 13*th International Arab Conference on Information Technology*. Zarqa, Jordan.

Amade, N., Painho, M. & Oliveira, T. (2017). Determinants of geographic information technologies intention and adoption and Mozambique institutions' perspectives. *Research Journal of Information Technology*, 9(2): 64–73. https://doi.org/ 10.3923/ rjit.2017.64.73.

Amade, N., Painho, M. & Oliveira, T. (2018). Geographic information technology usage in developing countries – A case study in Mozambique. *Geo-Spatial Information Science*, 21(4): 331–345. https://doi.org/10.1080/10095020.2018.1523995.

Arpaci, I., Yardimci, Y. C., Ozkan, S. & Turetken, O. (2012). Organizational adoption of information technologies: A literature review. *International Journal of e-Business and e-Government Studies*, 4(2): 37–50.

Bano, M., Zowghi, D. & Da Rimini, F. (2018). User Involvement in software development: The good, the bad, and the ugly. *IEEE Software*, 35(6): 8–11. https:// doi.org/ 10.1109/MS.2018.4321252.

CAG (2020). Performance audit report on revenue collection from own sources in local government authorities. 255(022).

Chang, F. (2017). Local tax scale and its economic effects in China. *Modern Economy*, 08(03): 445–457. https://doi.org/10.4236/me.2017.83033.

Chowdhury, S. & Salahuddin, K. M. (2017). A literature review of factors influencing implementation of management information systems in organizations. *International Journal of Business and Management*, 12(8): 72. https://doi.org/ 10.5539/ ijbm. v12n8p72.

Collin, N. M., Lopez C. D. & François H. J. (2016). The impact of smart technologies in the municipal budget: Increased revenue and reduced expenses for better services. *Uraía Workshop*, 1–76.

Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3): 319–340.

Diatmika, I. M. W. P. & Widhiyani, N. L. S. (2021). Factors impact accounting information system performance. *American Journal of Humanities and Social Sciences Research (AJHSSR):* 5(6): 412–418.

Dick-Sagoe, C. & Tingum, E. N. (2021). Flypaper effect of intergovernmental transfers and incentives to improve own-source revenue mobilization of local governments in the Central Region of Ghana. *Open Journal of Social Sciences*, 09(08): 434–447. https://doi.org/10.4236/jss.2021.98030.

Dwivedi, K., Wastell, D., Laumer, S., Henriksen, H. Z., Myers, M. D., Bunker, D., … Srivastava, S. C. (2017). Research on information systems failures and successes: Status update and future directions. *Information Systems Frontiers*, 17(1): 143–157. https://doi.org/10.1007/s10796-014-9500-y.

Dwivedi, Y., Ravichandran, K., Williams, M., Miller, S., Lal, B., Antony, G., … Mil-, S. (2017). IS / IT project failures: A review of the extant literature for deriving a taxonomy of failure Factors.

Eldrandaly, K. A., Naguib, S. M. & Hassan, M. M. (2015). Evaluation of critical success factors for GIS implementation using analytic hierarchy process. *International Journal of Computing Academic Research*, 4(3): 132–143. Retrieved from http://www. meacse. org/ijcar.

Evwiekpaefe, A. E., Chiemeke, S. C. & Haruna, M. Z. (2018). Individual and organizational acceptance of technology theories and models : Conceptual gap and possible solutions. *Pacific Journal of Science and Technology*, 19(1): 189–197. Retrieved from http://www.akamaiuniversity.us/PJST.htm.

Field, A. (2018). Discovering statistics using SPSS (2nd edition). Andy Field, London: Sage Copyright © The British Psychological Society. (January 2006). https://doi.org/ 10.1348/000709906X100611.

Gibbs, J. L. & Kraema, K. L. (2004). A cross-country investigation of the determinants of scope of e-commerce use: An institutional approach. *Electronic Markets*, 14(2): 124–137.

