

**ENHANCE TAX ADMINISTRATION TO INFORMAL TRADERS IN
TANZANIA THROUGH DIGITAL TECHNOLOGY- THE USER
REQUIREMENTS DEFINITION**

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ABSTRACT: *Studies on mobile technology have so far focused on the usage of digital technology to enhance business operations. However, in Tanzania, little is known on the user requirements for a technological solution that connects informal practitioners and regulatory framework. Therefore, this study focuses on a digital tool to enhance the tax administration of informal practitioners. The user requirement considered set-up of informal traders, the canon of tax, activity theory, and the technological acceptancy model. This qualitative study, collected data through focus group discussions, interviews, document reviews, site visits and studio work. The study confirmed that digital tools should enhance activities, and the qualities that attract informal traders to use. The study resulted in an early-stage prototype, also, the lesson on establishing user requirements that connect informal practitioners and regulatory framework was learned. This paper contributes to the inclusion of informal practitioners in digital technology and taxation in developing economy like some of African Countries.*

KEYWORDS: informal traders, tax administration, user requirements, prototyping

INTRODUCTION

Mobile services are increasingly becoming popular in enhancing activities in dynamic environments of formal and informal practitioners. Through mobile technology, the services can be delivered anywhere and anytime (Gomera & Oreku, 2018). Moreover, mobile technology is considered to have a significant contribution on the growth, formalisation and economic profile of informal practitioners. The contribution of mobile technology is evident in the arears of financial inclusion (Gomera & Mikko, 2015), customer care (Rumanyika, Apiola, Mramba, Oyelere & Tedre, 2021; Rumanyika, Apiola, Mramba, Oyelere & Tedre, 2021; Kapinga, Suero & Mbise, 2019), farming information sharing (Misaki, Apiola, & Gaiani, 2019), record keeping (Gomera, Suhonen, Oyelere & Kapinga, 2019; Mramba, Tulilahi & Apiola, 2016) and loan monitoring (Gomera & Oreku, 2018) to mention but a few. The cited examples indicate that mobile technology can offer significant benefits that can enable informal practitioners formalize their businesses and contribute to national coffers especially after their inclusion in the tax net.

The informal sector has been considered as important to the economy and to the livelihood of many people in African countries (Dube, (2014). The sector is the backbone of today's economies of developing economies (Donner & Escobari, 2009; De Ferranti & Ody, 2007). In most African countries, informal practices are directly linked to the national economic development through self-employment and thereby contributing to the Gross Domestic Production (GDP) (Ajmeru, Pandit, Borgaonkar, & Sriganesh, 2013). Although the informal sector is significant in national development its contribution to the economy is not well documented. This has theoretical and practical implication in the budgeting and strategies of most developing economies like most of African countries (Dube, 2018; Elly, 2017).

The informal practitioners are often considered as less productive than formal ones, although the former employ large numbers of populations than the latter (Hemmer & Mannel, 1989; Varcin, 2000; Onwe, 2013). The exact size of the informal sector is hard to establish due to its informality (Bagachwa, 2019; Kerner, 2019), however, statistics shows that around 75 percent of Tanzania population are informal practitioners (Haji, 2017). The informal sector relates to some key business activities such as retail, service provision and construction (Gomera, Suhonen, & Oreku, 2020). This calls for the need of formalising the sector through tax system.

Active tax systems are presumed to mobilize revenue from a wide tax base hence reinforcing government legality of achieving fair sharing of costs and catalysing national development. The major administer of the tax system in any country is a revenue authority of that particular country (Fjeldstad & Heggstad, 2011). Revenue authorities have been widely acknowledged as instrumental funds collectors through administering taxes in multitude of tax payers (Coleman & Evans, 2003; Dube, 2014). Despite that a wide tax base is a goal of most revenue authorities the initiatives towards the inclusion of informal practitioners in the tax base to achieve this goal seemed to have been an uphill task. Moreover currently, Tanzania introduced special identity card to informal traders (Wamachinga) who have to pay TZS 20,000 (Equivalent to \$ 9) per year as business levy. This system of revenue collection from the informal traders might be substantial, however its administrative costs may result to insignificant net income generation (Gomera, Oreku, & Shau, 2021). Given the large number of informal practitioners, the administration of tax is nearly impossible (Dube, 2018). Moreover, most of the informal practitioners are lacking the knowledge and skills of using complex technological devices (Gomera, Oreku, & Shau, 2021; Coleman & Evans, 2003) of calculating taxable income, filling of tax returns and interpreting tax regulations (Coleman & Evans, 2003; Dube, 2014; Ebifuro, Mienye, & Odubo, 2016). This calls for the attention of policy makers, practitioners, researchers and programmers to consider the inclusion of informal practitioners in the tax net.

As with any systems, m-services have to be designed with a clear specification of user requirements. The m-taxation creates the possibility of bringing up practical aspect of a canon of tax systems to informal practitioners.

This study has motivated by number of aspects, which need the attention of practitioners, researchers, and policy makers. In this regard, four aspects are considered in this paper, *one*, the importance of informal practitioners in contributing to the income of developing countries. *Two*, the practical need of increasing tax base through the inclusion of informal practitioners in the tax base. *Three*, the complex nature of tax administration to informal practitioners brought by a canon of tax aspects. *Four*, limitation of literature on user requirements for technological solution that connect informal practitioners and regulatory framework.

STATEMENT OF THE PROBLEM

The establishment of user requirement should result to the accomplishment of the objectives of the real-world (Lehtola, Kauppinen, & Kujala, 2004) of creating a tool with the capability of solving a practical problem (Johannesson & Perjons, 2014), or of creating a system of accomplishing an activity (Darke & Shanks, 1997). Therefore, a well-established user requirement should consider the qualities of the tool/product, the tasks to be accomplished, the challenges to be addressed, the environment where the tool is expected to operate, the nature of potential users and the contribution of knowledge from the process (Johannesson & Perjons, 2014; Balley, et al., 2014; Maguire & Bevan, 2002). To ensure the cited objectives are achieved, the early prototype of the proposed artefact has to go hand in hand with the establishment of user requirement stage (Alavi, 1984).

The establishment of user requirements in this study focused on mobile taxation of informal traders in the Tanzanian context. This is because informal practitioners are important in the economy (Kibassa, 2012; Engelschalk, 2007); hence, there is a need of widening the tax base (Coleman & Evans, 2003; Lubua, 2014) of which informal traders are the potential candidates of the process (Gomera, Oreku, & Shau, 2021). Despite that the informal traders create the opportunity of forming a wide tax base of the country, there is hardly any practical approach of including them in the tax administration. This is due to the challenges on implementing tax administration to the informal sector (Gomera, Oreku, & Shau, 2021; Lubua, 2014), and most of these challenges are caused by a canon of tax systems (Nakiwala, 2010; Mahangila, 2017; Mainoma, et al., 2020), and characteristics of informal traders Tendlers, (2002); Kolli & Sinharay, (2011); and McKenzie, (2021).

The possibility of taxing an informal trader is closely connected with the ability of a digital technology to transform the informal to the formal practitioners (Lubua, 2014). The role of a mobile technology of transforming informal practitioners has been widely acknowledged; see for example. Gomera, Suhonen, Oyelere, and Kapinga, (2019) on mobile record keeping to women entrepreneurs; Mramba, Rumanyika, Apiola and Suhonen, (2017) and Mramba, Tulilahti and Apiola (2016) on bookkeeping to street traders; Rumanyika, Apiola, Mramba, Oyelere and Tedre, (2021) and Rumanyika, Apiola, Mramba, Oyelere and Tedre, (2021) on market searching to street traders;

Kapinga, Suero and Mbise (2019) on mobile marketing for women entrepreneurs; and Misaki, Apiola and Gaiani (2019) on Small Scale farmers.

