Tallinn University
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THE INFLUENCE OF TRUST ON USER INTERACTIONS IN E-TRANSACTION PLATFORMS:

THE CONTEXT OF A DEVELOPING COUNTRY

Master thesis

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Abstract

This paper reports recent findings which aims at informing design ideas and identifying characteristics that could help to develop e-transaction applications and systems that promotes perceived trust. To accomplish our goals, we employed the socio-technical model of trust by Sousa et al. (2014), to on one hand determine if users' trust such e-payment system hosted by a third party company outside well known financial institutions (banks); then we further investigate how to incorporate trust into the platform. And on the other hand, as a design critique to establish bespoke visual clues that promotes perceived trust in the system and inform the system of potential pitfalls in their service design. A questionnaire was deployed to 500 current users of the platform and 106 valid responses were received. Our findings indicated that the trust features of concern to users are willingness, competency, predictability and benevolence with exception to honesty, reciprocity and motivation. Results presented are trust related characteristics that should be tackled when designing and deploying e-transaction platforms in developing countries.

Keywords: e-Transaction, Human Computer Interaction for Development, Trust in Service Design, User Trust.

Kokkuvõte

Käesolev artikkel annab ülevaate leidudest, mis keskenduvad disainiideede kaardistamisele ning relevantsete omaduste kaardistamisele, aitamaks luua e-tehingute rakendusi ning süsteeme, mis endendavad intuitiivset usaldust. Saavutamaks oma eesmärke, rakendasime Sousa et. al. (2014) poolt loodud sotsio-tehnilist usaldusmudelit, et mõista, kas kasutajad usaldavad vähemtuntud kolmandate osapoolte poolt loodud e-pangandusrakendusi ning et analüüsida, kuidas suurendada kasutajate usaldust antud platvormides. Lisaks rakendasime eelmainitud mudelit disainianalüüsi läbi viimisel, et kaardistada visuaalsed faktorid, mis äratavad kasutajates usaldust süsteemi suhtes. Viisime läbi küsitluse 500 aktiivse platvormi kasutaja seas, kogudes seeläbi 106 analüüsitavat vastust. Uuringutulemustest selgub, et kasutajad hindavad enim pädevust, kompetentsust, prognoositavust ning heatahtlikkust, eranditeks ausus, vastastikkus ning motivatsioon. Tulemustena on esitatud usaldusega seotud omadused, millele tasuks fokuseerida, luues e-tehingute platvorme arenevates riikides. Märksõnad: e-tehingud, inimese-arvuti interaktsioon arenduses, usaldus teenustedisainis, kasutajate usaldus.

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List of Abbreviation

1. CMC: Computer Mediated Communication
2. e-Transaction: Electronic Transaction
3. e-Payment: Electronic Payment
4. HCI: Human Computer Interaction
5. UX: User Experience

1 INTRODUCTION

Various methods of e-transaction are continually transforming the way we do business over the Internet, including e-banking, e-ordering and online publishing/online retailing (Okoro & Kigho, 2013), by allowing the exchange of funds and data quickly, conveniently, and dependably than ever before. With e-transaction comes a number of benefits, such as cost reduction, flexibility, convenience, enhances productivity and efficiency, tracking individual spending, and it is now making handwritten signature on a paper document gradually a thing of the past, etc. Despite its advantages, a large number of users in developing countries are not willing to provide sensitive financial information over the web; The reluctance to entrust sensitive personal information like credit card numbers to businesses operating on the web remains strong in developing countries (Lawrence & Tar, 2010). The cause of this has been mostly attributed to 'lack of trust' in various studies (Popoola & Arshad, 2015; Seckler et al, 2015; Oseni & Dingley 2014; Akintola et al, 2011).

The concept of trust in the domain of Internet banking has received a significant rate of interest and was recognized by researchers as one of the key motives why a large percentage of consumers are still reluctant to accept Internet banking, most especially in developing countries, and Nigeria in particular (Popoola, 2013). Because of the importance of 'trust' in web and software applications (online or otherwise), a lot of researchers have tried to study it (Sousa, 2014; Dianne, 2013; Mouratidis & Cofta, 2010; Yousafzai et al 2009). Several researchers have proposed design approaches, guidelines, patterns and web characteristics to help promote trust in e-transaction platforms but it appears that in many developing countries, consumers source for information online but make purchases the traditional way (Okoro & Kigho, 2013; Oreku, Mtenzi, & Ali, 2013).

This study takes a design approach in the context of Nigeria (a developing country) and employ the socio-technical model of trust (Sousa, Dias & Lamas, 2014) to investigate website characteristics that engender trust on a third party indigenous electronic payment service platform called 'Remita'. The methodological approach is to administer online surveys to current users of Remita using a well-structured questionnaire based on the socio technical model (Sousa et al, 2014) indicators of trust and conduct a design heuristic evaluation of the platform characteristics to identify likely pitfalls to trust enabling visual cues.

This contribution therefore is to provide insightful guidelines to designers by constructively informing design ideas and identifying website characteristics that will help develop e-transaction applications and systems that promotes perceived trust in developing countries. Furthermore, based on well-established social psychological theories, the study empirically contributes to refining the socio technical trust model proposed by (Sousa et al. 2014).

Overall, the general aim is to analyse the influence of trust components and its role in the facilitation of e-payment transactions and thus propose heuristic design guidelines to foster trust online by focusing on the context of a developing country. This aims to encourage more patronage of users in e-transaction platforms and consequently contribute in narrowing the digital divide.

This initial section contains information about the research problem and its significance and an overview of the entire thesis. In this chapter, a discussion on the problem statement and its significance for the study. It also addresses the main research questions as well as addresses the objective and purpose of this research dissertation. It ends by describing the organization of this document.

1.1 RESEARCH PROBLEM AND SIGNIFICANCE

For any payment system to be deemed credible and seen as a replacement of cash (or at least compete with it) it must win the trust of users. For this to happen users need to perceive a sense of trust...however, "there remains a strong reluctance to entrust sensitive personal information like credit card numbers to businesses operating on the web in developing countries" (Lawrence & Tar, 2010). The cause of this has been mostly attributed to 'lack of trust' in various studies (Popoola & Arshad, 2015; Seckler et al, 2015; Oseni & Dingley 2014; Akintola et al, 2011). And as stated by Popoola (2013), the concept of trust was recognized by researchers as one of the key motives why a large percentage of users are still reluctant to accept internet banking, most especially in developing countries and Nigeria in particular.

The study therefore takes a critical investigation into this problem by evaluating website characteristics that engender or deters trust and by the use of a survey to elicit users trust perceptions with the objective of proffering design ideas to develop trust enabling interactions in e-transaction platforms.

1.2 RESEARCH GOAL AND MOTIVATION

The benefits of wide spread usage of e-transaction and its potentials for transformation developing economies cannot be overemphasized. However, the growth of e-transaction in developing countries is being hindered by a combination of factors of which lack of trust is prominent (Popoola, 2013; Lawrence & Tar, 2010; Gholami, Ogun, Koh and Lim 2010). According to literature, there is an ostensible low level of contentment with regards to trust in e-transaction systems in developing countries, where this is very much pronounced in Nigeria (Popoola & Ashrad, 2015; Akintola, Akinyede, & Agbonifo, 2011, Adeshina & Ayo, 2010). There is a need to look more closely into characteristics that engender trust in developing countries (Kingsley, Sousa & Ogunyemi, 2017). This evident lack of trust in e-transaction systems raises questions and concerns, the will to contribute in addressing this challenge and the consequential benefits of promoting user trusts in e-transactions motivated this study. Although trust can be established by a variety of antecedents, this research investigates trust from the dimension of interaction design. Designing for trust requires not only a focus on understanding the nuances, such as security, privacy, and reputation, but above all it requires understanding the subtleties of the perception of trust (Sousa, Shmorgun, Lamas & Araklyan, 2014).

The goals of this study therefore are:

1. to inform design ideas that foster trust online and
2. identifying characteristics that could help develop e-transaction applications and systems that promotes perceived trust.

Which is intended to generally improve the quality of online systems by designing systems that properly implements embedded trust-related non-functional requirements in e-transaction platforms in developing countries.

1.3 THE RESEARCH METHODOLOGY

The research methodology builds to serve above goals and the following the research questions.

1.3.1 RESEARCH QUESTION

There are two fundamental questions raised in this study, formulated as;

- First, what are the design considerations for promoting the trust appeal when designing e-payment systems?
- And secondly, what are users' perceptions regarding trust enabling indicators with interactions on Remita e-payment platforms?

To achieve the answer to these questions, the following methodology was employed as is describe in table below, the table illustrates the research procedures.

Steps of Research	***Research aim***	***Research question***	***Method***
Step One: Theoretical Background study	To inform design ideas that foster trust online and to identify characteristics that could help develop e-transaction applications and systems that promotes perceived trust.	What are the design considerations for promoting trust when designing e-payment systems?	Literature review
Step Two: Qualitative Approach	To identify trust enabling or deterring characteristics that Remita users may be likely faced with	What are the design considerations for promoting trust in Remita e-payment system?	Heuristic design inspection
Step Three: Quantitative Approach	To reach out to the actual users and gather data for a richer insight to users perceptions.	What are users' perceptions regarding trust enabling indicators with interactions on Remita e-payment platforms?	Survey method

Table 1 - Research Procedure

Above table describes an exploratory research case study of an e-payment service in Nigeria.