Gondo, T. & Zibabgwe, S. (2010). GIS solutions and land management in Urban Ethiopia. Perspectives on capacity, utilization and transformative possibilities. *Knowledge Management Research and Practice*, 2(2): 200–216.

Hameed, M. A., Counsell, S. & Swift, S. (2012). A conceptual model for the process of IT innovation adoption in organizations. *Journal of Engineering and Technology Management*, 29(3): 358–390.

Haneem, F. & Kama, N. (2018). Recent progress of factors influencing information technology adoption in local government context. *Journal of Theoretical and Applied Information Technology*, 96, 5510-5521.

Henrik, R. (2006). The use of Geographic Information Systems for property valuation and tax assessment. *GIS and Valuation*, 1–11.

Huang, L. & Lai, C. (2012). An investigation on critical success factors for knowledge management using structural equation modeling. *Procedia - Social and Behavioral Sciences*, 40, 24–30.

Ishengoma, F., Mselle, L. & Mongi, H. (2019). Critical success factors for m-Government adoption in Tanzania: A conceptual framework. *Electronic Journal of Information Systems in Developing Countries*, 85(1): 1–10. https://doi.org/10.1002/isd2.12064.

James, A. O. (1995). Earnings, book values, and dividends in equity valuation. *Contemporary Accounting Research*, 11(2): 661–687.

Kamara, A. K., Kamara, S. & Koroma, P. (2022). Improving revenue collections through tax reforms: Evidence from National Revenue Authority, Sierra Leone. *OALib*, 09(12): 1–24. https://doi.org/10.4236/oalib.1109338.

Kašćelan, L., Lazović, V., Đuričković, T. & Biljana, R. (2018). Analysis of the diffusion of e-services in public sector using the Decision Tree Method. *IRENET - Society for Advancing Innovation and Research in Economy, Zagreb,* 4: 38–48.

Kessy, S. S. A. (2019). Electronic payment and revenue collection in local government authorities in Tanzania: Evidence from Kinondoni Municipality. *Tanzanian Economic Review*, 9(2): 89–106.

Li, A. (2018). Research on tax collection and management system of e-commerce. *American Journal of Industrial and Business Management*, 08(11): 2256–2266. https://doi. org/ 10.4236/ajibm.2018.811150.

Li, M. H. & Feeney, M. K. (2014). Adoption of electronic technologies in local U.S. governments distinguishing between e-Services and communication technologies. *Am. Rev. Public Adm.*, 44(1): 75–91.

Maiga, S. (2015). The impact of tax collection in achieving revenue targets: The directorate general of taxes of Mali. *Theoretical Economics Letters*, 05(03): 403–409. https://doi.org/10.4236/tel.2015.53046.

Manwaring, P. (2017). Enhancing revenues for local authorities in Tanzania. *International Growth Centre*, (October 2017): 1–2.

Masser, I. & Craglia, M. (2020). A comparative evaluation of GIS diffusion in local government in nine European countries. *In GIS Diffusion*. CRC Press.

McCluskey, W. & Huang, C. Y. (2019). The role of ICT in property tax administration: Lessons from Tanzania. *CMI Brief*.

Mkalawa, C. (2014). *Application of GIS for revenue collection and management*. Retrieved January 12, 2018, from Un- Habitat 2014 website: https://www.esriea.com/ uc2017/ industry-session/Application of GIS For Revenue Collection and Management.pdf.

Mohamad, A. K., Jayakrishnan, M. & Yusof, M. M. (2022). Thriving information system through business intelligence knowledge management excellence framework. *International Journal of Electrical and Computer Engineering*, 12(1): 506–514. https://doi. org/10.11591/ijece.v12i1.pp506-514.

Moro, B. (2008). The theory of the revenue maximizing firm. *Journal of Service Science and Management*, 01(02): 172–192. https://doi.org/10.4236/jssm.2008.12019.