Despite the widely advocated efficacy of mobile technology in transforming informal practitioners and the potential of informal traders in widening a tax base, little is known on the qualities of a potential technological tool that could enhance tax administration of informal traders. Additionally, there is no active practical information on the ideal digital technological tool of tackling tax administration to the informal sector in the Tanzanian context. Therefore, this study looks at a digital tool that would enhance tax administration of informal practitioners in Tanzania. The establishment of user requirements incorporates aspects such as Technological Acceptancy Model (TAM), Activity Theory (AT) and a canon of taxes. To achieve the stated objectives, this study intends to respond to the following three specific research questions.

- *RQ1: What are the activities involving in taxation of informal traders?*
- *RQ2: What are the key features of the digital technological tool that would enhance tax administration to informal traders?*
- *RQ3 What lessons learned from user requirements definition of a mobile technological tool for tax administration to informal traders?*

LITERATURE REVIEW

Informal Practitioners

Informal practitioners are citizens and foreigners that undertake economic activities, which are unmeasured and unrecorded (Jackson, 2012; Dube, (2014; Hemmer & Mannel, 1989). Thus, in general, all the economic activities that are outside the government control, unregistered and unregulated belong to the informal practitioners. The informal practitioners cut across different sectors and hence form the largest segment for house-hold income and employment in many developing countries including Tanzania (Bagachwa, 2019; Haji, 2017; Elly, 2017).

The informal activities are dominated by individual entrepreneurs, family enterprises or small organized groups with the aim of selling products and services. These activities include vehicle repair, woodworking, hand crafts, paintings, clothing, shoe making, and construction to mention a few. Since all practitioners sell either products or services (Elly, 2017; Kerner, 2019), this study refers to them as informal traders.

The informal traders are considered marginalize, in other words, are considered to generate income for poor people (Cheng & Gereffi, 1994), exploited mainly by capitalists who seek to reduce costs (Katalin, 2015) and are unable to abide by bureaucratic and regulatory procedures set by government (Tanzi, 2013; Nakiwala, 2010; Mahangila, 2017). The informal traders are considered marginal, hence limiting the absorption of their activities into the formal economy. The notion of informal trade referring to a business of the poor has led to the prevalence of weak institutions owned by poorly educated people. Moreover, the bureaucratic costs and strict regulations pose

a challenge for traders in formalizing their activities. Sometimes, corruption connected to granting of business permit to start businesses force traders to stay informal. The cited challenges facing the informal practitioners, (Charmes, 2012; Kolli & Sinharay, 2011) limit economic activities of informal traders from being reported in the GDP statistics.

Despite being considered incapacitated, the informal traders have a linkage to the formal economy (Varcin, 2000; Onwe, 2013). Moreover, informal traders' activities are usually not performed with the explicit intention of evading tax payment (Tanzi, 2013; Tendler, 2002; Nakiwala, 2010). Therefore, it is important to take advantage of technological dynamics and the entrepreneurial spirit and include them in the tax net.

Importance of Taxing Informal Traders

The contribution of informal traders to the country's economy is widely acknowledged. The sector is considered as an opportunity of stimulating economic development (Joshi, Prichard, & Heady, 2014). Given its potential in contributing to the national economy the informal sector has attracted the attention of policymakers and researchers who have dedicated their precious time on the agenda. In this regard, there has been policy reforms on the informal-sector in general and small firms in particular, as part of a broader social-policy agenda of reducing poverty and unemployment (Joshi, Prichard, & Heady, 2013; Gomera, et al., 2020). Generally, the informal sector is helping in maintaining the community involvement to the economic development (Kibassa, 2012; Onwe, 2013; Kerner, 2019), which is potential in the realisation of unemployment reduction and increasing of individual income generation (Kolli & Sinharay, 2011).

The Government has recognised the importance of informal traders and has supported the sector by focusing on burden-reducing measures such as credit amnesties and subsidies. The same supportive approach has been adopted by international donors and non-government organisations who have been steady fast in extending assistance to informal traders, such as provision of micro-credit and other programs aiming at poverty reduction (Tendler, 2002).

The importance of informal traders can be scaled-up to tax administration. Tax revenue from informal traders as another source of tax income can help the Government to finance development activities and reduce reliance on foreign aids (Hearson, 2014). In this regard, the cost of administering informal taxpayers should be structured in such a way that does not outweigh revenues. A long-term revenue can increase from a wider tax base through formalizing a wider range of tax payers. The process of recognizing the informal traders in the tax system will lead to their transformation from informal to formal. The inclusion of informal traders to the tax system will improve their commitment as citizens and hence increase their responsibility in strengthening the national economic resources. Owing to the widespread of informal traders in the Tanzanian economic sectors and the potential of increasing revenue (Tanzi, 2013), tax administration to this group should be considered as a serious matter of economic interest.

Tax Administration to Informal Traders

The complicated tax system and a cannon of taxes clearly fuel policy and practical debates on taxing informal practitioners. In Tanzanian small tax regime, businesses below the turnover threshold of TZS 20 million (\$ 8,500) are required to pay a presumptive tax based on brackets (Tanzi, 2013; Slemrod & Yitzhaki, Analyzing the standard deduction as a presumptive tax, 1994; Gale & Holtzblatt, 2002). The system is flexible and allows small businesses the option of paying a flat payment if no records are kept, or a percentage of turnover plus a smaller flat payment if some records are kept (Slemrod, Yitzhaki, Mayshar, & Lundholm, 1994; Mahangila, 2017). Moreover, tax administration to informal traders is regarded as close to impossible due to trade-off between canons of tax systems and the challenges associated with taxing informal practitioners.

The taxing of informal traders is faced with trade-off between benefits and costs, which is common in developing countries (Nakiwala, 2010; Mahangila, 2017). The tax payers and tax authorities must cope with more complex tax administration procedures using fewer resources (Bird & Zolt, 2008; Gomera, Oreku, & Shau, 2021).

In the Tanzanian context, informal traders lack knowledge regarding tax compliance and recording requirements. Moreover, due to its complexity the generation of a tax report is close to impossible to informal traders. Therefore, taxation on informal traders has an impact on two aspects; cost and policy. The costs of compliance are huge apart from tax burden itself. In addition, the tax authority finds tax administration as having higher cost burden than the benefit derived from revenue and fiscal practises (Fjeldstad, Kolstad, & Nygaard, 2006; Fjeldstad & Heggstad, 2011; Nakiwala, 2010). Tax practices to informal practitioners is hard and close to impossible because of the following, Tax practices yields little revenue, noncompliance is easy (due to cash based low audit probability, cheaper to evade and consists fewer tax handles), imposition of high compliance costs to both taxpayer and tax administration, poor or no tax education and low or no tax morale (Gomera, Oreku, & Shau, 2021)

Despite that it is difficult for TRA to collect tax from informal traders, the Local Government Authorities charge a large number of taxes, fees, licenses and other charges from this sector (Fjeldstad, Kolstad, & Nygaard, 2006; Tanzi, 2013; Tendler, 2002; Gallagher, 2005; Gomera, Oreku & Shau, 2021). This implies that revenue authority has the opportunity of finding the way out of formally integrating informal traders in the national tax base.

Digital Technology in Tax Administration to Informal Traders

Digital technology usage among informal traders creates an opportunity of including informal traders in the tax system. Evidence from literature shows that digital technology to informal traders is frequent in services such as customers' retention (Rumanyika, Apiola, Mramba, Oyelere, & Tedre, 2021; Kapinga, Suero, & Mbise, 2019), mobile training (Gomera W. C., Oreku, Apiola, & Suhonen, 2017), mobile money services, and social media platform. The cited advantages include the possibility of transforming practitioners from informal to formal ones (Deen-Swarray, Moyo, &

Stork, 2013), information sharing is anytime and anywhere (Gomera & Oreku, 2016), there is enhancement of interaction between formal institutions and informal practitioners (Gomera & Mikko, 2015), and there is the ability of assisting informal practitioners on their daily activities.