It includes three main parts a theoretical background, a qualitative research approach and a quantitative research approach. Both approaches employ the socio-technical model of trust (Sousa et al., 2014) to examine trust indicators on a third party indigenous electronic payment platform called 'Remita'.

During the qualitative research approach the author performed a heuristic design inspection of the platform, carried out to identify trust enabling or deterring characteristics users may be likely faced with. The researcher, also partnered with the company that developed Remita in order to reach out to the actual users and gather data for a richer insight to users' perceptions.

During the quantitative approach the researcher used an online survey to be able to answer the research question, "What are users' perceptions regarding trust enabling indicators with interactions on e-payment platforms?".

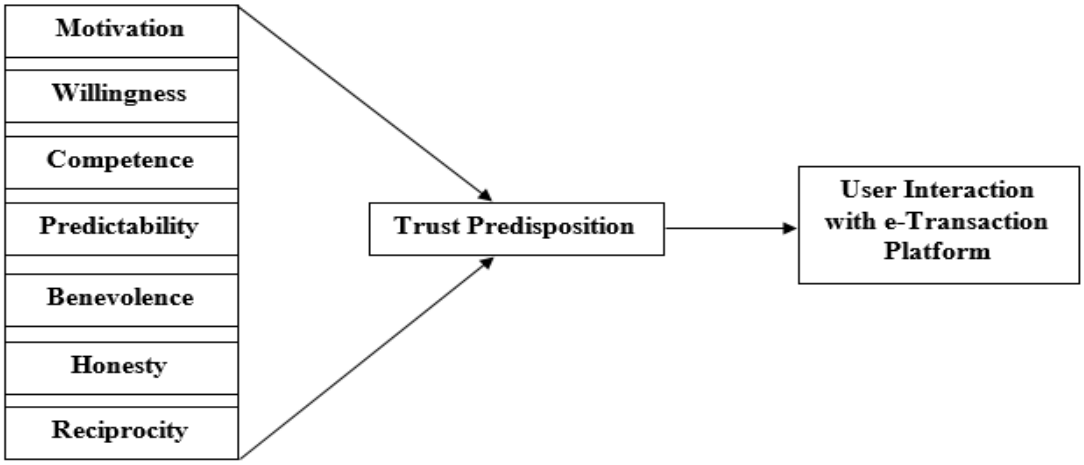


Figure 1 - The socio technical model framework (Adapted from the socio-technical model of trust by Sousa et al. 2014)

Based on the conceptual model proposed above, the following hypotheses translating this research question into predicted outcomes have been formulated for this study:

1.3.2 HYPOTHESES

H1: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived motivation in the system.

H2: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived willingness in the system.

H3: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived competence in the system.

H4: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived predictability in the system.

H5: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived benevolence in the system.

H6: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived honesty in the system.
H7: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived reciprocity in the system.

1.3.3 EXPECTED OUTCOMES

This study is intended to on the one hand, reveal trust features of concern to users in the design of e-transaction platforms in a developing country and on the other hand to promote trust enabling factors which can be enhanced to attract others who are not users and ensure good user experience.

1.4 THESIS STRUCTURE

In the following chapter a theoretical overview of the evolution, definitions, categories and related work on trust in e-transaction services will be given. Trust as a construct will be looked into, Trust in e-transaction, Trust in Nigeria e-payment services, and a focus on the case study.
The relationships and how they are maintained will be discussed. The last part of this chapter focuses on trust and design and explains the trust model used for the study.
The second chapter focuses on the study. It starts with the description of the methodology used for this research, followed by reporting of the results, answering the research questions and a discussion.
The thesis ends with a conclusion, which summarizes the whole thesis and includes recommendations and suggestions for future work.
The appendices include some larger illustrations and the survey.

2 THEORETICAL BACKGROUND

The theoretical background chapter aims to provide a brief overview of Trust as a construct, look at how different authors have defined the phenomenon, and the attempts made to understand it from different perspectives. Furthermore, this chapter will also look at the role of trust in e-transactions, a look into the digital divide as trust is perceived in the developing and non-developing world and then a focus on Nigeria as the context of this study. The second half of the theoretical background will start with the focus on the case study, a peek into Remita e-payment service, and then the influence of trust in designs. Finally, the socio-technical model used as a research lens will also be described in detail.

2.1 TRUST

Over the past decade, there has been a proliferation of online marketplaces, ranging from eBay and Amazon to Uber and Airbnb. These online markets cannot exist without trust. Trust was always a topic, which is of ubiquitous importance to people (Sousa et al, 2014). It is a widely held belief that trust is the foundation of any relationship. It has a social dimension in its role of governing personal relationships; it also has implications for how we make decisions, when we decide how to react to objects and people, as trustworthy or not (Sutcliffe, 2006).

Trust as a construct is complex and difficult to understand, (Sousa, 2014; Sun D., Chang G., Sun L. & Wang X., 2011, Camp, 2003), it is understood differently by different individuals (Mouratidis & Cofta, 2010), and though many studies have tried to address the concept of trust; yet, there is no universally accepted scholarly definition given to trust (Mohammad et al, 2013). As a topic trust has attracted research from many fields. For instance, in personality psychology, trust is mainly viewed as an individual characteristic (e.g., Erikson, 1968; Rotter, 1967) as it involves the juxtaposition of people's loftiest hopes and aspirations with their deepest worries and fears (Simpson, 2007), while social psychology focuses on the interpersonal dynamics of trust (e.g., Mishra, 1996; Weber 2003). Economics look at trust in the context of commercial exchanges and transactions (Egger, 2003). Philosophers focuses on the interplay between trust and distrust and usually distinguish genuine trust from mere reliance (Hawley, 2013; Baier

1986). Lately the study on trust has gained prominence in computer-mediated interactions, (Sousa et al, 2014; Mouratidis & Cofta, 2010).

Despite the multidimensional views of trust, the different disciplines and conceptions all share common elements. Morgan and Hunt (1994) defined trust as the belief that the trustee will behave in a favorable manner; they stated that trust refers to believing that the trustee will not do harm to the trustor and that negative consequences will not occur. Kimery and McCard (2002) define trust as customers' willingness to accept weakness in an online transaction based on their positive expectations regarding future online behaviour. Koller (1988) explained that trust as could be seen as a person's expectation that an interaction partner is able and willing to behave in a positive way towards the person, even when the interaction partner is free to choose among alternative behaviours that could lead to negative consequences for the person, that is, trust is seen as a function of the degree of risk. Mouratidis and Cofta (2010), stated that trust is the willingness of a party (trustor) to be vulnerable to the actions of another party (trustee) based on expectation that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party. The level of trust can be said to be higher, the stronger the individual holds an expectation". Finally, trust within interactive processes, is defined as users predisposition to interact (based on a calculative orientation toward the risky); This represents a reinsurance element, which often helps users to support their intended behaviours, Sousa et al (2014). Trust, therefore, according to existing literature does not occur in a vacuum but arises as a result of interactions or anticipated interaction between human to human or human and computer where "risk" is a sine qua non, taken with an expectation of reciprocity; achieving a desired or expected outcome. It appears that trust is a predictor of our willingness, intentions, behaviors and predisposition to interact. And trust apparently has a direct psychological effect on our feelings, and thoughts, thereby influencing our actions or inactions. These definitions of trust will merge only when observed behavior can be explained by internal state, without considering the internal state, and examining trust behaviors designs for enabling peer to peer trust over the digital network will be flawed (Camp, 2003).

Therefore, there is a need for a greater understanding of the influence of trust on how users interact with online systems. As it has been noted, trust is a word with complex dimensions, where privacy and security concerns can be considered very important aspects in e-transaction. This study looks at trust from a less focused aspect, that is from the perspective of Human

Computer Interaction, where the socio-technical model of trust is employed which encapsulates constructs for measuring trust with relation to interaction design.

2.1.1 TRUST AND INTERACTION DESIGN

While agreeing that we became part of a digital crowd when clearly supporting the development of trust and security technology, we miss a need for focusing on how it influences the domains of Human-Computer Interaction (Sousa et al. 2014). With an increasing number of technologies supporting transactions over distance and replacing traditional forms of interaction, designing for trust has become a core concern for researchers in both HCI and Computer Mediated Communication (CMC) (Riegelsberger, et al. 2005). It is possible to alter social trust by the design of technical systems, including online systems. Appropriate design can affect the perception of trust, can impact on the development of trust, and can damage existing trust (Mouratidis et al 2010). Designing for trust requires not only a focus on understanding the nuances, such as security, privacy, and reputation, but above all it requires understanding the subtleties of the perception of trust (Sousa, Shmorgun, Lamas, & Arakelyan, 2014). Therefore, "designers must be aware of their role as social engineers when creating online markets, meeting places, and environments" (Riegelsberger et al. 2005, pg. 383).

In order to understand and design trust systems, acknowledgement of the social and human elements are required (Camp, 2003). A proper understanding of design for trust, therefore, connotes an understanding of the perceptual factors that promotes trust, which should be embedded in interaction designs and as well as an understanding of risk indicators. The design of systems should shape how people behave and impact the level of trust and trustworthy behavior (Riegelsberger et al. 2005). Studies on trust enhancing visual cues focusing on interaction design found certain cues to have an effect on users trust perceptions. Cues include, ease of navigation (Nielsen et al., 2000; Shneiderman, 2000; Ganguly, Dash, Cyr & Head, 2010), Information Content, easy to access and read well-designed policy statements (Shneiderman, 2000), live customer support chat (Arrazola, Herrera, Mothais, & Marcos, 2013).

