Received: 28 Jan 2024 | Revised: 09 May 2024 | Accepted: 16 Jun 2024 | Published: 30 Jun 2024
Volume 2(1) Pages 87-106 DOI: https://doi.org/ 10.56279/jicts.v2i1.84

JICTS
Journal of ICT Systems

Comparative Study of the Use of Tax Management Information Systems between Zanzibar and Tanzania Mainland

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Funding information

This work was self-sponsored.

Abstract

Tax Management Information Systems (MIS) are crucial for efficient tax administration, enhancing efficiency, transparency, and governance. This study aimed to compare the use of Tax MIS in Tanzania mainland and Zanzibar, focusing on the Integrated Tax Administration System (ITAS) and Integrated Tax Administration System (ITAX), respectively. The study's goals were to identify key factors facilitating effective Tax MIS use and to improve its usage in Zanzibar. Using a mixed comparative descriptive design based on the Technology-Organization-Environment framework, data were collected from 108 participants through questionnaires and interviews. Descriptive analysis was performed using SPSS for quantitative data and thematic analysis for qualitative data. Key findings indicated that system availability, compatibility, and top management support are essential for effective Tax MIS use. However, significant differences were observed between Zanzibar and Tanzania mainland, with Zanzibar's Tax MIS still in its early stages, lacking full automation in some processes. To improve the usage of Tax MIS in Zanzibar, the existing process should be redesigned and integrated into the system, the management should encourage their staff in using the system by being champion users and providing training and incentives. In addition, the Tax MIS infrastructure should be improved.

Keywords

Management Information System
Tax Administration
Tax Organization
Tax MIS

1. Introduction

Developing countries have been actively pursuing the development and implementation of management information systems (MIS) to improve their operations and revolutionize the delivery of public services [1]. By automating the underlying operations and processes, governments have been able to efficiently manage and enhance tax administration, leading to the successful

collection of tax revenue [1, 2]. Countries, such as Bangladesh, Burundi, Ethiopia, Ghana, Mozambique, Nepal, Peru, South Africa, Swaziland, Senegal, Tanzania, Uganda, and Zambia, have effectively automated their tax administration processes to address their operational and strategic objectives. Tax management systems, such as integrated tax administration systems (ITAX), revenue management systems (RMS), revenue premier enterprise, standard integrated tax administration systems (SIGTAS), and tax and revenue management (TRM), have been widely used to provide tax and revenue management solutions [3]. These systems aim to combine the operational processes of a tax administration, including taxpayer registration, return process, billing and collection process, taxpayer accounting process, online self-services, revenue accounting process, case management process and security process. The primary objectives of such systems are to enhance taxpayer compliance, increase revenue, improve services to tax stakeholders, and establish accountability, transparency, and information integrity. ICT systems have positively impacted revenue collection [1, 2]; if implemented effectively, these systems can fulfill all tax organizations' objectives, increase compliance, and reduce administration costs [4, 5].

Tanzania has two main tax organisations responsible for the administration of government taxes: Tanzania Mainland Tax Organisation (TMTO) [6] and Zanzibar Tax Organisation (ZTO) [7]. TMTO operates for both Tanzania Mainland and Zanzibar and collects both direct and indirect taxes [6]. To allow efficient country-wide tax administration, the process of tax revenue collection and tax administration is currently managed using Tax MIS. Such systems enhance the effective collection of tax revenues, which contributes to economic growth [8]. The effective use of Tax MIS at TMTO has been shown to reduce financial inconsistencies, promote accuracy and transparency in financial information, and tax compliance, monitor revenue sources, and the quality of financial reporting, and enable immediate update of financial information that benefit taxpayers, tax collectors and all tax stakeholders [9]. The adoption of Tax MIS, specifically the ITAX at TMTO has led to a positive impact on tax administration and contributed to the increase of the government's income as well as national economic growth [6]. The ITAX has contributed to improving tax collection by speeding up the authoritative processes, immediate monitoring of taxpayers and their information, and helped to increase revenue and income by 80% [10].

Similar to the Union Government, the Revolutionary Government of Zanzibar has made several initiatives in deploying and using MIS to improve public service delivery and to make the government more result-oriented and citizen-centered [11]. ZTO is the prime agency for the administration of all taxes from Inland Revenue sources in Zanzibar – a semi-autonomous part of the United Republic of Tanzania. It collects only indirect taxes, in implementing its corporate plan to automate and integrate its underlying business operations to maximize tax revenue collections and improve tax administration processes to ZTO and the taxpayers. ZTO utilizes several Tax MIS, primarily the Integrated Tax Administration System (ITAS) [12].