However, there is no evidence of using digital technology in tax services (Lubua, 2014). The absence of digital technology in taxation among informal traders may be due to complexity of tax regulations, multi-requirement variables, inter-institutional relationship and absence of practical relationship between tax authorities and tax payers (Chatama, 2013; Bird & Zolt, 2008). This creates the need of taking action in addressing user requirements for devising a digital tool for tax administration to informal traders. The basic need of Mobile technological tool for tax administration should focus on the following Basic Tax Equation.

$$\begin{aligned} &\text{Tax Administration Cost} < \text{Tax Revenue} \\ &\text{Enterprises Tax Cost} < \text{Perceive Compliance Cost} \end{aligned}$$

The practical approach of the above tax equation should focus on issues such as how new technology may or should influence country's tax system. In addition, the proposed tax system should be designed and administered to include informal trades as an important tax source in Tanzania. Due to the aforementioned practical needs, this study is engaged in developing a mobile taxation that enhances tax administration to informal traders.

The aspects that form uniqueness of the user requirements in m-taxation tool include the gap of professional knowledge and skills between tax authorities and tax payers, the differences on working environment between the two players, the involvement of tax regulations and policies, and specific activities to be performed in ensuring that, tax is administered to informal practitioners (Tanzi, 2013; Mahangila, 2017). Skill enhancement program on tax can also be challenging on the part of tax authorities.

User Requirements

Numerous studies cited variables worth considering when determining user requirements for the technological tool. The variables include characteristics of potential users, the working environment, the internal and external context of the organization, and the complexity of the implementation process (uniqueness of the referred service) (Johannesson & Perjons, 2014; Balley, et al., 2014; Belfo, 2012). User requirements focus on the capabilities, qualities and features of the technological tool to enhance practical activities of the potential end users (Johannesson & Perjons, 2014; Braun, Benedict, Wendler, & Esswein, 2015).

The definition of user requirements helps developers to understanding the functions of the tool from the user's perspectives (Braun, Benedict, Wendler, & Esswein, 2015). The process is called co-designing, which may include potential end users, policy makers, expert on specific disciplines, software or other developers (Capilla, Babar, & Pastor, 2012; Belfo, 2012). This study considered different aspects that helped in determining

user requirements such as a definition approach, working environment of potential end users, characteristics of end users, and regulations governing the practice.

The user requirements can be functional or non-functional. *Functional requirements* refer to the how and the what services the potential tool is expected to offer to the end-user basing on their needs. The what aspect bases on describing the activity the user needs the tool to perform. Whereas, the how aspect focuses on the expected behaviour of the potential tool in responding to the inputs to generate outputs under particular situations (Maguire & Bevan, 2002; Dabbagh, Lee, & Parizi, 2016). In this study, the functional requirements collected by identifying the regulatory needs, services needs and environmental aspect of informal traders that may help to enhance tax administration.

Non-functional requirements on the other hand, describe the qualities of the artifact. These are may be measured based on how the potential end user feels and gauges in terms of easiness to use, security, supportive to working environment, portability and attractiveness. Non-functional requirements in an artifact addresses how comfortable the end user finds the artifact when performing a functional requirement (Capilla, Babar, & Pastor, 2012; Johannesson & Perjons, 2014).

Moreover, *the structural and Environmental requirements* are also important aspects to consider during the definition of requirements. The structural requirement focuses on appearance and interrelationship among components whereas, environmental requirements deal with aspects that support the system to enable end-users have the capacity of utilizing the services offered by the artifact. Environmental requirements are related to network availability, costs, time, expertise, user experience, and other services, which are easy to relate to the environmental requirement (Walsham, 2012; Naumann & Jenkins, 1982).

Prototyping the requirements

To establish user requirements, there are numerous user requirements approaches that are widely recognized in the ICT4D discipline. These approaches provide different views basing on the audience, specific case and technology. Although the approaches are neither perfect nor complete for all cases to all audience, there are some approaches that fit certain groups and cases as opposed to others (Firesmith, 2003). One of the cited approaches that concludes the user requirement stage is the designing of early prototype of the potential artefact.

The prototyping of user requirements is an important stage in user requirement definition, as it provides qualities descriptions and practicability of the identified requirements (Gomaa, 1983; Dragicevic, Celar, & Novak, 2014; Alavi, 1984). Early prototype is considered as an important parameter for testing the inclusion of requirements in the working end product (Gomaa, 1983; Jeenicke, Bleek, & Klischewski, 2003).

In this study, user requirements focused on having a clear picture of user needs regarding the innovation, in other words, they provide answers to questions such as “*Why is the tool required? Who are the potential users? “Why should the tool be used?”* and, *where will the tool be used?* (Belfo, 2012). Therefore, practical approaches of user requirement definition mostly focus on objects, functions and states (Belfo, 2012; Johannesson & Perjons, 2014). The aforementioned aspects have been considered in terms of economic level, time availability, activities, working environment and education level of the potential end users (Belfo, 2012). Therefore, iterative of testing practical requirements to early prototype was used to accomplish the user requirement definition.

CONCEPTUAL FRAMEWORK OF THE STUDY

There are several theories used in this study, namely the canon of good tax, Activity Theory (AT) and Information Acceptance Model (TAM). The aforementioned theories help to connect the technological, activities and tax discipline in establishing user requirements for mobile taxation from the perspective of informal traders. The integration of social aspect and ICT is still an opportunity for problem solving based research, hence the emergence of new technological solutions such as a mobile tool in social-economic networking (Walsham, 2017; Walsham, 2012). Therefore, technological-based and social economic theories were used to back-up the current study.

The multidisciplinary theories were used on the grounds of the nature of the study, that comprises aspects such as the attitude of tax payers, information required for informal traders to be involved in tax net, the level of understanding of potential end users, the working environment and the nature of complex relationship as it includes tax regulations. (Walsham, 2017). The theories used in this study involve an intersection of information systems (IS), computer science, artifact designing process and taxation aspect (Heeks, 2008; Walsham, 2012). In this study, there are two distinct aspects considered. The first is the canon of good tax systems that brings a close to impossible situation for tax administration to informal traders (Johnson, 2002; Tanzi, 2013; Mainoma, et al., 2020). The second is TAM and AT, which can tackle challenges related to canons of tax and enhance the possibility of including informal traders in the tax administration.

The canons of taxation define certain rules and principles upon which a good taxation system should be built. In this paper, the canons of taxation are a useful foundation of discussing the basis of tax policy, tax laws and tax administration when thinking of taxing informal traders (Tanzi, 2013). The canon of tax aspects results to close to impossible practical aspect of administering tax to informal traders. The canon of tax system was used to indicate the aspects, which need to be addressed by tax administration tool and make the inclusion of informal traders in the tax net possible. Mainoma, et al., (2020), summarize the canons, which were originally proposed by Smith in Book V, Chapter 2 of *The Wealth of Nations*. The canons are presented in Table 1.

Table 1 Summarized Canon of Tax System

Canon	Description
Equity	Simply, every citizen should pay tax to the Government according to their ability to pay
Certainty	A Tax Payer should be certain on how much tax he/she has to pay, to whom and by what time the tax is to be paid. The place and other procedural information should also be clear.
Convenience	Tax should be levied in such a manner and at such a time that it affords maximum convenience to the tax payer.
Economy	The cost of collecting tax should be minimum so that a major part of the collections may be sent to the Government treasury.

The Activity Theory is a cross-disciplinary framework for studying individual and group practices in development processes (Brown, Heath, & Pea, 1999; Engeström, 1999). The inclusion of the AT in this study is based on its supportive principles and components used to establish the user requirement of the mobile taxation tool (Nardi, 1996).

Activity Theory is based on three principles: The first is Activities as basic units of analysis (human action as the unit of analysis) in a controlled environment. The second is the history and development as human under continuous change in non-linear or situation. This means there is no need of remaining in the old phenomena of assuming or dealing with activities. The third principle is based on the principle that activities use artifacts such as process, policies, methods, laws, and organization to realize outcome. Therefore, the AT helped to focus attention on the features of artifacts that can mediate the activity of tax administration to informal traders.