Mrutu, L. & Mganga, P. (2016). Outsourcing or giving all out? Experience from Tanzania local government revenue collection. *Journal of Public Administration and Governance*, 6(3): 1. https://doi.org/10.5296/jpag.v6i3.8695.

Mtalo, E. G. (2016). Spatially empowered local governance: GIS and Big Data Strategy context. 1–21.

Mukuwa, V. & Phiri, J. (2020). The effects of e-services on revenue collection and tax compliance among SMEs in developing countries: A case study of Zambia. *Open Journal of Social Sciences*, 08(01): 98–108. https://doi.org/10.4236/jss.2020.81008.

Mzava, P., Nobert, J. & Valimba, P. (2019). Land cover change detection in the urban catchments of Dar es Salaam, Tanzania, using Remote sensing and GIS techniques. *Tanzania Journal of Science*, 45(3): 315–329. Retrieved from www.ajol.info/ index. php/tjs/.

Nallaperumal, R. & Thangaman, G. (2020). Factors for implementation of ERP in higher education – A literature review. *Seventeenth AIMS International Conference on Management*, (January): 336–339. Retrieved from https://www.researchgate. net/ publication/338336390_Factors_for_Implementation_of_ERP_in_Higher_Education _-A_Literature_Review.

Namangaya, A. (2018). Practices in institutionalizing GIS for revenue mobilization: The case of secondary cities in Tanzania. *Current Urban Studies*, (6): 559–572.

Oladele, G. A. (2020). Legal implications of state government's control over internally generated revenue of local government councils in Oyo State, Nigeria. *Beijing Law Review*, 11(04): 899–910. https://doi.org/10.4236/blr.2020.114054.

Olaoye, F. O. & Akinola, A. A. (2019). Tax revenue and budget implementation in Nigeria. *American Journal of Industrial and Business Management*, 09(05): 1219–1233. https://doi.org/10.4236/ajibm.2019.95082.

Pérez-Mira, B., Abbasi, F., Khajouei, R., Mirzaee, M., Nugroho, Y., Prasetyo, A., … Durachman, Y. (2017). ATI working paper. *Journal of Theoretical and Applied Information Technology*, 4(1): 71. Retrieved from https://www.business.unsw.edu. au/About-Site/ Schools-Site/Taxation-Business-Law-Site/Documents/TJEN Christine% 2C INDRIANI Vitria%2C WICAKSONO Panggah Tri%2C ATTA 2019.pdf%0Ahttp:// www. ef.uns. ac.rs/mis/archive-pdf/2009 - No2/MIS2009_2_2.pdf% 0Ahttp:// www.wor.

Quaddus, M. & Hofmeyer, G. (2007). An investigation into the factors influencing the adoption of B2B trading exchanges in small businesses. *European Journal of Information Systems*, 16(3): 202–215.

Ridhima, K. (2012). GIS simplifying property tax collection in India. *India Geospatial Digest*.

Rogers, E. M. (1962). *Diffusion of innovations*. New York: Free Press.

Rogers, E. M. (1995). *Diffusion of innovations* (4th ed.). New York: The Free Press.

Sausi, J. M., Kitali, E. J. & Mtebe, J. S. (2021). *Evaluation of local government revenue collection information system success in Tanzania*. https://doi.org/10.1108/DPRG-04-2021-0055.

Sayginer, C. & Ercan, T. (2020). Understanding determinants of Cloud Computing Adoption using an Integrated Diffusion of Innovation (DOI)-technological, organizational and environmental (TOE) Model. *Humanities & Social Sciences Reviews*, 8(1): 91–102. https://doi.org/10.18510/hssr.2020.8115.

Scott, W. G. (2001). *Institutions and organizations* (2nd ed.). Thousand Oaks, CA: Sage.

Sichone, J. (2019). Information system success in Tanzania customs operations: Taxpayers' optimism bias and perceived ease of use. *Information and Knowledge Management*, 9(March): 22–28. https://doi.org/10.7176/IKM/9-3-02.