Based on the government's controller and auditor general's reports [13, 14], users of the ITAS system failed to use the system to its full capacity and instead opted to work with smaller alternative programs outside of the system. Inadequate utilization of Tax MIS at ZTO has also been cited as a reason for poor tax revenue collection performance in Zanzibar [15]. This directly affects the economic growth of the country in a manner

that the government fails to meet its budgetary needs to finance social service delivery, such as health, education, water, and energy. Efficient tax administration plays a vital role in a country's economic growth. Therefore, this research was necessary to identify the reasons for the inadequate utilization of the ITAS at ZTO and propose strategies that could help ZTO align with their organizational objectives by utilizing Tax MIS effectively and efficiently.

2. Research Motivation

2.1 Tax Management Information System

Tax MIS appears to be rapidly adopted in both developed and developing countries, but there have been only a few empirical Tax MIS studies that were conducted in developing countries. Singh et al., Awa et al., Mandola and sangadah [16–19] analysed the challenges that technological advancements pose to developing countries and highlight some favorable instances of technology-driven innovations and their implementation in tax policy and administration. Mandola [18] assessed the usage of integrated tax management system, specifically electronic filing system among small and medium taxpayers in Kenya. Singh et al. [16] evaluated the use of e-filling systems among taxpayers in the income tax department of India. Djafri et al. [20] examined how ICT utilization increase taxpayer compliance. Bird & Zolt [21] analysed the challenges posed by technological advancements in developing nations and spotlight positive instances of technology-driven innovations in tax policy and administration. Night & Bananuka [22] investigated the mediating role of the adoption of an electronic tax system in the correlation between an individual's attitude towards the system and their adherence to tax compliance, utilizing evidence obtained from small business enterprises (SBEs) situated in a developing economy in Africa. Most of those studies have examined Tax MIS usage from various perspectives, but a significant proportion of the research has concentrated on the taxpayers' point of view, with less attention paid to the perspective of tax staff usage. Further research is necessary to evaluate the usage of internal users (organizations' staff) of Tax MIS to deepen our understanding of the efficient utilization of Tax MIS in developing countries. While every comparative study has its own specific goal [3], this study seeks to highlight important differences (strengths and weaknesses) between the subjects being compared using multiple perspectives to draw conclusions based on the research [3, 4]. Thus, this study aimed to compare the usage of Tax MIS mainly ITAS and ITAX systems in Zanzibar and Tanzania mainland to contribute towards (i) highlighting essential factors that facilitate the effective use of Tax MIS in the collection of tax revenues, and (ii) improving its usage in Zanzibar.

2.2 The Technology Organization Environment Framework (TOE)

Figure 1 depicts the Technology Organization Environment (TOE) framework, which has been extensively employed as a theoretical perspective for analyzing the adoption and usage of MIS. Its focus on the three contexts of organizational, technological, and environmental factors has strengthened its selection over other models for assessing the adoption and utilization of technological innovations integrated into core business processes [23]. The TOE framework has been adopted in evaluating the adoption and usage of MIS in a variety of organizational contexts, for instance, Zabadi [24] used the TOE framework in assessing MIS usage in Jordanian Telecommunication Sectors (JTS). Nur et al. [25] used the TOE framework to evaluate the adoption of an accounting information system among Malaysian small and medium-sized enterprises. Khobi et al. [26] Used the TOE framework to investigate the use of DHIS2 in Sierra Leone.

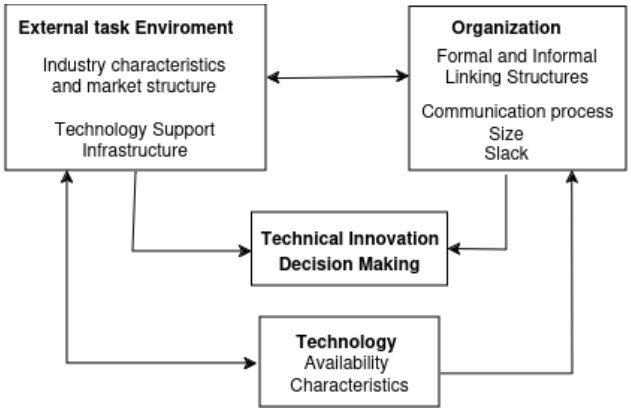

Figure 1. Technology organization environment (TOE) framework [30].

Similarly, tax organizations across countries have also adopted the TOE framework to evaluate the Tax MIS adoption and usage [27, 28, 29].

Deogratus at al. [29] pointed out that the TOE framework constructs vary based on the contexts that impact and influence how organizations adopt and utilize technology. Therefore, this study utilized the TOE framework constructs to investigate how the ITAX and ITAS systems, which were integrated into the core business processes of TMTO and ZTO, were utilized by their staff. The study focused on the technological and organizational constructs to bridge the technological and organizational perspectives concerning the usage of the ITAX and ITAS systems. It excluded external environment constructs since the study solely focused on internal characteristics relevant to system users. These internal characteristics are further described in the proceeding subsections. A review of previous works under pre-defined inclusion and exclusion parameters was done to establish relevant criteria for evaluating the usage of tax administration information systems. The review focused on publications in English from 2010 to 2023 that addressed Tax MIS within the context of developing countries focusing on its adoption and usage. Publications lacking essential metadata or not centered on Tax MIS in developing countries were excluded. The critical criteria for evaluating the usage of ITAX and ITAS in TMTO and ZTO are summarized in the framework presented in Figure 2, which are further elaborated in the subsequent subsections.