In addition to the principles of AT, the study was supplemented by five components of the theory. The first is the object of the activity, in other words, the goals and intentions or services to be rendered by the tax administration tool. The second is the subjects in the activity, in our case, the people engaged in the tax administration of informal traders were focuses. The third component is the tool mediating activity, whereas this study refers to the mobile taxation of informal traders, which can be used to transform a nearly impossible process to a possible one. The fourth component includes rules and regulations that govern the activity. The fifth component, which was used is an outcome, whereas in this case, an early-stage prototype of a mobile technological tool for tax administration of informal traders were used to reflect the expected output (Kaptelinin & Nardi, 2006).

The *Technological Acceptancy Model (TAM)*, demarcated the importance of acceptancy of the proposed tool by people, environment, organization, and technological fit at the stage of establishing user requirements (Ujakpa & Heukelman, 2020; Ahmadi, 2021; Dadayan & Ferro, 2005). The model is very useful as it addresses the influences and interaction of each end user. (Belfo, 2012; Brown, Heath, & Pea, 1999). The TAM (Davis, 1989) is considered as an influential model in describing the acceptance and usage of technological solutions. The model is useful due to its assumption that perceived usefulness and ease to use are the primary determinants of users' requirements, which affect the intention to use (Davis, 1989).

It is important to be aware of technological acceptancy attitude from the point of user requirement definition. In order to establish user requirements, the acceptancy of the potential technological should be determined based on potential end users' (Velicia-Martin, Cabrera-Sanchez, Gil-Cordero, & Palos-Sanchez, 2021). TAM has proven to be a useful theoretical model explaining and predicting users' attitude in the information technology. This determines both the impact and the extent to which an artifact can bring the required qualities and which are specific to local needs and uses.

A combination of the three aforementioned theories is illustrated in Figure 1. The figure shows the process and a wide range of different aspects that have an impact on the mobile taxation user requirement definition.

The framework describes the role of TAM and AT in tackling the impracticability of a cannon of tax towards tax administration of informal traders. Both TAM and AT focus on specified information, content, attitude and the environment that led to the need of technological tool that would facilitate the taxation of informal traders. Moreover, Figure 1 shows that, with the combination of TAM, AT, Canon tax phenomena and the research process used in this study, the user requirements of a mobile technology tool can be established to enhance tax administration of informal traders.

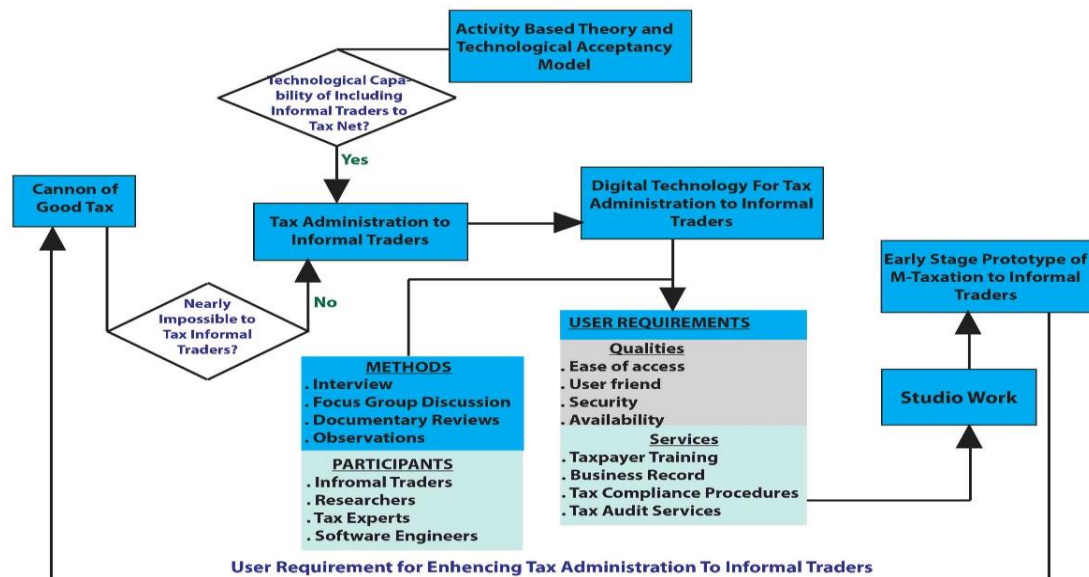


Figure 1 Conceptual Framework

RESEARCH DESIGN

A qualitative method enables researcher to study social, economic, technological phenomenon and potential attitude on technological tool (Dragicevic, Celar, & Novak, 2014; Bryman, 2012). The multidisciplinary theories of tax, activity and technological acceptancy (Velicia-Martin, Cabrera-Sanchez, Gil-Cordero, & Palos-Sanchez, 2021; Johnson, 2002; Nardi, 1996), co-design (Tremblay, Hevner, & Berndt, 2010), and prototyping (Naumann & Jenkins, 1982), were used to establish user requirement of mobile taxation tool for informal traders. The co-designing sessions helped the researcher to understand the potential end users, their needs, education level, preferred qualities of the potential tool, and working environment (Rumanyika, Apiola, Mramba, Oyelere, & Tedre, 2021). Moreover, the approach helped to obtain data that provided insights on a wide range of different and sometimes conflicting user needs such as the attitude and acceptance of tax practices in relation to potential advantages of mobile taxation. Table 2 summaries the elements of qualitative research design used in this study.

Table 2 Elements of Research Design

Element	Specific aspect used
Research approach	Co-designing and Prototype approach (studio work) (Lantz, 1986)
Theories	Activity Theory, Technological Acceptancy Model and Canons Tax
Research Method	Qualitative method (Bryman, 2012; Creswell, 2014)
Data collection methods	<ul style="list-style-type: none"> • Focus Group • Semi-structured interviews • Working environment visit and observation • Documents Review • Studio
Participants	<ul style="list-style-type: none"> • Researcher • Software Engineers • Informal Traders, • Trade officers • Tax experts
Data analysis	Content analysis
RQ1	TAM – Intention to use for tax administration (activities), importance for transformation of informal traders (useful in tax administration) ABT
RQ2	<ul style="list-style-type: none"> • TAM – Perceived easy to use, • ABT – Activities to be performed
RQ3	The TAM and ABT bring an opportunity to address challenges caused by cannon of good tax by establishing user requirement of tax administration tool to informal trader.

Data Collection Methods

The data were collected using focus group discussion (Lunt & Livingstone, 1996; Grimshaw & Wilson, 32-48), interview, document review, and visits to the working environment (Bryman, 2012; Creswell, 2014). The methods were found suitable as they addressed different questions, and therefore integrate the information to achieve the main objective. The combined data collection methods led to a detailed, accurate and valid data concerning environment and activities for an in-depth information on specific design requirements. These methods generated a specification of the requirements in terms of personas, scenarios, technological and organizational prerequisites.

Interview

Interviews were conducted to informal traders who were selected based on willingness to participate in the stud. The interviews lasted for 20–30 min whereby the researchers used an interview guide in administering interview questions. However, the

interviewees determined the time spent and the amount of data collected. Market Officers in different areas of Dar es Salaam City were very helpful during obtaining informal traders for interview. Market Officers were requested to provide names and contacts of informal traders who were willing to participate in the study. In addition, snowball sampling (Bryman, 2012; Creswell, 2014) was applied whereby the interviewed traders proposed potential candidates for interview. The interviews focused on identifying the uses, activities, information needs and the required quality to be incorporated in the expected tool for tax administration to informal traders.

However, there were challenges in convincing informal traders to agree to participate in this study; firstly, these informal traders were not registered, were not highly educated and were not willing to disclose their personal income and business information. Therefore, the researcher had to provide detailed explanations on the importance and benefits to be derived from the study. The inclusion criteria for traders included willingness to participate in the study.

Focus Group Discussion

The FGD was found suitable for establishing the requirements (Tremblay, Hevner, & Berndt, 2010). During interviews, the researcher requested for further consent from interviewees to participate in FGD for brainstorming. Six Co-design sessions were held in two different stages of FGD for the study. The first stage FGD was to have a common agreement on user requirements as recommended by informal traders during the interview. The second FGD stage aimed at receiving feedback from studio work that came up with a proposed early-stage prototype and agree on the expected qualities of the potential mobile tax application.