The effect of measures to develop and maintain trust in e-commerce is also influenced by several other factors: person-specific (e.g. personality traits that influence trusting beliefs, intentions and

behaviors) and contextual (such as technology and legal norms related to e-commerce) that cannot be controlled by the online retailer (Grabner-Kraeuter & Kaluscha 2003).

A major goal of interaction design is to create engaging interfaces that consequently leads to good user experience (UX), when a user struggles with making a decision on a platform or is simply plagued with doubts as a result of visual cues and design characteristics then this is a bad experience. A good design can inspire trust, (Schneiderman, 2000: 59). Schneiderman, (2000) expressed an important point about design and UX, stating that "A well-designed website should have orderly structure with convenient navigation, meaningful descriptions of products, and comprehensible processes for transactions," this is supported by Nielsen et al., (2000) who advocated that cues that can have an impact on trust perceptions include ease of navigation, ease of searching, use of professional images and ease of carrying out transactions. Riegelsberger and Sasse (2002); Grabner-Kraeuter (2002) affirms that the web platform functionality influences the trust perceptions of users. A well-designed interface, both aesthetically and functionally, can have a large impact on perceived trustworthiness of the website, as users have a proclivity for relying heavily on website design; aesthetically, high-quality images of products, appealing visual design elements, and an overall professional appearance give trustworthy cues (Corritore et al. 2003). In essence, the social and technical considerations of users, taking into cognizance not only the aesthetic feel and well-designed components but also, the UX, placing the user in the forefront as the focal point of the design are vital in building user trust.

Trust therefore may be missing because of poor interaction design. The content and format of the interface have a powerful effect on trust (Lee & See, 2004). It becomes important then to identify trust promoting factors, that can help support a more functional design guidance considerate to users concerns. Interaction design according to literature has been seen to be a predictor of trust and should be carefully sought after by interaction designers as it is of a major concern to HCI, however, because of the multi-dimensional aspect of trust, design in itself is but a facet of the contributing factors that promotes trust. Human behavior, after all, may be influenced but cannot be singularly determined by the design of a system. (Riegelsberger et al. 2005).

2.2 RELATED STUDIES

E-payment systems and businesses are faced with "problems associated with insecurity and privacy among transaction counterparts, which puts pressure on Internet marketers to create a

trust that is much stronger and more persistent than what is normally demanded offline" (Reichheld & Schefter, 2000) . User trust in electronic transactions was defined by Chellapa and Pavlou (2002) as the subjective probability with which users believe that a particular transaction will occur in a manner consistent with their confident expectations.

It is generally easier to develop trust between people in real life settings, face-to-face so to say, where people can see and "touch" each other, rather than online, where there are less (nonverbal) cues to take into consideration when developing trust, Zheng et al (2002) & Egger (2003) buttresses this in further by stating that lack of trust is mostly due to security and privacy concerns, unfamiliar online services, lack of direct interaction with products and people, as well as the poor credibility of online information. User trust in an online business is derived from the entirety of the online experience, from the ease of purchase to the quality of the good, to the speed and cost of delivery, and any after sales services that are required, (Su, Song & Chen, 2007). The spatial and temporal separation of the bank branch and the customer, and that of the customer and the financial advisor increases fears of opportunism arising from product and identity uncertainty, (Yousafzai et al. 2009). One reason is that the further away a business is from its customer, the lower the levels of trust, (Teo & Liu, 2007).

Wu and Cheng (2005) and Flavian and Guinaliu (2006) expressed that trust plays a key role in creating satisfied and expected outcomes in online transactions. Egger (2006) argued that sufficient trust needs to exist when placing an order online and when the customer submit his or her financial information and other personal data in undertaking financial transactions.

Many studies have shown that trust is an important cognition that drives the continued use of information systems. The theoretical reasoning behind this effect has been that trust helps people rule out undesirable, yet possible, opportunistic behaviors, and ultimately makes users more at ease regarding transacting with a website (Turel & Gefen, 2013). Because of its importance in e-payment or software systems, a number of researchers have tried to tackle trust. Extant studies however, despite their merits have some limitations with regard to the approach and objective of this study.

Nilashi et al. (2015) investigated the issue of customer trust in mobile commerce to identify which factors more influence on customers' trust during online shopping. They found that security, design and content are the factors which more influence on customers' trust. Fuzzy logic was applied for measuring trust level, uncovering hidden relationship between websites'

features and trust level, solving the uncertainty problem and handling human reasoning where the reasoning processes behind customers' trust in mobile commerce transactions. In a similar finding, Kim et al. (2010) in their studies conducted in Korea, examined the effect of perceived trust, perceived security and their causes on intention to use electronic payments. In their results both perceived security and perceived trust affect current use of e-payment systems, and that the presence of security statement seal affects perceived security but it has no effect on perceived trust. An interesting finding also was that the effect of trust is stronger than that of security.

Chellapa & Pavlou (2002) on the other hand, proposes mechanisms of encryption, protection, authentication, and verification as antecedents of perceived information security. These mechanisms are derived from technological solutions to security threats that are visible to users and hence contribute to actual user perceptions. A key empirical finding of the research was the relative strength of perceived security on trust in electronic transactions as opposed to retailer reputation and financial liability.

Factors influencing Chinese users' perception and adoption toward e-payment was examined by Pei et al. (2015). Their results showed that perceived benefits and trust are significantly associated with consumers' use intention. Their findings suggested that users may value more on benefits of the e-payment system than trust on them. Interestingly, perceived risks are not significantly associated with use intention toward e-payment. They inferred that Chinese users are not concerned so much about the perceived risk when they select an e-payment system possibly because of good reputation and secure protection of e-payment systems and even when they perceive the potential risks they still trust on and would accept them. The findings also reveal that the benefits users are most concerned about are easy registration, learnability, convenience, fast processing and usability of the e-payment instead of financial benefits such as lower fees.

Mukherjee & Nath (2007) aimed to re-examine the commitment-trust theory (CTT) of relationship marketing in the online retailing context and seeked to theorize the antecedents and consequences of commitment and trust in the online context. They identified five main antecedents to trust: (1) shared values; (2) communication; (3) opportunistic behaviour; (4) privacy; and (5) security. In their findings, privacy and security features of the website along with shared values were identified as the key antecedents of trust, which in turn positively influences relationship commitment.

Mouratidis et al (2010), argued that "It is widely recognized that successful online systems are not those that simply fulfil some functional specifications, but rather systems that are developed to also meet a number of non-functional requirements such as security, reliability and trust". The paper emphasized the need to develop a field of study ("designing for trust") to improve software systems quality and eliminate cultural issues related to the inclusion of trust considerations into the development of software systems.

In a closely related study by Sillence, Briggs, Fishwick & Harris (2004), which investigated elements of health web platforms considered by users when making trust decisions, the major question raised was; do different design and information content factors influence trust and mistrust of online? An important finding from the study is that despite personal risk and instructions to do otherwise, users consistently examined design factors when making trust judgment. In another related study, Corritore, Wiedenbeck & Kracher (2001) examined the importance of online trust. Their findings identifies three perceptual factors that impact online trust: perception of credibility, ease of use and risk. They stated that trust is used to decrease complexity, and that work in human factors that points to trust are necessary for users to believe computers. Past sparse studies examining the relationship between trust and online systems has however failed to clearly identify trust characteristics that should be incorporated in the design of online platforms to help promote trust appeal. These past studies reviewed has however shown that trust is a major cognition that spurs acceptance or intention to use an electronic payment system. Most past studies identified security and privacy issues as a prerequisite for trust, (Chellapa & Pavlou, 2002; Mukherjee & Nath, 2007; Kim et al., 2010). Some studies tried to investigate trust from a design perspective, (Sabi, Tsuma, Mlay & Bang 2015; Mouratidis et al., 2010; Sillence et al., 2004; Grabner-Kraeuter & Kaluscha, 2003). But no past study did integrate effectively the social and technical dimension of examining trust with e-payment platform usage from a different lens in other cultures other than in developed countries in order to shed new light on its effect. Hence, this study takes up this interesting divide to look at the influence of perceived trust on intention to use an electronic payment system from the perspective of users in developing countries with Nigeria as the focal context.

2.3 E-TRANSACTIONS IN DEVELOPING COUNTRIES

In developing countries, businesses find themselves at a disadvantage because of insecurity, whether real or perceived Lawrence & Tar (2010). Although e-transaction payment systems have the potential of solving a vast majority of problems in developing countries in areas like corruption, healthcare, education, governance, etc. However, these countries are unable to reap these benefits, as there is a vast difference between the adoption rates, implementation and use of e-commerce in developed and developing nations, with the latter lagging behind to a significant extent (Alyoubi, 2015). Most users in developing countries are not willing to provide sensitive financial information over the Web; the reluctance to entrust sensitive personal information like credit card numbers to businesses operating on the web remains strong in developing countries (Lawrence & Tar, 2010).