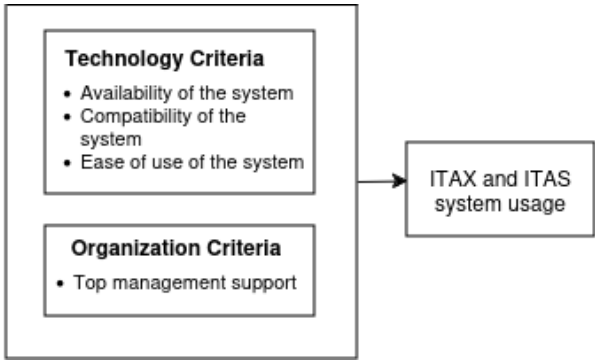

Figure 2. Criteria for evaluating ITAX and ITAS system usage.

A. Technological Context

The technological context assesses various technological features that impact the usage of Tax MIS. Different criteria have been utilized in evaluating technology in organizations, such as system compatibility, availability, complexity, relative advantage, and security [31]. Other studies have mentioned factors such as internet accessibility and user-friendliness of the systems [18], complexity, compatibility, information quality, and system quality [32], as well as technological standards, availability of professionals, tax evasion evidence, improvement process, and control [33]. This study adopted these technological criteria, and their definitions are as follows.

Availability of the System: The accessibility and functionality of an information system for authorized users over a specific period is known as system availability, which is measured from the user's perspective [34, 35]. In this study, system availability pertains to the accessibility of the ITAX and ITAS systems to authorized users at TMTO and ZTO for their tax administration duties. The

availability of Tax MIS is critical to users of organizational tax information systems, as it indicates the probability that a system will not fail when required. Therefore, the degree to which this criterion is satisfied varies with the extent to which the system is used and remains operational.

Compatibility of the System: The user's perspective was used to measure this criterion, assessing whether the systems are suitable for the planned organizational tasks and user needs. Compatibility refers to the extent to which Tax MIS is perceived to align with system users' significant requirements for the system and its ability to perform the intended tasks [32]. In this study, compatibility pertains to how well the ITAX and ITAS systems align with TMTO and ZTO tasks, as well as their employees' essential requirements for the systems. The usage of these systems heavily relies on how well they fit the planned tasks and user requirements. Therefore, the level to which this criterion is met varies depending on the extent of system usage.

Ease of Use of the System: This criterion was evaluated from the perspective of system users to determine if the ITAX and ITAS systems are user-friendly. Ease of use is an essential criterion for system usage as it measures the degree to which system users perceive a particular system as easy to use [30, 36]. Milamo & Magobe [37] also insisted on improving user friendliness of the system. In this study, ease of use refers to the extent to which ITAX and ITAS system users find using the systems easy. If a user finds a system difficult to navigate, they are less likely to use it. Thus, the ease with which users can interact with the system is a critical factor in determining its usage.

B. Organizational Context

A variety of organizational characteristics that influence the usage of Tax MIS were evaluated in the organizational context. Senior management support, IT infrastructure availability, and government relations were some of the criteria mentioned by Gonçalves et al. [33]. Azmi et al. [31] Identified tax compliance cost and external learning resources as key factors. Deogratus et al. [29] Highlighted the importance of funds availability and awareness. Singh et al. [16] Emphasized organizational support as a crucial organizational criterion for MIS usage. Patnaik et al. [27] Mentioned technical skill in e-taxing, cost of ICT equipment, and management support. The definition for the selected organizational criterion for this study is presented below.

Top Management Support (TMS): The level of support from top management is a critical criterion for every system user. TMS refers to the degree to which senior management provides resources, support, and training to their staff. In this study, TMS evaluates the extent to which TMTO and ZTO managements provide support and training to their staff regarding the usage of ITAX and ITAS systems. TMS has been shown to affect the usage of Tax MIS and was, therefore, considered in evaluating the usage of these two systems. The degree of TMS varies based on the extent of system usage.

Operationalization of Variables: The variables adopted in this study included system availability, system compatibility, ease of use of the system, and top management support for the system. Alterations in these variables have an impact on the extent to which ZTO and TMTO staff use the ITAX and ITAS systems.

3. Method

3.1 Research Design

For this study, we adopted a descriptive mixed-method research design to analyze the usage of ITAX and ITAS systems [38]. The analysis was based on the selected criteria of system availability, compatibility, ease of use, and top management

support. Data was collected from both tax organizations to facilitate the analysis.