In the FGD, informal traders and tax experts agreed on the qualities of the mobile tax tool by considering the working environmental, education level of the potential users, technological capability of potential users, the level of income, tax regulation, and attitudes towards tax payment. The FGD lasted between one and two hours. The notes were taken by the researcher assistance and software engineers using a notebook, laptops and mobile phones.

Document Review

The document review (Creswell, 2014) was used for task analysis and the identification of regulatory requirements. Through this method, the researcher identified activities and information required for tax procedures, which include the flow of information and activities performed in tax administration, the types of tax that are charged to informal traders and the regulatory requirement.

Site observation

Visits to the working environment was used to observe the actual working environment of informal traders. This helped to establish the multimedia fit for the proper communication between tax authority and informal traders.

Prototyping

After the first round of co-design sessions, the prototyping took place to sketch and transform the identified non- functional user requirements to functional requirement (Dabbagh, Lee, & Parizi, 2016) before providing feedback to the second-round co-designing sessions. The outputs from the studio work were brought again into the second round FGD for comments and final agreement of user requirements. The prototyping led to an early-stage prototype. Therefore, the user requirements definition was concluded by transforming the user requirements into early-stage prototype.

The reason behind using each of the individual data collection method are summarized in Table 3.

Table 3 Summarized methods of data collection used

S/No.	Method	Reason
1	Documentary review	Understanding task, information flows and regulatory framework guiding tax administration
2	Interview	In-depth and specific understanding of potential end users, their needs and preferences towards the tool and appropriate requirement
3	Focus group sessions	Integration of user perspectives into common understanding of the design requirements and attitudes
4	Site observation	Observation and understanding of working environment and specification of technological tool that fit the said environment
5	Prototyping	Translating user requirements to specification, quality and early prototype of the potential tool

Study Participants

The researcher formulated a research team that comprised five tax experts, two software engineers and 46 informal traders. Therefore, this study had 53 research participants who played different roles in the research project. Before involving participants in this study, the researcher explained the objectives of the study to both tax experts and informal traders. The researcher assured participants on the confidentiality of the information to be obtained during the study. Moreover, the respondents were told they were free to withdraw at any stage of the research process if they wished to do so. Basing on the fact that the respondents are Swahili language speakers, both the focus group question guide and semi-structured interview guide were designed in English and translated into Kiswahili. Moreover, in order to captured user requirements as recommended by informal traders and tax experts for early-stage prototype, all participants were treated equally during interviews and FGD.

Sample Size

The determination of sample size based on the saturation point of the information received from interviewees. The saturation point was realised when the researcher noted that there were no new inputs and this was usually after interviewing between 41 and

46 respondents. For the case of FGD, the sample size involved informal traders who were willing to participate in a brainstorming session. About 36 informal traders, 5 tax experts and 2 software engineers participated in FGD. The sessions in the first and second rounds of FGD had the same members of groups with different intension. Table 4 presents the distribution of FGD sample size from different sessions.

Table 4 Participants of Focus Group Discussion

Round of FGD	FGD Sessions	Informal Traders	Tax Experts	Software Engineers	Total
1st round FGD - Input for Early Prototype	Session one	11	2	2	15
	Session two	12	1	2	15
	Session three	13	2	2	17
2nd Round – Feedback from Studio work	Session one	9	2	2	13
	Session two	10	1	2	14
	Session three	11	2	2	14
Total Participants		36	5	2	43

Data Analysis

Theories from different disciplines were used to link user requirement with a real-world dimension such as design deliverables, related system qualities and sources of user requirements such as policy, regulation and standard. Therefore, data analysis used both content analysis and prototyping approach. The methods complemented each other to realize the outputs. The content analysis was used by grouping the data into different categories such as people (potential users), scenarios (situations, policies and regulations), and working environment (of both tax authorities and tax payers). The prototyping approach transformed the requirements agreed in the first-round co-designing session to studio work then provided feedback to the second round of designing sessions. Therefore, the results of content analysis provided input to the studio for designing of the draft an early-stage prototype, whereas, prototyping provided feedback to the discussion to obtain approval for the final round of the early prototype of the mobile taxation.

FINDINGS AND DISCUSSION

This section presents the finding and discussion on the established user requirements for mobile taxation to informal traders and the lesson learned from the process. This section is divided into three parts as per the research questions namely RQ1 RQ2 and RQ3.

The user requirements definition considered the description of four complementary aspects namely potential users, the working environment, the services to be offered in tax administration and the prerequisites of regulations and tax laws. The study results involved the establishment of user requirements, the early-stage prototype and the lesson learned from the process. The user requirements as identified by participants are divided into three categories namely functional requirements, non-function and structure and environmental requirements.

RQ1: What are the activities involving in taxation of informal traders?*Required activities and information*

The data reveal that informal traders require a mobile app which would enable them to undertake all tax related activities and provide all relevant information for tax administration. Participants proposed that the tool should support activities relating to tax administration to informal practitioners. The associated tax administration services include business registration, report generation/ bookkeeping, location identification, notification of tax due date and due dates for tax payment.

During FGD, tax experts proposed that, the tool should support multiple services including policy and regulatory aspects and the integration with other government bodies and agencies as would be found necessary. During interviews, one of the informal traders said, ‘...*The best way for us to use the tax administrative tool is to make the tool provide other business-related services such as record keeping, registration, tax computation, training and sharing of business information.*’ Another respondent had this to say, “*the application should perform other activities such as specification and report generation, business report creation, enquiring (customer services), and actual tax payable.*” Moreover, from FGD, the informal traders explained that the automated business activities will simplify compliance with tax rules and improve certainty on the amount of tax payable.

The user requirement confirmed the kinds of services/tasks that would have to be provided to enhance tax administration among informal traders. The services cited as important by participants include Taxpayer Education/ training – for compliance enquiry and benefit, simple business record keeping, business sharing information (accounting management), simple tax compliance procedures and audit services. Table 5 summaries the findings on the services proposed as important by the research team.

Table 5 Activities and Information flow required for tax administration tool to informal traders

No.	Item for Tool	Identified activities	Source of information
1.	Ability to facilitate Services associated with taxation to Informal practitioners	<ul style="list-style-type: none"> • Enhance training • Online registration • Enhance record keeping • Enhance payment process • Enhance self-assessment • The tool should assist tax authority determine tax graduation 	Document review, Interview and FGD
2.	Facilitation of information sharing	<ul style="list-style-type: none"> • Geographical location of informal practitioners • Reminding on payments of taxation • Remind the status of registration 	Document review, Interview, and FGD

Also, this study revealed the importance of education to informal practitioners while dealing with any act of formalizing their practices. The training/ education has highly recommended by all respondents during interview and in all FGDs.

However, during FGD, there were contradicting aspects between the informal traders and tax experts. The requirement of geographical tracing of the informal traders resulted to an interesting discussion. Tax experts considered it as very important, whereas, the informal traders believed otherwise because it has nothing to do with the amount of tax to be paid. The requirement of geographical location was included in the early prototype subject to the confirmation of further studies that may involve other stakeholders such as Tax authorities.

The services preferred by informal traders and tax experts to be offered in the potential tax administration tool were agreed in the second round FGD. The agreement was reached after the researcher and software engineers presented the first draft of the early prototype to the participants. The preferred services are indicated in the system overview diagram in Figure 2.