The impact of e-commerce on developing countries could be even stronger than that on developed countries because the scope for reducing inefficiencies and increasing productivity is much larger in the developing countries (El Gawady, 2005). The study of Lawrence & Tar, (2010) identified specific infrastructural barriers hindering the adoption of e-commerce in developing countries where transactional trust was listed as a major barrier.

Individuals, from different cultures and backgrounds, are willing to trust software systems, as they trust other humans, knowing that there are potential risks, (Josang, 2006). Many western designed systems have failed when implemented in developing countries due to lack of local knowledge and differences in operational conditions (Heeks, 2002; Langmia, 2011, Sabi, et al., 2015). Successful examples of western designed system computerisation can be found in literature (Heek, 2002) but frustrating stories of systems which failed to fulfil their initial promise are more frequent" (Avgerou & Walsham, 2000) The most extreme form occurs when industrialized country designers create an information system (IS) within and for an industrialized country context, and that IS is subsequently transferred to a developing country. In such situations, the actuality of local conditions in the developing country will not have been considered at all in the original design, and a considerable design–actuality gap is therefore likely, leading to a significant risk of IS failure (Heek, 2002). An example is the study of Sabi et al. (2015) which used a model based on Diffusion of Innovation (DOI) and Technology Acceptance Model (TAM) in investigating the contextual factors impacting adoption, implementation and usage of western designed software packages in developing countries using a case study in Cameroon. Aimed at explaining user preference and trust in western designed

banking software systems in developing countries. The findings from this study demonstrated that user engagement at an early stage in the implementation of a western designed software package in developing countries will greatly enhance user acceptance and usage of the system. The statistical analysis of the influence of cultural and environmental factors showed that user preference of locally designed software systems over western designed systems was significant.

Guseva (2010) studied e-commerce systems' quality criteria by a sample of European frequently online purchasers. Results revealed that important criteria motivating users towards e-commerce adoption and use are: existence of high security standards, followed by availability of variety of electronic payment systems, and availability of online help and support during e-commerce transaction.

The success of technology adoption is heavily dependant on how it is used by the adopters and this in turn is affected by the fit between the technology and the adopters (Unhelkar 2003). Apparently developers in developing countries fail to employ participatory design approaches, proper user testing, prototyping, and other Human Computer Interaction (HCI) techniques when designing services and most importantly e-payment platforms where users tend to be skeptical as evident in literature (Kingsley et al. 2017).

2.3.1 E-TRANSACTION AND USER TRUST IN NIGERIA

Electronic transaction is relatively a new phenomenon in Nigeria (Abubakar & Adebayo, 2014). In Nigeria just as it entails in many developing countries, cash appears to be the main mode of payment. Recently, it has been revealed by the Central Bank of Nigeria (CBN) that the direct cost of cash is estimated to reach a sum of one hundred and ninety-two billion naira (548,571,428 in dollars) in 2012, (Yaqub et al., 2013). Against these backdrops, the CBN introduced the cashless policy in April 2011 with the objective of promoting the use of electronic payment channels instead of cash (Yaqub et al., 2013; Ovat, 2012). Undoubtedly, an efficient payment system (that which depends less on cash) is a sine qua-non for national development and a significant national infrastructure for growth, (Osazevbaru & Yomere, 2015). However, in the long run the implementation of e-payment system is dependent on the consumer's behaviour, (Adeyelure et al, 2014).

With various perceived benefit of e-payment such as convenience, speed, efficiency and reduced cost, Nigeria economic climate is enthusiastic to embrace e-payment system (Adeyelure, Pretorius & Kalema, 2014). But amidst the growth in e-transactions, there are still some fundamental problems, most importantly, lack of trust, cybercrime, internet frauds and perceived lack of security with online payment still hamper the growth of Ecommerce in Nigeria (Adeshina & Ayo, 2010). Nigeria today is not certain of its Internet transactions because of lack of trust on the part of customers to put their hard earned currency on a business system that is not trustworthy, Akintola et al (2011).

Gholami et al. (2010) investigated factors that affect individuals' intention to adopt e-payment systems in Nigeria. They found that several variables, including customer trust, affected individuals' intention to adopt electronic payments. Adeshina and Ayo (2010) identified that there exists low-level of trust in the security measures of internet banking technology and the capability of internet banking system in Nigeria to protect privacy. Customers' trust in an Internet environment is very important as there is little guarantee that the online vendor will refrain from undesirables, unethical, opportunistic behaviour, such as unfair pricing, presenting inaccurate information, distributing personal data and purchase activity without prior permission (Gefen, 2000).

Popoola (2013) study revealed that Nigerian bank customers who are non-users of internet banking lack trust in internet banking and the users of internet banking have partial trust in it. The study concluded that the reasons for this lack of trust is because of perceived lack of security, bad reputation of banks, poor technology and lack of assuring policy, that assures refund of customers' savings in case of any misfortune or a guarantee. The finding indicates that customers both users and non-users of internet banking do not have trust in the security system of many banks. Despite the significance of building customer trust in internet banking, there are scanty studies in this area in developing countries. This gap is particularly apparent in Africa and specifically in Nigeria (Popoola & Arshad, 2016). The findings of their recent study, Popoola & Arshad (2016) indicated that all the 12 Nigerian banks that participated in the study have strategies in place which they use to build trust in their customers in acceptance and usage of internet banking while promoting their internet banking services. However, the results of the study showed that the strategies used by the banks were not effectively achieving these banks

goal of increasing customer's acceptance and usage of the services as customers do not trust internet banking.

Salimon et al, (2015) discussed the mediating effect of e-trust and e-satisfaction in the context of Nigeria with the purpose of enhancing the relationship between e-banking adoption and perceived security. The paper explained that the adoption of e-banking is determined by several factors but factors in the Nigerian context include perceived security, e-satisfaction and e-trust. In a more recent study which considered Human Centered Design processes in Nigeria, Ogunyemi, et al (2016) drew a conclusion that trust is one of the challenges to developers as a hedonic value because of the cynical nature of Nigerians which was attributed to developers not giving much attention to user experience considerations. Furthermore, in the studies of Oseni & Dingley (2014), trust issues came as 40% in the league of the challenges facing e-Service adoption and implementation in Nigeria, they also identified usability and cultural contexts for all intended users to be put into consideration when designing websites as this will go a long way to encourage the usage of these services.

Trust as a construct has been identified by many researchers as a factor hindering users from interacting with e-payment services in developing countries (Salimon et al, 2015; Adesina & Ayo, 2010; Agwu, 2012; Ezeoha, 2005; Ikoh & Iboh, 2013). Apparently, none of the existing studies reviewed has taken a step further to understand from user experience perspective why users of online services in Nigeria are cynical about electronic transaction services. This thesis ventures to fill this research gap by evaluating the construct of trust from a design standpoint in the context of the developing world.

2.4 THE REMITA E-TRANSACTION SERVICE

One major recurring problem in Nigerian Banks is the overcrowding of banking halls, this had led to the movement of customers from one bank to the other, where they can obtain banking services without much delay, (Augustine, 2013). E-banking was adopted by banks in Nigeria so as to improve their service delivery, decongest queues in the banking hall, enable customers withdraw cash 24/7, aid international payment and remittance, track personal banking transaction, request for online statement, or even transfer deposit to a third party account, (John & Rotimi, 2014). Payments of monthly salaries are delayed and often prone to fraudulent acts.

The use of removable devices to store and move financial information around was also susceptible to fraud.

Thus, SystemSpecs observed these processes and the challenges that emanated through ethnographic investigations to come up with a solution they call Remita in order to meet both unmet and unidentified needs of the Nigerian financial market. Remita has the functionality to process third party cheques across different banks' platform through a process called e-cheque. The company's Managing Director who had 22 years banking experience and other key members of the team brainstormed and brought multidisciplinary skills into conceptualizing Remita and other products developed by the company.

Remita is offered on the basis of Software as a Service (SaaS) to enhance accessibility, business continuity, and technical support, which are major challenges with most client-server applications and custom applications. Remita was introduced to the Nigerian community in 1998. (http://remita.net/remita-in-brief)

Of all e-payment services or software, only Remita is institutionalized in Nigeria having been endorsed by the Central Bank of Nigeria (CBN)1 as a gateway for moving funds across banks in Nigeria. The choice of remita is therefore based on the perception that this study would gain useful insights into trust on e-service transactions from a widely used and an institutional service as Remita.

[1] https://www.cbn.gov.ng/out/2015/bpsd/circular%20on%20oagf%20revenue%20collection.pdf

3 THE REMITA CASE STUDY AND TRUST

This chapter will provide us the results of a qualitative approach to better understand the chosen case study.
This qualitative approach aimed to identify trust enabling or deterring characteristics that Remita users may be likely faced with. The research question here addressed is “What are the design considerations for promoting trust in Remita e-payment system?” and the methodology approach chosen was based a Heuristic design inspection method.

In this qualitative exploratory research that uses an e-payment service in Nigeria as case study, we employed the socio-technical model of trust (Sousa et al., 2014) to examine trust indicators on a third party indigenous electronic payment platform called 'Remita'.

We applied the inspection method, design by the Sousa et al., (2014) which consisted on a set of heuristic design inspections that enable us to perform a trust critical design of the platform. This heuristic inspection method was carried out to identify trust enabling or deterring characteristics users may be likely faced with. Furthermore, the researcher partnered with the company that developed Remita in order to reach out to the actual users and gather data for a richer insight to users’ perceptions.