Soares-Aguiar, A. & Palma-Dos-Reis, A. (2008). Why do firms adopt e-procurement systems? Using logistic regression to empirically test a conceptual model. *IEEE Transactions on Engineering Management*, 55(1): 120–133.

Suleiman, M. (2015). Adoption of e-procurement and value addition: Tanzanian context. *European Journal of Business and Management Www.Iiste.Org ISSN*, 7(14): 145–153. Retrieved from www.iiste.org.

Teo, T. S. H., Lin, S. & Lai, K. (2009). Adopters and non-adopters of e-procurement in Singapore: An empirical study. *International Journal of Management Science*, 37(5): 972–987.

Tornatzky, L., Fleischer, M. & Chakrabarti, A. K. (1990). The process of technological innovation. *Lexington Books, MA: Lexington.*

UN-Habitat (2002). Local democracy and decentralisation in East and Southern Africa: Experiences from Uganda, Kenya, Botswana, Tanzania and Ethiopia, Nairobi. *UN-Habitat*, 69.

URT (2016). *National information and communications technologies policy*: Dar es Salaam: Ministry of Works, Transport and Communication.

Venkatesh, V., Morris, M. G., Davis, G. B. & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. *MIS Quarterly*, 27(3): 425–478. https://doi.org/doi:10.2307/30036540.

Wang, S. & Feeney, M. K. (2016). *Determinants of information and communication technology adoption in municipalities*. https://doi.org/10.1177/0275074014553462.

Wang, Y. M., Wang, Y. S. & Yang, Y. F. (2010). Understanding the determinants of RFID adoption in the manufacturing industry. Technological forecasting and Social Change, 77(5): 803–815. https://doi.org/10.1016/j.techfore.2010.03.006.

Wong, C. C., Hiew, P. L. & Sample, A. (2007). *Diffusion of mobile entertainment in Malaysia: Drivers and barriers.* 1(11): 768–771.

World Bank (2015). *Tanzania - Dar es Salaam Metropolitan Development Project*. Dar es Salaam.

Worrall, L., Colenbrander, S., Palmer, I., Makene, F., Mushi, D., Kida, T., … Godfrey, N. (2017). Better urban growth in Tanzania: A preliminary exploration of the opportunities and challenges. *Coalition for Urban Transitions*, 90. Retrieved from http://www.esrf.or.tz/docs/NCE2017_Better_Urban_Growth_Tanzania_final.pdf.

Yadav, R., Khanna, A., Panday, P. & Dasmohapatra, S. (2019). An analytical study of quality of work life: Organizational commitment and their relation with revenue per employee of major IT companies in India. *Journal of Human Resource and Sustainability Studies*, 07(02): 284–301. https://doi.org/10.4236/jhrss.2019.72018.

Zabadi, A. M. (2016). Adoption of Information Systems (IS): The factors that influencing IS usage and its effect on employee in Jordan Telecom sector (JTS): A Conceptual integrated model. *International Journal of Business and Management*, 11(3): 25. https://doi.org/10.5539/ijbm.v11n3p25.

Zeng, J. & Zhang, J. (2013). Using dashboard for lean revenue cycle management. *IBusiness*, 05(03): 100–103. https://doi.org/10.4236/ib.2013.53b021.

Zhang, S. & Huang, Z. (2019). Research on perfecting government non-tax revenue management system. *Open Journal of Accounting*, 08(03): 35–46. https://doi.org/10.4236/ojacct.2019.83003.

Zhao, J., Meng, Q. & Wu, Z. (2018). Problems and thoughts of issuing municipal bond to fiscal revenue. *Chinese Studies*, 07(03): 220–229. https://doi.org/10.4236/chnstd.2018.

Zhu, K., Dong, S. & Xu, S. (2006). Innovation diffusion in global contexts: Determinants of post-adoption digital transformation of European companies. *European Journal of Information Systems*, 15(6): 601–616.