System Overview

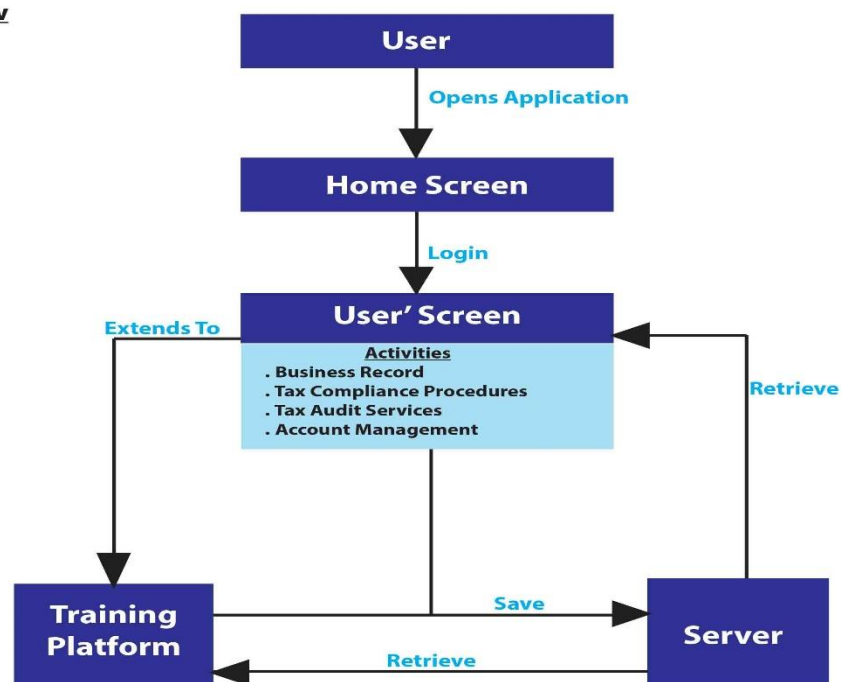


Figure 2 System Overview for Tax Administration Tool to Informal Traders

The services were associated because for tax purposes training, record keeping and information sharing are very important aspects to be considered (Gomera, Oreku, & Shau, 2021). Therefore, the associated services should form important part of the features of mobile tax to informal traders.

The results revealed further that one of the basic requirements of tax administration tool is to enhance multiple services. The findings concur with the finding in a study by other scholars (i.e., Nakiwala, 2010; Tanzi, 2013; Joshi, Prichard, & Heady, 2013) who argue

that the main challenge of administrating tax to informal practitioners is that these practitioners cannot handle their business in a manner that tax can be easily estimated. This aspect confirms the findings of previous studies (Gomera, et al., 2020; Mramba, Rumanyika, Apiola, & Suhonen, 2017; Baguma, Marko, Mwakaba, & Nakajubi, 2013) on the importance of scalability while trying to automatize the informal practitioners' activities. The significant new insights on the requirements were the associated services that informal traders wish to have in line with mobile taxation application. Therefore, the requirement that all activities support tax administration should be automated is the basis for the development of a viable technological solution.

As for the required services, the results confirm the activity to be performed by an artifact according to AT as propounded by Engeström (1999) and the usefulness of the activity to end users according to TAM as provided by (Davis, 1989). In addition, the services recommended by participants are consistent with the findings reported in a study by Gomera, Oreku and Shau (2021) who revealed that the mobile tax tool should support policies that benefit informal practitioners to be in the tax regime. Through multiple activities, the tool will reduce excessive tax administration requirements as pointed out by other scholars (i.e., Fjeldstad, Kolstad and Nygaard 2006; Slemrod & Yitzhaki, 1994; Bird & Zolt, 2008; Dube 2014), hence helping informal traders to comply with tax requirements.

The study confirms the findings reported in a study by Gomera and Mikko (2015) who found training as among the important services in the interaction between MFIs and MBs. Training will equip informal practitioners with different technical know-how of transforming from informal to formal practices. Therefore, this study is a reveille that any action towards formalizing the informal practitioners should consider training service because of the education level of most informal practitioners.

RQ2: What are the key features of the digital technological tool that would enhance tax administration to informal traders?

Basing on the aspect of Canon of Tax, AT and TAM with the data collected through interview, FGD and studio work, the user requirements, approved for design and development of the mobile application as summarized in Table 4. Informal traders' opinion revealed that they prefer a mobile tax application to be well-organized and simple.

According to the participants, easy to use and navigation with a few steps and multimedia will make the tool attractive to use. During the interview, one of the respondents said, '*... I prefer to use simple, easy and video-based application to accomplish my task in a very short time, if the app becomes complicated it needs effort to learn the usage procedures and may not be convincing for use.*' During the FGD, the informal traders insisted that the application, which is simple to operate is useful in their working environment. The simple and user-friendly interface allows the user to easily enter and maintain daily business information, permanent metadata, and daily reporting or communicating with tax authorities.

The simplicity extended to the content of the information, the participant proposed that short content of information was preferred because most of the informal traders are busy and have low level of education hence, they have no time and are not interested in following a long menu of instructions to access information.

The multimedia namely audio, video, document, sign and symbols raised high expectations among all the respondents. From the brainstorming session it was revealed that that the best way of ensuring that informal traders are able to use the tool is to have a user-friendly graphical interface that includes text, diagrams, tables, photos, audio and video information. In addition, during site visit, the research observed that informal traders were working in different kinds of environment. Some would allow audio communication; some would allow video and some would only read the document.

The potential end users considered security as one of the crucial requirements. In this regard, they cited security in terms of proprietary information, trade secrets, national secrets and financial safety. The research team proposed that the tool should consider verification, and permission to view information, authority to perform specific tasks and proper login. It should also include privacy and integrity. The studio work resulted to additional technical qualities of the potential tool. The research team proposed other important qualities to be considered during the development stage. The qualities proposed to be considered include completeness, internationalization, performance, scalability and usability.

Table 6 User requirements for tax administration tool to informal traders

Item for Tool	Identified Requirements	Source of information
Proposed Functionality of mobile tax administration	<ul style="list-style-type: none"> • Ease of access • Security (Authenticated) • Ease of navigation • Ease of information sharing • Simple to use. • Allow easy option for registration. • mobile returns for small taxpayers • Increase outreach to encourage voluntary compliance • Light weight information • Allow multimedia information flow i.e., video, audio, picture and text 	Interview, Site Visit and FGD

Early Prototype of Tax Administration Tool for Informal Traders

To accomplish the establishment of user requirements, the early-stage prototype was developed to ensure common understanding between potential end users and software engineers. Moreover, the early prototype confirmed that the requirements contain

features that are either new or at least as good as the current mobile applications. In brainstorming session during FGD, the end-users decided on the user requirements to be included in the early prototype later on the prototype was presented to confirm the previous decision.

Through prototyping, the user requirements have been translated into technical description of the mobile taxation application as shown in Figure 3 for user case diagram, Figure 4 for class diagram and Figure 5 for interaction diagram for users. These were the user requirements results, which were collected, identified, and validated afterward being modelled in the studio work for mobile taxation application. The early prototype demonstrated after the requirements specification is the last stage of user requirement definition on the informal traders' perspective as it was discussed and agreed by potential end-users. The steps involved in using the mobile tax administration application are clearly depicted in the use case diagram in Figure 3, which shows the available procedures for both MFI officers and MB owners.