Later on, the researcher also performed a quantitative analysis which used a online survey method and was distributed to 500 current users of Remita. This questionnaire used the LimeSurvey open source tool. A total of 106 complete responses were received and these respondents were from different states in Nigeria. Thus, the response rate was 21.2%.

This result section start with the case study evaluation, presenting its findings and discussions, to further describe the survey results, which can be divided into simpler descriptive results and a bit more complex results that in addition to answering this survey's questions can also set a footing for future research. The chapter will end with a discussion on the results and their implication.

3.1 CONCEPTUAL FRAMEWORK OF THE STUDY

Trust as a construct is relatively broad and as seen in the literature it means different things to different fields of knowledge. The socio-technical model of trust focuses on the aspects of trust that is of concern to design and Human Computer Interaction.

This socio technical model of trust (Sonia Sousa & Paulo Dias, 20) depicts trust as a construct informed by 7 (seven) constructs. The model determines the extent to which one relates with one's social and technical environment. These constructs explain the individual qualities of trust: Willingness, reflects the positive or negative feeling about performing a given action while considering the risk and incentives. Competency, reflects the degree of ease of use, when associated with the use of the system. Predictability, represents the user's confidence that the system will help him perform a desired action in accordance with what is expected. Benevolence reflects the user's perception that most people share similar social behaviours and sharing values. Reciprocity represents the degree to which an individual sees oneself as part of a group. Honesty, reflects an insurance quality when facing apprehension, or education setting. Qualities of trust, as defined by Sousa et al (2016):

Motivation – "the degree to which an individual believes (even under conditions of vulnerability and dependence) h/she has the ability to perform specific beneficial actions when using a computer."

Willingness – "positive or negative feelings about performing a given action while considering the risk and incentives."

Competency – "the degree of ease of use when associated with the use of the system."

Predictability – "a user's confidence that the system will help him to perform a desired action in accordance with what is expected."

Benevolence – "a user's perception that most people share similar social behaviors and sharing values."

Reciprocity – "the degree to which an individual sees oneself as a part of a group."

Honesty – "an insurance quality when facing apprehension, or even fear with the possibility of being deceived."

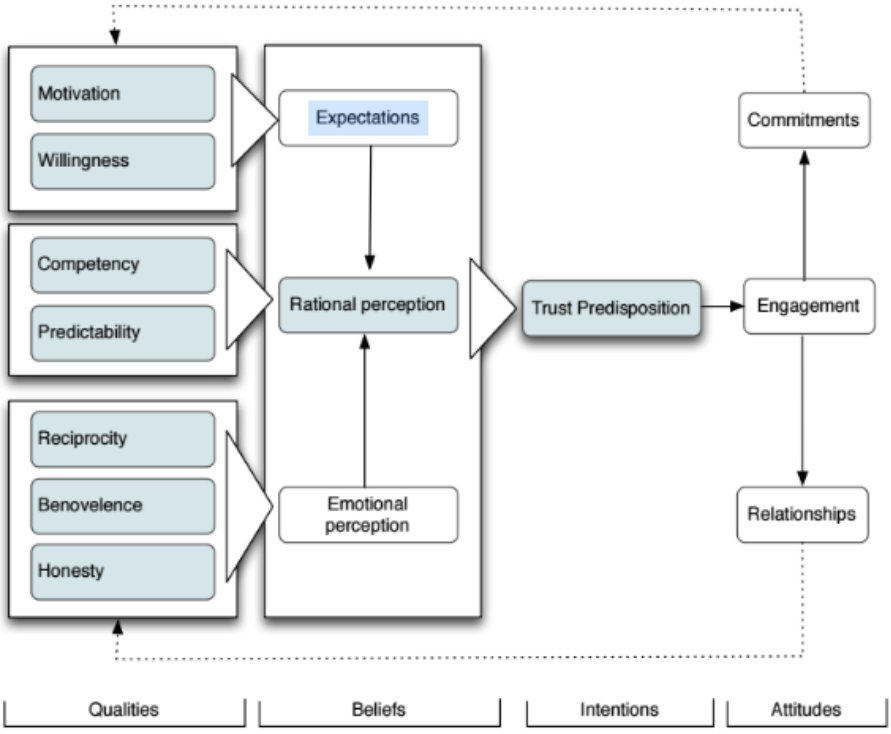


Figure 2 - The social model of Trust (Sousa et al. 2014)

This model, see figure 2, is based on the combination of the unification of Davis's and Venkatesh's Technology. The resulting model (after validation) takes into consideration certain observable qualities of trust that helps to determine: a user's intention of trust (Motivation and Willingness); incentive user's usage behaviour (Competency and Predictability); and supports and moderates the relationships (Benevolence, Reciprocity and Honesty).

3.2 QUALITATIVE ANALYSIS FINDINGS

During this exploratory study, the researched used the socio-technical trust model (Fig 2.) as a design critique method, to examined possible trust pitfalls on Remita e-transaction service. As well as looked for possible trust-enabling interactions to uncover opportunities for improvement. As a result of the evaluation, we found that the platform presents good design features, which should encourage meaningful user trust-enabling interactions, but also points out some pitfalls to be considered.

3.2.1 RESULTS OF THE INTERVIEW

As a complement of this research the author also performed email and phone conversations interviews, afterwards followed a visit to Nigeria with the CTO of Remita, for a clearer understanding of the study.

From these meetings it was found that the company's estimated growth of users were not met and they had struggled with a decrease in users but for a recent slight increase.

He stated that trust is an issue of reckon in e-platforms and showed interests in the study. He showed full commitment and willingness to help distribute the questionnaires to current users of the platform when the time was right.

3.2.2 RESULTS OF THE INSPECTION METHOD

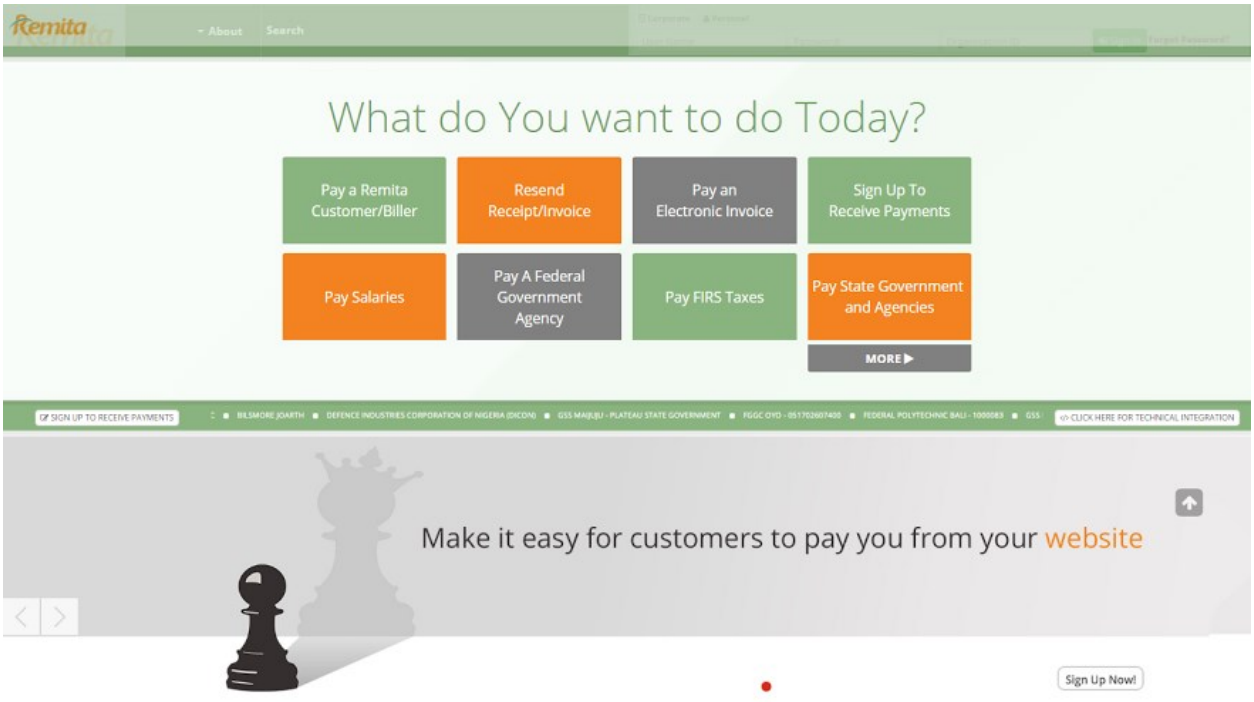


Figure 3 - A screenshot of the welcome homepage of Remita

The homepage (Fig. 3) has a well-balanced color scheme which includes warm and cool colors, the designs employs a good blend of color repetition which unifies the service and choice colors like grey in the background gives it some seriousness and professional feel. The cool colors give the platform an earnest, business-like ambience, creating an impression of seriousness and professionalism.