The primary data was gathered through structured questionnaires and key informant interview guides. The questionnaire employed a closed-ended format with a scale of 1 to 5, ranging from agree to strongly disagree, with a few questions featuring pre-determined answer options, and several open-ended questions to enable respondents to elaborate on their views and opinions. The questionnaires were distributed to ITAX and ITAS system users. Subsequently, the key informant interview method was used to gather detailed information from selected stakeholders, specifically two managers from each tax organization. The goal was to gain a deeper understanding of the ITAX and ITAS systems usage at TMTO and ZTO. Field notes were taken during data collection to establish correlations and clarify questionnaire responses with the managers' viewpoints. The themes for the interviews were aligned with the study's research objectives, and this method helped to supplement the information obtained from the questionnaires. The combination of these two methods facilitated the collection of relevant data for the study.

Finally, following an understanding of the system usage experiences of both organizations, strategies were developed based on recommendations from system users, which were ranked based on their likelihood of occurrence, encompassing every suggestion provided by ITAS system users. By integrating user insights into our strategy formulation process, we guarantee the creation of strategies poised to significantly improve system usage.

3.2 Sampling Technique and Sample Size

This study used probability sampling technique, particularly a simple random sampling technique [38]. Participants had an equal chance of being selected. ZTO consists of 11 departments, including registration, human resources, research, ICT, audit, debt management, accounting, legal, revenue assurance, ZTO Pemba, and DRPC. The ITAS system is utilized by five departments: registration, DRPC, accounting, audit, and ZTO Pemba, which were sampled for the study. The selection of ZTO's sample was random from these five departments, while others are not using the system for various reasons.

TMTO operates nationwide and has three main tax departments: customs, the Direct Revenue Department (DRD), and the large taxpayer department. Only the DRD department uses the ITAX system. This study was conducted at the TMTO branch in Unguja Zanzibar under the DRD department only.

Determination of the minimum sample size was based on the population size (N) and a margin of error (e) calculated using Slovin's formula [40]. The sample size was obtained by

$$n = \frac{N}{1 + Ne^2} \quad (1)$$

where n is the size of sample, N is the size of population, e is the acceptable error.

The estimated confidence level is 95%, giving a margin error of 5%. For the ITAS system, $N = 80$ users, and for the ITAX system, $N = 40$ users.

The sample size for TMTO, Zanzibar, and ZTO has given the following data:

$$n\text{TMTO} = \frac{40}{1 + 40(0.05)^2} = 36.88 \sim 37$$

$$n\text{ZTO} = \frac{80}{1 + 80(0.05)^2} = 67$$

The calculations show that the sample size for TMTO is approximately 37 and for ZTO is 67. Isip [39] indicated that a minimum of 100 samples are sufficient for descriptive studies. Therefore, 104 samples sufficed for this study. For key informant interviews, a sample of two managers from each tax organization was interviewed. The literature [41] recommends several four to six key informants. Therefore, four managers from both tax organizations sufficed for the key informant interviews in this study.

3.3 Data Analysis

Quantitative Analysis: 104 completed questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS) software. The collected data from the questionnaires were imported into SPSS and underwent data editing, labeling, and processing. A statistical analysis method was used to interpret, organize, and present staff experiences, views, and opinions on their usage of the ITAX and ITAS systems. The results were scaled from 1 (agree) to 5 (strongly disagree), and the interpretation of results was based on the percentage of agreement for each criterion.

Qualitative Analysis: Thematic analysis is a qualitative data analysis method that involves coding and data analysis to identify patterns and themes that emerge across a dataset [42]. It is a suitable method for understanding behaviors, experiences, and thoughts in research. In this study, thematic analysis was used to analyze the qualitative data collected through key informant interviews. The data were manually coded based on the study questions and potential information identified, and themes were constructed through the coded data. This approach allowed for the identification of the experiences, views, and opinions of four managers on the usage of ITAX and ITAS systems in both tax organizations, and the results were presented in a report.

4. Results

4.1 Reliability and Validity

The reliability of each criterion's set of items was assessed using Cronbach's alpha coefficient through a reliability analysis test in SPSS. Cronbach's alpha value above 0.7 confirms internal inconsistency [43]. The results showed that the Cronbach's alpha coefficient for the 21 items was 0.871 for TMTO data and 0.949 for ZTO data as shown in Table 1. Each criterion had a Cronbach's alpha value above 0.70, ranging from 0.746 to 0.923, indicating the reliability of the instrument used in the study and suggesting the internal consistency of the items.

Table 1. Cronbach's alpha coefficient for constructs reliability measurement.

Constructs	Cronbach's alpha	
	TMTO	ZTO
Availability of the system	0.786	0.911
Compatibility of the system	0.918	0.923
Ease of use of the system	0.923	0.894
Top management support	0.813	0.746

4.2 Demographic Information

This study determined the general characteristics of the respondents in evaluating the usage of the ITAX and ITAS systems. The respondent's data provided were gender, age, education level, units, or departments they are working for, and years of experience in using the ITAX or ITAS system. The results determined that participants from both tax organizations were representative of our target sample for this study.