Use Case Diagram

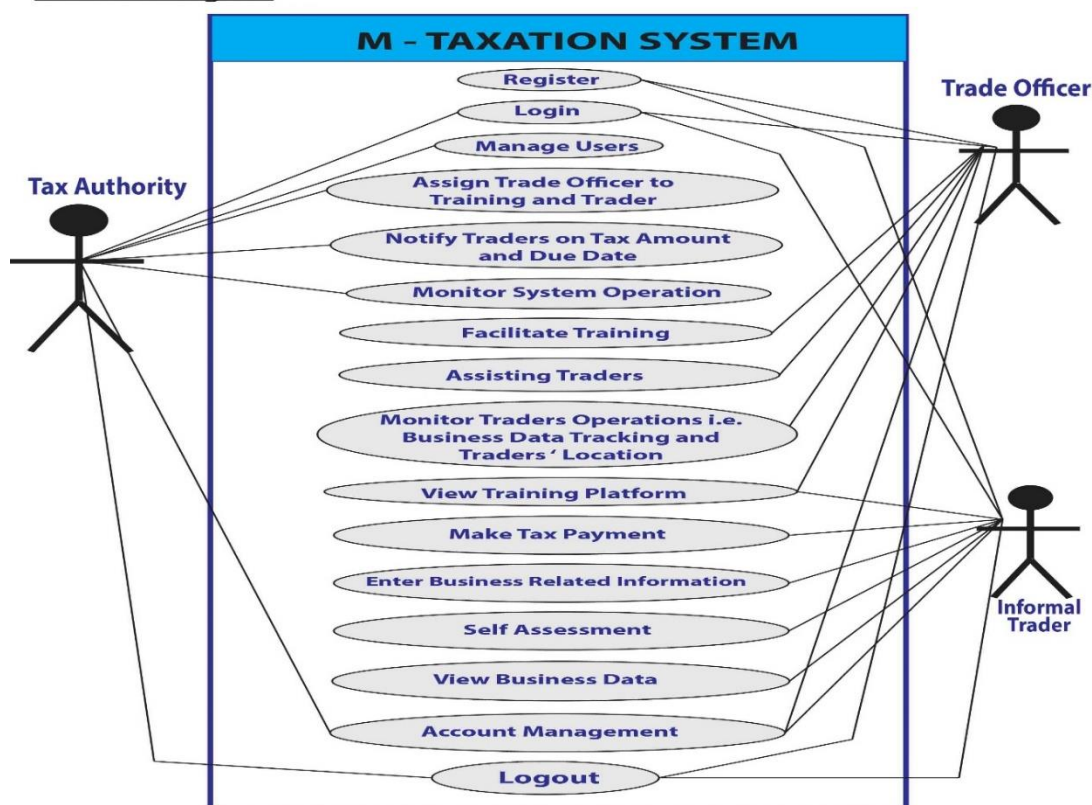


Figure 3 Use Case Diagram for Tax Administration Tool to Informal Traders

Basing on the user requirement analysis, the mobile tax administration tool should have several critical properties. The tasks for both sides namely, the main end users and other stakeholders should be considered as important during the design of the M-tax administration of informal practitioners.

During FDG, the participants concluded that the mobile application for tax administration to informal traders should consider a typical complex artifact that needs a n-tier application (application with malt-users) with high integrated services that embed different hardware (e.g., phones, computers, automated receipts machines). Moreover, the artifact should consider operationalization of rules, policies and regulations. Therefore, during FGD the respondents suggested that, the artifact should consider issues such as operational availability, performance, interoperability, scalability and security as functional requirements. Figure 4 presents the studio work that established the components of the application in a class diagram of mobile tax administration to informal traders.

Class Diagram

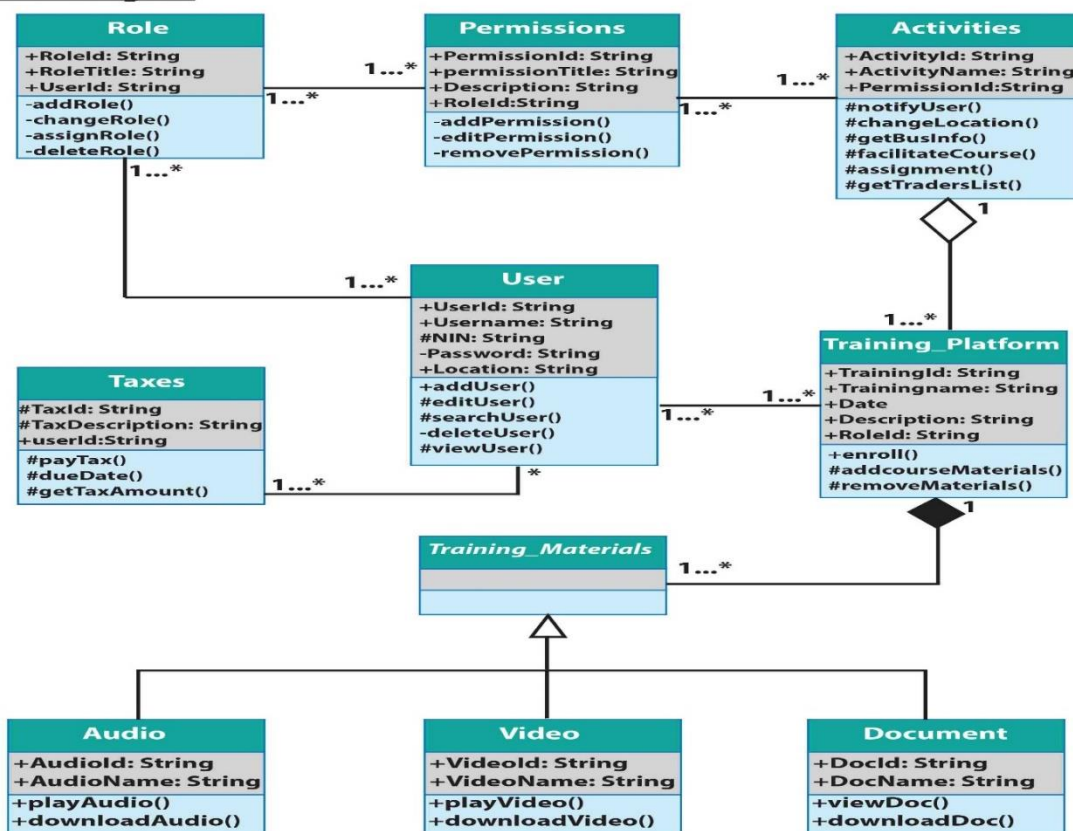


Figure 4 Class Diagram for tax administration tool to informal traders

The studio work and FGD resulted to common understanding of the interaction the user required to accomplish tax administration as shown in Figure 5. The potential users of the mobile taxation tool are informal traders, trade officers and tax authorities. The drivers for the usage of the tool by each group are also identified. The interaction diagram below identifies the connection, flow and activities among users.

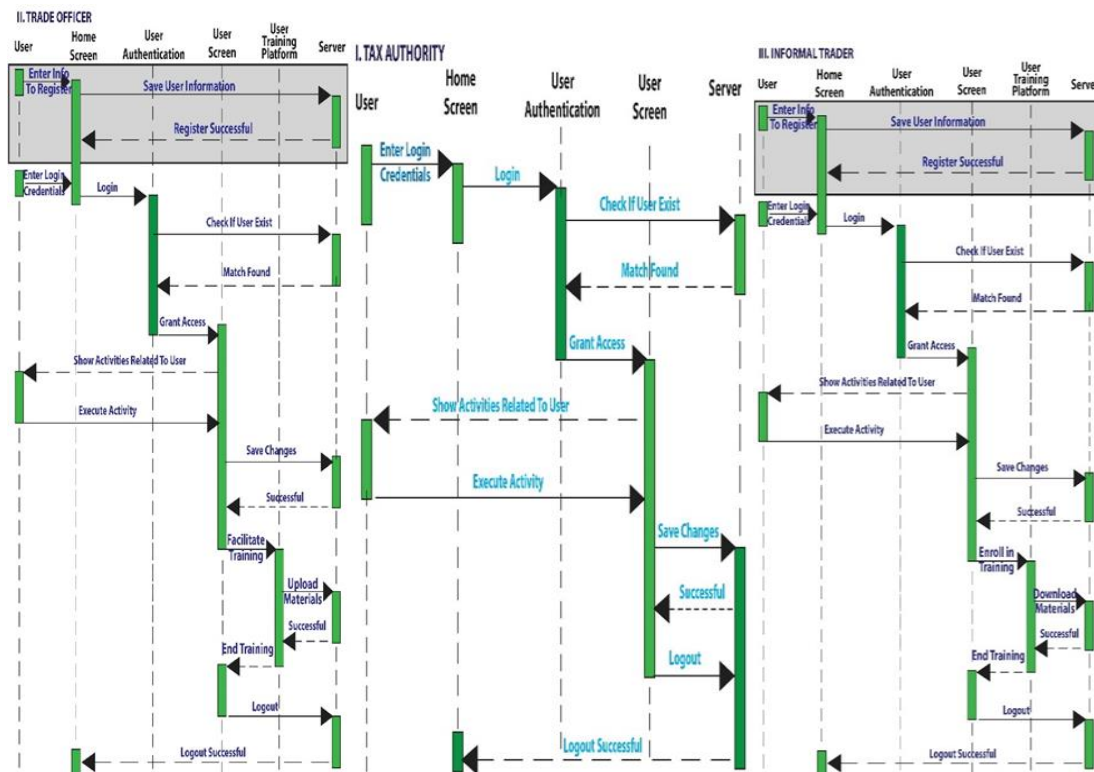


Figure 5 User interaction diagram for tax administration toll to informal traders

The findings confirmed that the perceived ease of use cited by the respondents' attribute to the perceived usefulness and associated attitudes of potential users towards the potential of the technological tool. The cited requirements are in line with the qualities that attract end users into using the designed tool as described in the technological acceptance model (TAM) provided by Davis, (1989). Therefore, this provides a positive intention associated with mobile tax administration to informal traders.