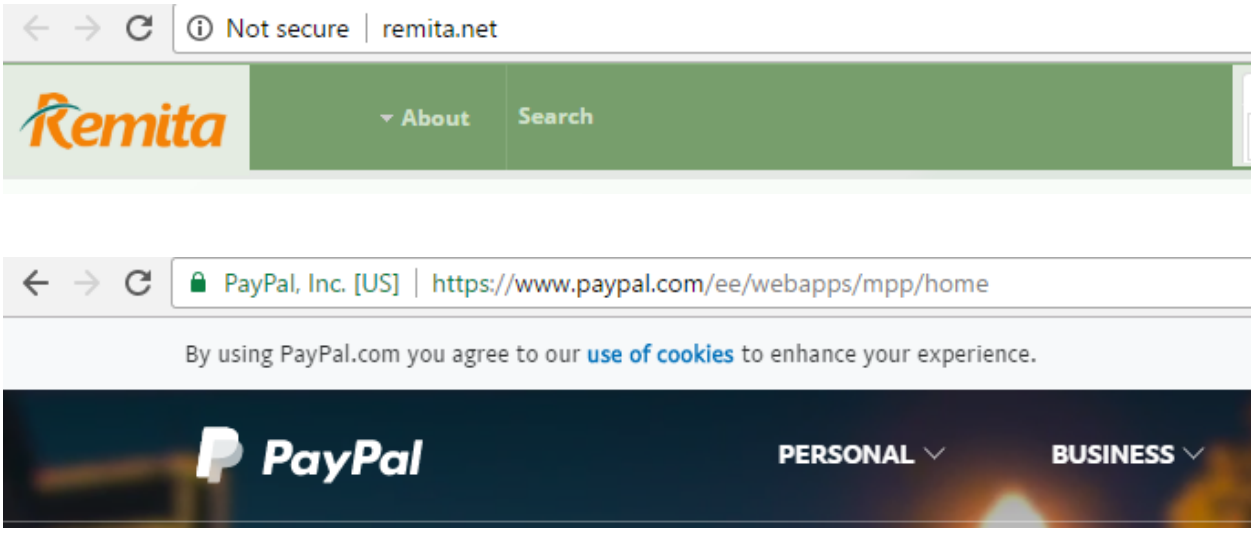


Figure 4 - Comparing Remita's address bar secure connection to PayPal.

However, the address bar (Fig. 4) shows there is no Secure Sockets Layer (SSL) indicated, clearly stated, "Not secure". Perhaps the indication of a lack of security deters motivation to the existing users but however has no impact on their trust to use the system according to our data analysis findings. On the contrary, this may likely hinder the trust of potential users and consequently their intention to use the service.

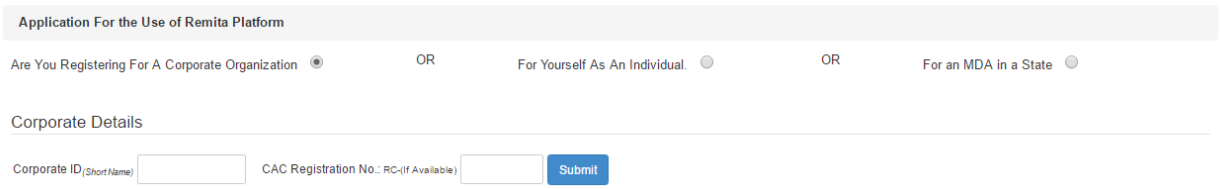


Figure 5 -The pre sign up page of Remita

A simple layout instead of a complex one is the key to keeping users interested. An effective use of white space (also referred to as negative space) commands attention to the intended actions/information for users to focus on. However, the positioning of the text fields and radio button as well as the header and footer design (See fig. 5), employed in the use of white space by Remita, aesthetically does not achieve an appealing balanced to incite user's willingness to sign up.

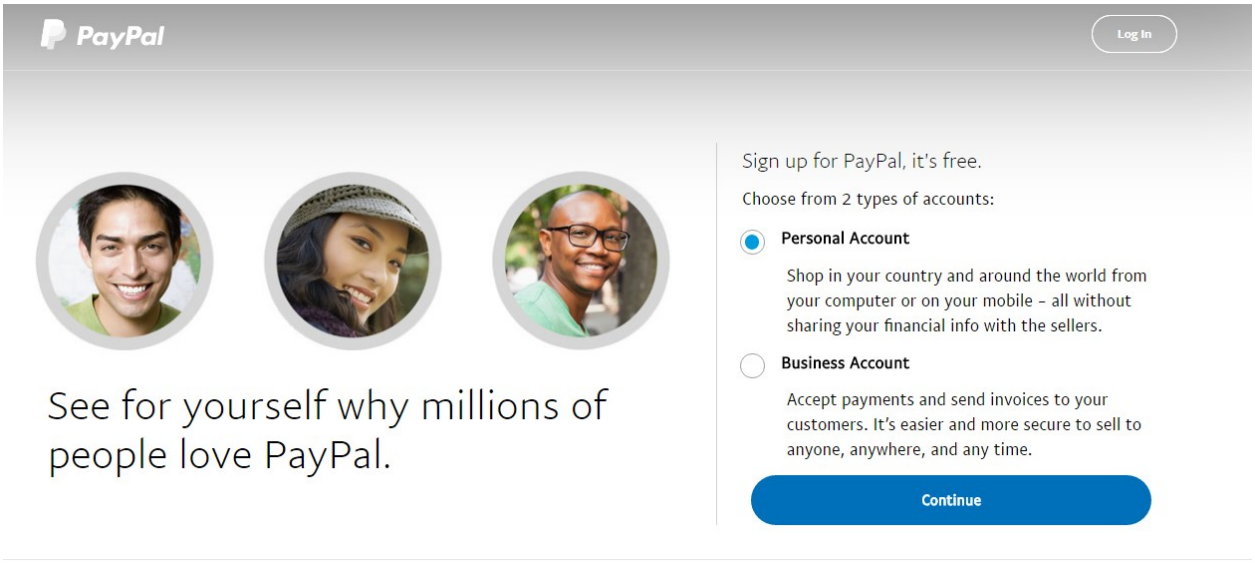
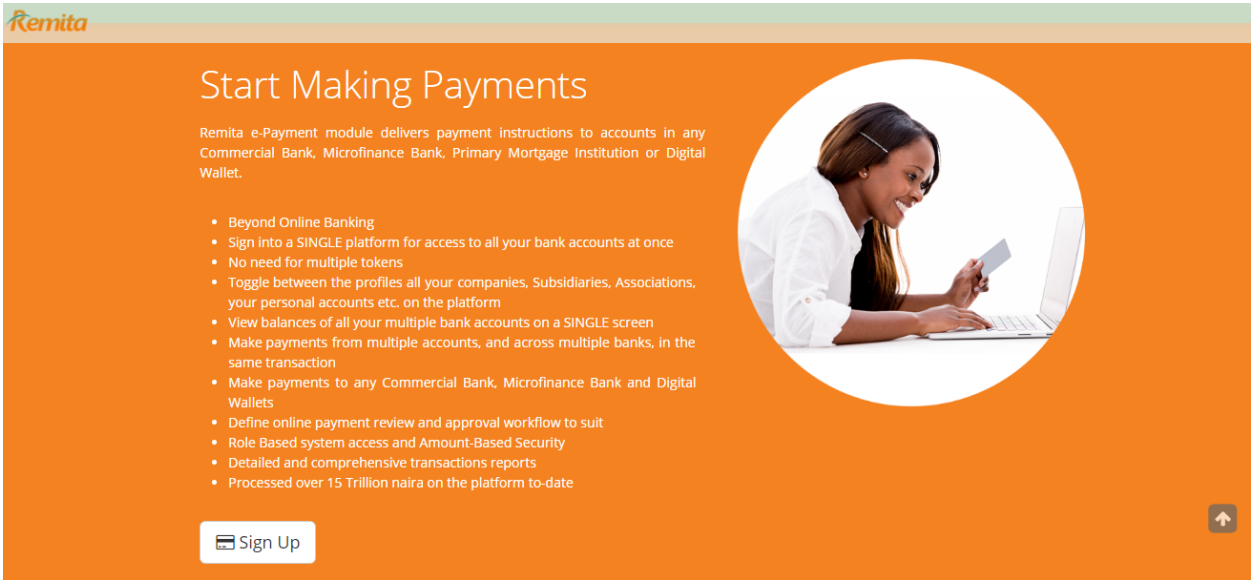


Figure 6 - The pre sign up page of PayPal.

In contrast to Remita, (Fig. 6) the PayPal signup page shows cheerful faces; indicating contented users of the platform, well-positioned information and a good use of white space. This creates somewhat of an 'halo effect' to trusting the information given in texts which collectively will most likely stimulate a users' willingness to go ahead with the sign up.



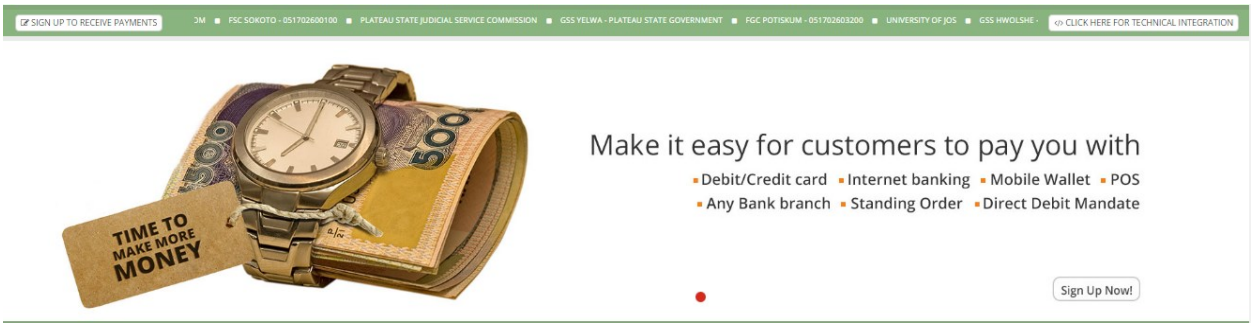


Figure 7 - A screenshot of another part of the homepage.