A. Gender Distribution

The distribution of gender among TMTO and ZTO staff revealed that the majority of TMTO respondents were male, accounting for 62.2%, while females made up 37.8% of the respondents. In contrast, the majority of ZTO respondents were female, accounting for 65.7%, while males made up 34.3%. These results suggest an uneven distribution of ITAX and ITAS system users between genders in the two tax organizations.

B. Age

The age distribution of ITAX and ITAS system users showed that most respondents from both tax organizations were between the ages of 20 to 40 years. TMTO accounted for 54.1% while ZTO accounted for 70.1%. These results suggest that both systems are still relatively new and that their users are generally capable of using them.

C. Education Level

The aim of examining the education levels of respondents was to understand the proficiency of ITAX and ITAS system users. The majority of TMTO respondents have obtained a bachelor's degree education, followed by postgraduate, master's, and Ph.D. qualifications, with no respondent having an education below a diploma. Similarly, for ZTO, most respondents have attained a bachelor's degree, followed by postgraduate, diploma, master's, and Ph.D. qualifications, with no respondent having an education below a diploma. These results suggest that all ITAX and ITAS system users have adequate education to utilize the systems effectively.

D. Working Departments and Units

The study sought to determine the department or unit of the participants to understand the ITAX and ITAS systems' usage within each department. The results showed that in TMTO, only one department, DRD, uses the ITAX system, which comprises four units - the data unit, debt unit, audit unit, and technical unit. In ZTO, five departments currently use the ITAS system, which are the registration department, DRCP department, accounting department, audit department, and Pemba department.

E. Years of Experience

The study sought to understand the working experience among respondents; the results revealed that the majority of ITAX system users had more than 10 years of experience, followed by those with 4 to 6 years of experience, 1 to 3 years of experience, and finally, those with 7 to 10 years of experience being the least. This indicates that most ITAX system users have a good level of experience using the system. In ZTO, ITAS users also had different levels of experience using the system, with the majority having 4 to 6 years of experience, followed by those with 7 to 10 years of experience, 1 to 3 years of experience, and finally, those with more than 10 years of experience being the least. This shows that most ITAS system users have a good level of experience using the system, but some users have less experience.

4.3 Usage of ITAX and ITAS Systems

In exploring the qualitative component of the research study, users were asked open-ended questions regarding their daily activities while using the ITAX and ITAS systems. It was observed that ZTO staff have several complaints and challenges concerning the ITAS system which causes ineffective usage. 24% of the respondents indicated a system incompatibility problem, “Some functions needed by staff do not appear in the system”. 18% of the respondents indicated that there are inactive modules within the system “Not all modules are active, only three modules work out of ten modules”. 13% of the respondents specified that the ITAS system produces incorrect and insufficient reports which makes them not trust information produced from the system, “Unable to view the correct non-filer and non-payers report monthly.” Another mentioned “No integration between input and output, provide insufficient information, redundant taxpayer information.” 9% of the respondents mentioned lack of training as a challenge prevents them from effectively using the ITAS system. “No in-house training planned for staff on ITAS system usage.” 14% of the respondents indicated that there is the instability of network and internet when using the ITAS system, “Sometimes the system is unavailable because of internet problems”. 14% of the respondents of respondents mentioned system integration problems, “It is more a manual system that cannot trace taxpayer’s movement properly, cannot connect with other systems to get the needed information.”

A. Availability of the systems

ITAX System Availability

Most of the respondents, accounting for 83.8%, agreed that they use the ITAX system in their daily work routine. Moreover, 78.4% of the respondents

agreed that the ITAX system is reliable in performing its intended tasks. The stable network of the ITAX system was highly agreed upon by 89.2% of the respondents, indicating that it simplifies their work without delays. This suggests that the ITAX system is highly available to its users. Additionally, 70.3% of ITAX system users agreed that they perform their daily tasks using the system. A significant percentage of respondents, 76%, reported infrequent system failures.

ITAS System Availability

The study revealed that the usage of the ITAS system is not as popular among respondents as compared to the ITAX system. 32.5% of the respondents confirmed the reliability of the ITAS system in performing intended tasks, and only 16.4% believed that the network is stable when the ITAS system is in use. These results suggest that the ITAS system may not be as readily available to its users as the ITAX system. Moreover, only 41.8% of ITAS system users agreed to perform their daily tasks using the system, while the respondents (71%) felt that system failures occur infrequently.

The results suggest that the ITAS system may not be readily available to its users. However, it is worth noting that both tax organizations reported infrequent system downtime due to faults or maintenance for both the ITAX and ITAS systems.