The findings revealed further that tax administration tool has to consider technological friendly, simplicity in the tax systems that encourage compliance and discourage evasion and avoidance, a wide tax base that can lead to increased revenue collection in the medium to long term, and the elimination of expensive incentives to boost revenue generation and with immediate effect. This might discourage the tax evasion practices as reported in other studies (Dube, 2018; Mackenzie, 2021; Ahmad, Stern & Stern, 1991). In addition, Dube (2021; 2018), indicated that the levels of evasion (confirmed by the informal practitioners is high on the application of tax regulations, high tax rates, complexity of tax system, low level of understanding, anonymity of business existence and corruption are the factors to low or lack of tax compliance. Therefore, the proposed tax administration tool should take into account the cited challenges.

The study findings are consistent with the findings reported in other studies (Gomera, Suhonen, Oyeleré & Kapinga, 2019; Kapinga, Suero & Mbise, 2019) who revealed that some MBs would prefer a video multimedia, some audio and other written documents depending on their working environment. Moreover, simplicity, easy to use and short

navigation resemble the user requirement reported in a study by Rumanyika et. al, (2021).

RQ3 What are the lessons learned from user requirements definition of a mobile technological tool for tax administration to informal traders?

The experience and findings obtained in this study came up with lessons learned in the areas of research approach, tax practices, and requirements for technological tool in formalizing informal practices. Under tax practices, this study confirms the importance of revenue for government expenditures (see Mackenzie, 2021; Kibassa, 2012). Therefore, the experience obtained in this study shows that, there is an opportunity of devising a well-organized tax administration innovation for sustainable contribution to government revenue. The findings confirmed the importance of AT (Engeström, 1999), and TAM (Velicia-Martin, Cabrera-Sanchez, Gil-Cordero, & Palos-Sanchez, 2021), in simplifying tax administration to informal traders and widening tax base. The identified activities, which could be performed by the tool confirm that, tax challenges raised by a canon of tax systems can be turned into an opportunity of creating a wide tax base, equality and economical tax practices to informal traders.

Among the identified activities of enhancing tax administration to informal traders, training was proposed as one of the important services. This implies that field training of different skills is instrumental in transforming informal practitioners to formal. From this lesson the study propounds that initiation of transforming the informal practitioners through technology must go hand in hand with the provision of training services. This finding concurs with the finding in a study by Alasadi and Al Sabbagh (2015) and McKenzie (2021) on the importance of training to informal traders and a study by Gomera, Oreku, Apiola and Suhonen, (2017) and Gomera and Oreku (2016) on the required services to be included in the microfinance services.

The researcher also learnt that, the contribution of people, organizations, activities/services, environment and policies should be balanced during the establishment of user requirement of an artefact in the ICT4D projects. The research has to ensure that both an individual dimension and the integration of the complexity of the environment, potential users, policies, practices/task/services, organization and technology are taken into account. This finding concurs with the finding in other studies (i.e., Lehtola, Kauppinen & Kujala, 2004; Dragicevic, Celar & Novak, 2014; Dabbagh, Lee & Parizi, 2016) indicating that, the work-life facilitating the product should consider as many dimensions as possible for better and more efficient and improved performance. This lesson was revealed because each dimension was found to bring its own requirements but the integration of both dimensions leads to a complete set of requirements. In addition, the multi-approach aspect may help to emphasis on the importance of each dimension since each approach can emphasis either one or some of these dimensions.

Another lesson learned is the balancing value of research participants; this is important because users, stakeholders, researchers, policy maker and developers have adequate

influence on user definition, Hence, they should work together for a good technological tool. Although, the researcher had to abide by the research plan, the research team proposed to have two stages of FGDs that resulted to an early prototype. The adjustment was made to ensure that, the research process take into account the ideas of development team, complexity of the services, technological environment, the human aspects and the nature of the relationship among potential users hence establishing user requirements. The role of research team was also indicated in the studies of, Ru'anyika, Apiola, Mramba, Oyelere & Tedre, (2021); and Belfo, (2012).

The multi-qualitative data collection methods allow an in-depth evaluation of the desired tool. The findings obtained from interview, document review, FGD and prototyping confirm that multiple approach is appropriate for defining user requirements in dynamic and complex practices (Belfo, 2012; Walsham, 2017). This approach strengthened data obtained from different dimensions. This lesson is in line with the suggestions made in a study by Lapidoth, (1977) who reveals that, a multiple approach in designing is important when there is uniqueness of activities, characteristics of potential end users and the working environment. In addition, the study revealed the importance of a combination of co-designing and prototyping approach in establishing user requirement. This approach emphasis on a regular design and sharing of software for a short -term development of the artifact at the same time gathering feedback from potential users and other relevant actors in a “development cycle”. The combination of co-designing and prototyping approach emphasises the importance of frequent communication with potential users and technically considering feedback in order to enable the artifact to confirm the established user requirements. The co-designing was practically applied by (Kapinga, Suero, & Mbise, 2019) whereas, prototyping approach was suggested by other scholars (i.e., Lant 1986; Jeenicke, Bleek & Klischewski, 2003); Naumann & Jenkins, 1982; Alavi, 1984).

Limitations of the Study

Despite that potential user of mobile taxation tool are from different groups such as tax payers (informal traders), tax authority and other stakeholders, this study concentrated on informal traders. Surely, tax authorities and other stakeholders have an additional set of user requirements. Therefore, there is a need for future studies on user requirements to focus on other users before combining with those established in this study.

This study is at an infant stage of the establishment of user requirements; therefore, future attention should be directed to policy development, regulatory framework, activities interaction and discussion before implementing the project of mobile taxation to informal traders.

Moreover, this study focused on tax administration of informal traders. However, in order to enhance tax administration to informal traders there is a need of carrying out preliminary activities such as registration procedures and other regulatory requirements, which could lead to a wide range of and different requirements on dealing with each aspect. Therefore, future studies should extensively consider scalability of the proposed tool.

Implication to Research and Practice

With the present rate of advocacy efficacy of mobile technology in transforming informal practitioners and the potential of informal traders in widening a tax base, this study has presented the qualities of a potential technological tool that could enhance tax administration of informal traders. Additionally, the study has focused on presenting the practical ideal of digital technological tool that can tackling tax administration problems to the informal sector in the Tanzanian context. The application of DSR in the user requirement definition also propound the practical research approach in the design and development of artifact that can solve the practical problems that facing low income earners.

CONCLUSION

This study included aspects such as human, technology, tax practices, and formalization of informal practitioners. The cited aspects needed interrelationship of different theories including AT, TAM and a Canon of tax system. Moreover, multiple qualitative data collection methods, co-designing and prototyping approach resulted to the establishment of user requirement and an early prototype of tax administration tool to informal traders.

The study emphasis that formal institutions, researchers and practitioners have to use various innovative ideas, multiple research approaches training and other services to solve the challenges related to the formalization of informal practitioners.

This study opens up an avenue for future studies on the inclusion of informal trader in tax base through mobile technology and applicability of mobile technology in transforming special community of developing countries such as Tanzania.

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