The webpage is responsive, which can be accessed on any internet enabled device, designed using bootstrap with nice visual flow and shows not only a variety of the uses of Remita, (See, Fig. 7) but provides a variety of prominent citizens' testimonials which depicts honesty (See, Fig 8), proving to be a competent service to help users achieve their goals. With scrolling down the page a user finds even more motivation to sign up and an appeal to benevolence.

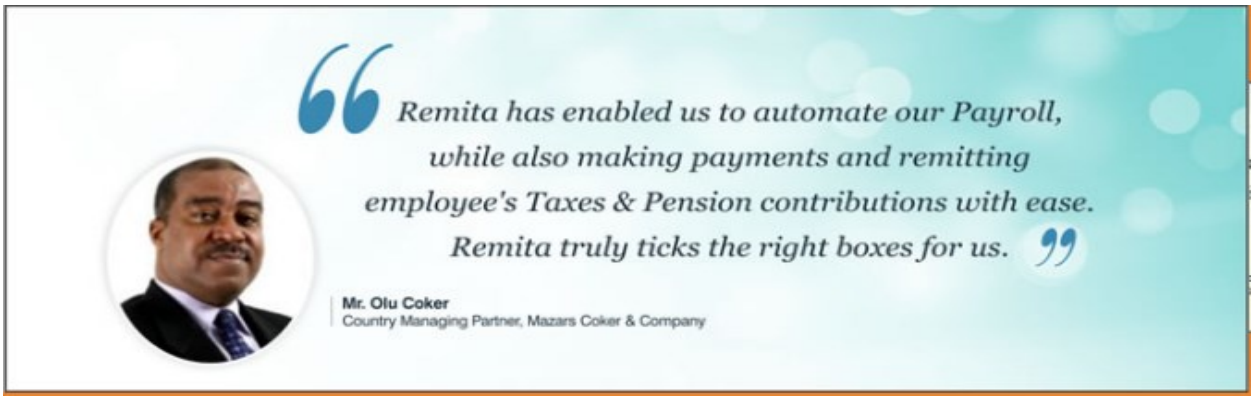


Figure 8 - A screenshot of users testimony

With regards to predictability, there is however a slack evident. On the "About" button drop down list, when the "your all in one app" is clicked, it appears to be a broken link as it leads nowhere but refreshes the page. Poor website maintenance provides negative cues to a user. Cues such as broken links, outdated information, missing images and download problems such as long download times (Nielsen et al., 2000). This could create a negative user experience and might hamper a user's confidence that the system will help him to perform a desired action in accordance with what is expected.

Remita provides instant feedback through email on a customer service, which responds within 48 hours and can be contacted via phone or on their social media platforms. A design recommendation to strengthen reciprocity would be to include a live chat in the system for onsite correspondence to provide real-time support to users as it applies with TransferWise as well as CashEnvoy (a Nigerian e-payment platform). Easy access to live customer representatives via a website is a positive cue (Nielsen et al., 2000).

Furthermore, there is no means of a direct email messaging through the platform for a quick compose and send to the site as an easy option against a user sending through his/her email account.

3.2.3 DISCUSSION

Going by the findings of the heuristic evaluation of the platform, it is evident that there are certain trust limiting indicators which for the most part could send off a negative signal to users trust perception. Therefore, it is recommended that a redesign of the Remita platform is carried out to incorporate the missing visual clues and characteristics highlighted, this proposal is expected to enhance current users' trust in the system as well as encourage the engagement of potential future users. Also, another suggestion is for a provision to a page showing the Remita partners e.g. the Central Bank of Nigeria, list of associated commercial banks, companies etc. and some well detailed user security/insurance information to boost users' trust perceptions and influence use of the platform.

3.3 QUANTITATIVE ANALYSIS AND FINDINGS

This study has explored the role of trust in the context of a Nigerian e-payment service, Remita. To the best of our knowledge, this is the first study to systematically analyze user trust levels when they interact with online payment service.

This study empirically contributed, as well to refining the socio technical trust model proposed by [Sousa] and resulted in a paper publish at HCII conference. The data from this study has helped in evaluating certain aspects of the model.

During the quantitative approach the researcher used an online survey to be able to answer the research question, "What are users' perceptions regarding trust enabling indicators with interactions on e-payment platforms?". The questionnaire was build based on the conceptual model proposed below.

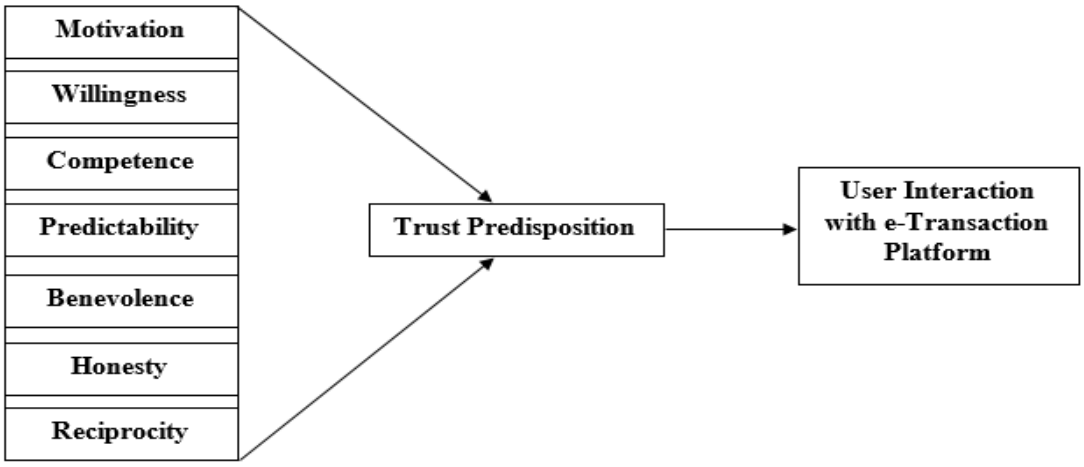


Figure 9 - The socio technical model framework (Adapted from the socio-technical model of trust by Sousa et al. 2014)

The following hypotheses translating this research question into predicted outcomes have been formulated for this study:

H1: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived motivation in the system.

H2: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived willingness in the system.

H3: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived competence in the system.

H4: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived predictability in the system.

H5: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived benevolence in the system.

H6: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived honesty in the system.

H7: Users are predisposed to use an e-transaction platform as trust is significantly enhanced by perceived reciprocity in the system.

3.3.1 THE SURVEY

The questionnaire started with a few background questions, such as gender, age and occupation. The second half of the descriptive question group was about the users' Internet use habits, in particular to show respondents frequency of use and savviness. The next group of questions were about users' familiarity with e-payment and to check if respondents use Remita platform. The other half of the questionnaire concentrated on questions formulated using the socio-technical model of trust with modifications based on literature. There were 3 groups of statements that the respondent had to rate on a Likert scale according to agreeableness. The survey ended with a question text field for users' input on why they trust the platform or not.

PILOT STUDY WITH REMITA'S CTO

A pilot study using the first draft of the online questionnaire was carried out with the CTO via Skype. He was very resourceful and helped point out some anomalies and as well gave useful suggestions/recommendations. Starting with the demographics, he had corrected the question of "what is your occupation?" to "what is your employment status?" He further suggested a radio button for the answer to gender, not a checkbox. For the sake of the questionnaire, he advised to use the word "e-payment" all though without a replacement with any synonym of it. Advised against default answers, as the default setting on limesurvey was set to mark an option. He complained of thinking too hard to be able understand some of the questions and advised on

rephrasing with the use of very simply words and short plain sentences. He also suggested that the questions should be tailored to specific UX, for instance, “when registering, was it easy for you?”. The last part of the questionnaire had 4 text fields to capture users views and experience with the platform, which he complained were too much and unnecessary as the general number of questions to answer were a lot. Few other pilot studies were conducted with users of e-transaction platforms where further insights were gathered in rephrasing and modification of the questionnaire before the final copy.

3.3.2 THE SURVEY RESULTS

The survey was answered by 106 people. Out of the 106 people, 34 (32.08%) were female and 72 (67.92%) were male.