B. Compatibility of the System

ITAX System Compatibility

Most of the respondents, 70.2%, agreed that the ITAX system can perform its intended tasks. Furthermore, 81.1% of the respondents stated that the ITAX system has helped them achieve their work objectives, while 86.5% of the respondents agreed that the system had improved their work performance. These results suggest that the ITAX system is compatible with users' requirements and tasks. In terms of efficiency, 67.6% of the responses fell into the 60 to 80% category, indicating that most ITAX users perceive the system as efficient in performing its tasks.

ITAS System Compatibility

The study found that a small percentage of respondents, 13.4% agreed that the ITAS system can perform its intended tasks, and only 28.3% agreed that it has helped them achieve their work objectives. Similarly, only 13.4% of the respondents agreed that it had improved their work performance. In contrast to the ITAX system, the ITAS system's efficiency was categorized as between 30% to 50% by only 67.2% of the respondents, indicating that users perceive it to be less efficient in performing tasks. These findings suggest that there may be an incompatibility between the ITAS system and its intended tasks, as well as its users.

C. Ease of Use of the System

ITAX System Usability

Most of the respondents, 75.6%, agreed that the ITAX system can interact easily, and 83.7% agreed that it helps them complete their work quickly. These findings suggest that the ITAX system is user-friendly and can be easily utilized by ITAX system users to efficiently perform their daily tasks.

ITAS System Usability

Most of the respondents, 68.7% agreed that the ITAS system can be easily interacted with, but only a small percentage of respondents, 13.4% agreed that it helps them work quickly. These results suggest that the ITAS system may be user-friendly, but it does not facilitate efficient completion of daily tasks for ITAS users.

D. Top Management Support

Top Management support for ITAX System

All respondents, a total of 100%, agreed that TMTO management considers the ITAX system to be important and plays a sufficient role in supporting its use. Additionally, 97% of

respondents agreed that the prioritization of training on the use of the ITAX system by TMTO management is high. These results demonstrate that ITAX users recognize the support provided by TMTO management, which helps them effectively use the ITAX system.

Top Management Support for ITAS System

Only 23.8% of the respondents agreed that ZTO management considers the ITAS system to be important, and just 26.9% of the respondents agreed that the management plays enough of a role to support its use. Additionally, only 18% of the respondents considered ZTO management's prioritization of training on the use of the ITAS system to be a high priority. These results suggest that ZTO management's support for the ITAS system has not been recognized by its users, which may explain their ineffective usage of the system.

4.4 Strategies for Improving the ITAS Usage in Zanzibar Tax Organisation

This study proposed strategies for improving tax administration information systems usage in ZTO and to any other similar contexts to enhance tax revenue collection. Table 2 summarizes the proposed strategies for an organization to improve system usage, ranked according to their levels of agreement among ITAS system users.

Table 2. Proposed Strategies for ITAS System Usage Improvements.

Strategy Proposed	Rank
ZTO is advised to take proactive steps to develop and rigorously manage system user requirements, ensuring alignment with staff's essential needs. This will guarantee completeness and integration of critical functions crucial for seamless organizational operations within the system.	1
ZTO is advised to take decisive action by regularly assessing existing business processes to optimize overall operational efficiency. Identify and automate manual processes to eliminate reliance on manual operations, driving increased efficiency throughout the organization.	2
ZTO needs an emphasis on training to enhance and support system users within organizations. It has to develop a comprehensive approach by strategically planning and executing annual training courses and in-house training plans that involve active participation from managers and all employees across the organization.	3
ZTO needs to prioritize maintaining system integration with other platforms to enhance the seamless flow of stakeholders' information and facilitate improvements in staff operations.	4
ZTO needs to establish a robust network infrastructure to guarantee consistent internet and network availability, as this is essential for effective information sharing and exchange within the organization.	5
ZTO has to proactively devise and execute change management strategies for employees, guiding them on organizational expectations and their crucial role in ensuring long-term success. Leveraging Kotter's eight-step plan model is particularly effective in driving successful change initiatives across diverse organizational contexts.	6

5. Discussions

According to the study's findings, a disparity was reported in the effectiveness of the ITAX and ITAS systems, the ITAX system responses indicated high effectiveness with the entire tax administration processes from registration to reporting, being conducted within the system. In

contrast, the ITAS system responses indicated less effectiveness with the partial automation of its tax administration processes. Interviews with TMTO and ZTO tax office staff identified several criteria that impact the usage of the ITAX and ITAS systems. These included the system's availability, compatibility with staff needs and tasks, ease of use, and support from management. These factors are rooted in the TOE framework, offering a comprehensive lens for analysing the intricate dynamics of technology adoption and implementation within organizational contexts [2]. System availability correlates with the technology component of the TOE framework, which assesses technological factors influencing adoption. It encompasses aspects such as accessibility and reliability of the ITAX and ITAS systems, crucial for ensuring its effective utilization by users. System compatibility aligns with the organizational component of TOE, evaluating existing organizational processes and structures for successful technology adoption. It reflects how well the ITAX and ITAS systems aligns with the workflows, tasks, and requirements of tax office staff, influencing the perceived ease of use and integration into daily operations. Management support pertains to the environment component of TOE, which examines external factors influencing adoption, such as leadership endorsement, resource allocation, and organizational culture.

This alignment underscores the importance of considering not only technological features but also organizational factors when evaluating technology deployment strategies. These factors resonate with findings from studies conducted in various countries, indicating their universal relevance in promoting the successful adoption of tax administration systems [44–46]. For instance, Rezvani et al. [44] highlights that the system's availability motivates users to continue using it. Furthermore, Hsieh & Wang [45] emphasises the importance of the system's compatibility with tax administration processes and staff needs, while Thielsch et al. [46] underscores the significance of tasks and ease of use in encouraging willing interaction with the system. Additionally, a high percentage of TMTO management support has been found to influence the usage of the ITAX system.

The ITAX and ITAS systems differ in terms of the year of their development and implementation. The ITAX system was developed in 2000/2001 and was implemented in 2003, while the ITAS system was developed in 2009 and implemented in 2011. The time gap between the two systems suggests that the ITAX system may have already reached the maturity stage, having undergone various adjustments that have contributed to its effective usage. On the other hand, the ITAS system is still in its early stages, and some of its processes have yet to be fully automated. This aligns with the findings of ZRB [6] as it demonstrated that differences in the timelines for developing and implementing information systems can significantly impact their effectiveness and the rates at which users adopt them.

The study also revealed that the inadequate management support has led to a significant portion of the system being unused. Currently, the system is utilized by five departments: registration, RDPC, accounting, audit, and Pemba. In contrast, six other departments, namely revenue assurance, debt management, ICT, legal, human resources, and research and planning have refrained from using the ITAS system due to incomplete automation in their processes. This underscores ineffective utilization within ZTO. These findings imply that the ITAS system is not effectively integrated into ZTO's operations. They align with broader organizational challenges in adopting technological solutions, citing insufficient management support as outlined in [47, 48].

Recognizing and addressing these issues is imperative for maximizing the potential benefits of the ITAS system and fostering a culture of innovation and efficiency within the organization. The findings of the study reveal six main strategies highlighted by the respondents as crucial for facilitating the effective use of ITAS in ZTO: managing system user requirements, regularly assessing business processes, providing training, integrating the system with other platforms used in the organization, establishing a robust network infrastructure, and implementing change management strategies. These strategies align with the findings of Jitpaiboon and Kalaian [47] and Gorla et al. [48], which emphasize the importance of assessing people and processes to ensure effective identification and management of system user requirements for optimal system performance. For ZTO, it is essential to ensure that the ITAS system is comprehensive and that all business processes are fully automated within the ITAS system.

The identified strategies are also aligned with those of Bott & Blume [3] which underscored the need for intensive training to facilitate the success of digital services in tax administration. Establishing adequate ICT infrastructure and enhancing internet access and reliability are essential steps to be taken by developing countries to make efficient use of the information that digital technologies provide. The findings highlighted the importance of adopting tax management information systems that align with the specific context of the organization.

The study underscores the importance of system integration with other platforms used in the organization and change management strategies, particularly in the context of organizations employing multiple systems. System integration ensures seamless interoperability and data exchange between different platforms, mitigating issues related to data silos and enhancing overall operational efficiency [49]. By integrating the ITAS system with existing platforms, organizations can streamline workflows, improve data accuracy, and facilitate cross-functional collaboration. Moreover, effective change management strategies are imperative for navigating the complexities associated with system integration and minimizing resistance to organizational changes.

Proactive communication, stakeholder engagement, and training initiatives are essential components of change management efforts, enabling organizations to foster a culture of adaptability and innovation [50]. In environments where various systems are utilized, such as in large enterprises or government agencies, the need for robust integration and change management practices becomes even more pronounced, highlighting the significance of these strategies in ensuring the successful implementation and adoption of new technologies [50]. By prioritizing these strategies and addressing the identified challenges, ZTO can unlock the full potential of the ITAS system and drive sustainable organizational growth and innovation.

6. Conclusion

Many tax organizations in developing countries have adopted tax administration management information systems to improve efficiency, governance, and transparency for tax stakeholders. This study evaluated the usage of the ITAX and ITAS systems among Tanzania mainland and Zanzibar tax organization office staff, identifying commonalities and differences in system usage to draw lessons from the process. Based on the analysis, it was found that the ITAX system was more effectively used than the ITAS system. To use the tax administration management information system effectively, the system must be available to users, supported by top managers, and compatible with staff requirements. The findings also

suggested that there must be alignment between system users, the Tax MIS processes, and the ability of the system itself to perform intended tasks. Strategies were proposed to help the Zanzibar integrated tax administration information system be more effectively used, leading to expected benefits for ZTO, its staff, and the Zanzibar government in generating sufficient revenue to finance social services.

ACKNOWLEDGEMENT

The authors acknowledge the support and contributions provided by both tax organizations in the completion of this research. The support of other independent reviewers for this work is also greatly valued.

CONTRIBUTIONS OF CO-AUTHORS

Asha F Juma		Conceived the idea, conducted data collection, performed data analysis, data interpretation and wrote the paper.
Ruthbetha Kateule	[ORCID: 0000-0002-0413-3981]	Conceived the idea, performed data analysis, data interpretation, write-up and reviewed the paper.
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APPENDIX

Appendix A: Questionnaire Guide for TMTO and ZTO

QUESTIONNAIRE FOR ASSESSING THE USAGE OF ITAS SYSTEM

Dear Respondents,

Thank you for your time to participate in the assessment of the usage of the ITAS system. The questionnaire is part of the assignment to achieve a research study on a study of the use of tax administration information systems: a case of Tanzania Mainland and Zanzibar. The research study is a prerequisite towards accomplishing Master of Science in Information Systems Management at the University of Dar es salaam.

Please remember, your response will provide valuable information that will help in improving the system usage. ITAS stands for the Zanzibar Integrated Tax Administration System.

(Please tick your answers and fill out the fields below)

Part I: Respondent Profile

1. Gender:

☐ Male ☐ Female

2. Age:

☐ Below 20 ☐ 20-40 ☐ Above 40

3. Education Level:

☐ Below Diploma ☐ Diploma ☐ Bachelor Degree ☐ Postgraduate Diploma

☐ Master Degree ☐ Ph.D.

4. Please state your working department.

.....

5. Years of experience in the use of ITAS system.

☐ 0 - 3 ☐ 4 - 6 ☐ 7- 10 ☐ More than 10 years

Part II: System Usage

6. The system helps you to accomplish your tasks more quickly.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

7. The system has improved your job performance.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

8. In terms of percentage, please categories the efficiency of the system.

☐ 0-20% ☐ 30-50% ☐ 60-80% ☐ 90-100%

9. The system is effective and is able to do everything that is intended.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

10. The system can easily be interacted.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

11. You are using the system in your daily activities (work routine).

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

12. The system is reliable, that it performs correctly for a specified time and in a specified environment.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

13. The system is available by user whenever it is needed.

☐ Yes ☐ No

14. Choose the term that clearly describe often the system go off after a fault/maintenance.

☐ Rarely ☐ Occasionally ☐ Too often

15. The system helps you to achieve current objectives of your work.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

16. The management of ZTO considers the system to be very important.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

17. The management of ZTO plays enough role to support the use of the system.

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

18. For the effective utilization of the system, it is important for the system users to be well trained about the system. Describe the prioritization of management toward trainings on the use of the system.

☐ High priority ☐ Low priority ☐ No priority

19. The network connectivity is stable when using the system

☐ Strongly Agree ☐ Agree ☐ Neutral ☐ Disagree ☐ Strongly Disagree

20. What are the challenges you face while using ITAS system?

……
……

21. What could be done to improve the use ITAS system?

……
……

Appendix B: Interview Guides for ZTO and TMTO

INTERVIEW GUIDE FOR ASSESSING THE USAGE OF ITAS SYSTEM

Dear Respondents,

Thank you very much for agreeing to do this interview in the evaluation of the usage of the ITAS system. This survey is part of the task to attain a research study on a study of the use of tax administration information systems: a case of Tanzania Mainland and Zanzibar. The research study is a prerequisite towards accomplishing Master of Science in Information Systems Management at the University of Dar es Salaam. ITAS stands for Zanzibar Integrated Tax Administration System.

The purpose of this interview is to gain more understanding of the use of ITAS system, the interview will last less than an hour. Everything you tell and your identity will be kept private, at any time during our conversation, it would be ideal if you feel free to let me know in case you have got any question or if you are not ready to reply any particular question. And for any reason, you may also stop this interview any time. Please remember, your response will provide valuable information that will help in improving the system usage.

Questions

1. Please describe ITAS system shortly.
2. What can you say about the ITAS system availability to its users?
3. What can you say about the ITAS system compatibility to staffs' tasks and their requirements for the ITAS system?
4. Is the ITAS system easy to interact with and use?
5. What can you say about the top management support regarding ITAS system usage?
6. Can you please describe your experience in staffs' usage of ITAS system?
7. From your experience, which challenges and obstacles prevents staffs from using the ITAS systems?
8. What suggestions do you have in terms of how we might meet these challenges?
9. Normally, Integrated Tax Administration System supposed to support eight tax administration operational processes which are: the taxpayer registration process, return process, billing and collection process, taxpayer accounting process, online self-services, revenue accounting processes, case management process, and security process. Apart from the security process, does the ITAS system Support the other seven tax administration processes?

Thank you very much for your time, and for sharing your experience with me.

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