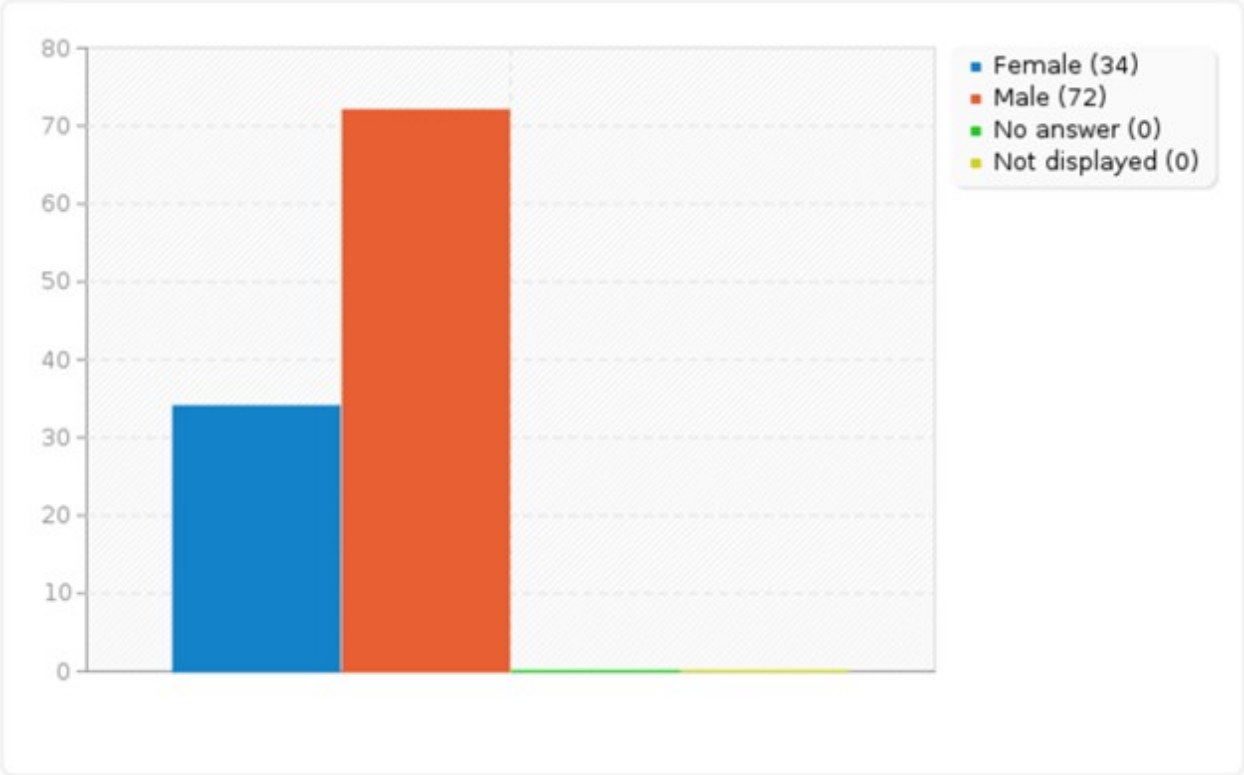


Figure 10 - Gender of respondents

This suggests that there are more male users of the platform.

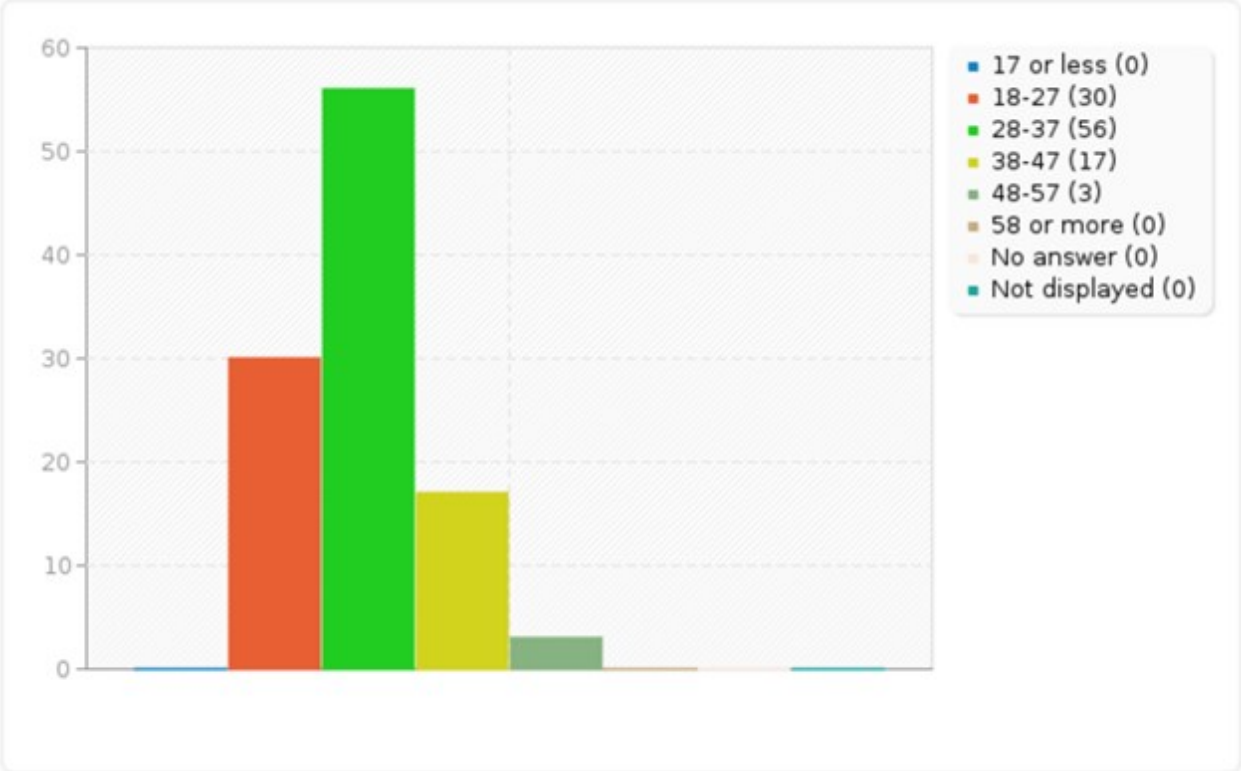


Figure 11 - Age group distribution of respondents.

Over half of the respondents were between the ages of 28-37 years of age (56, 52.83%), between 18-27 years of age (30, 28.30%). 17 people (16.04%) were between 38-47, 3 people (2.83%) were between 48-57, and no respondents were either 17 or younger or were 58 or older (Figure 10).

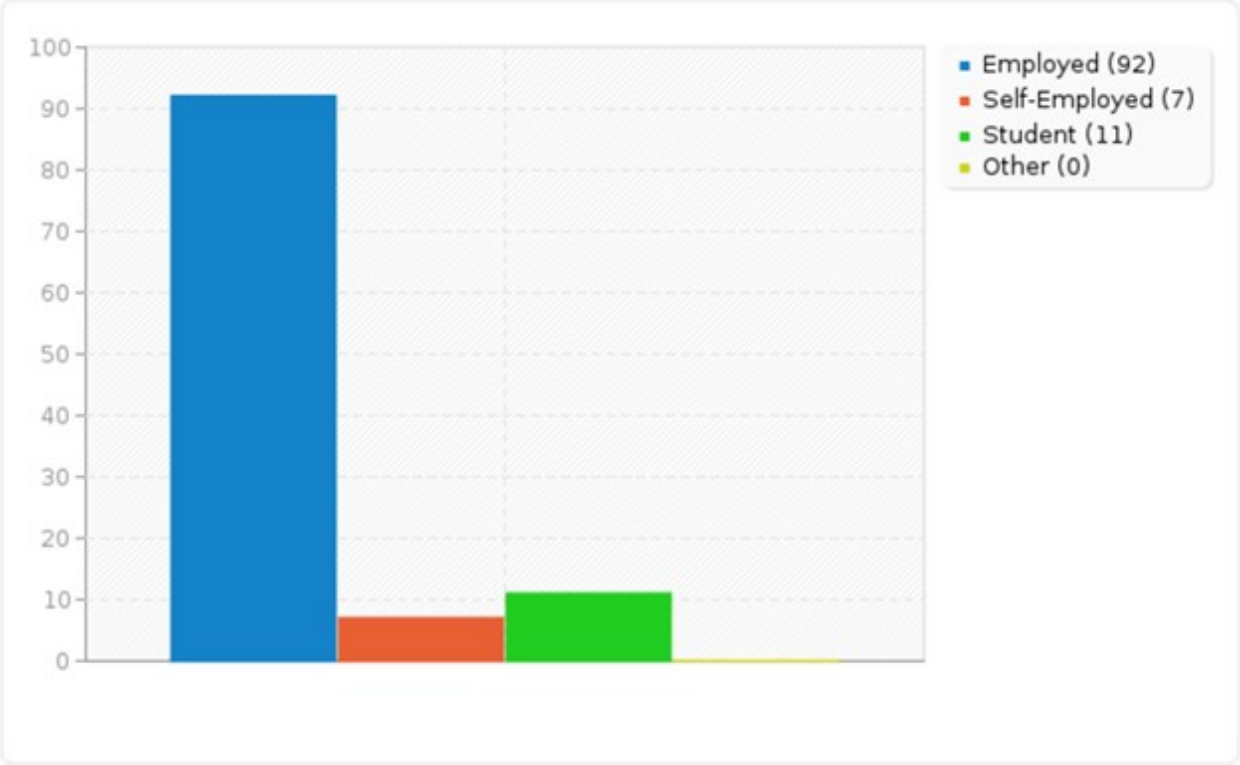


Figure 12 -Employment status

For respondents' employment status, users could choose more than one answer, e.g. a person may be employed and a student. 92 (86.79%) people marked that they were employed, 7 (6.60%) were self-employed and 11 (10.38) marked as students.

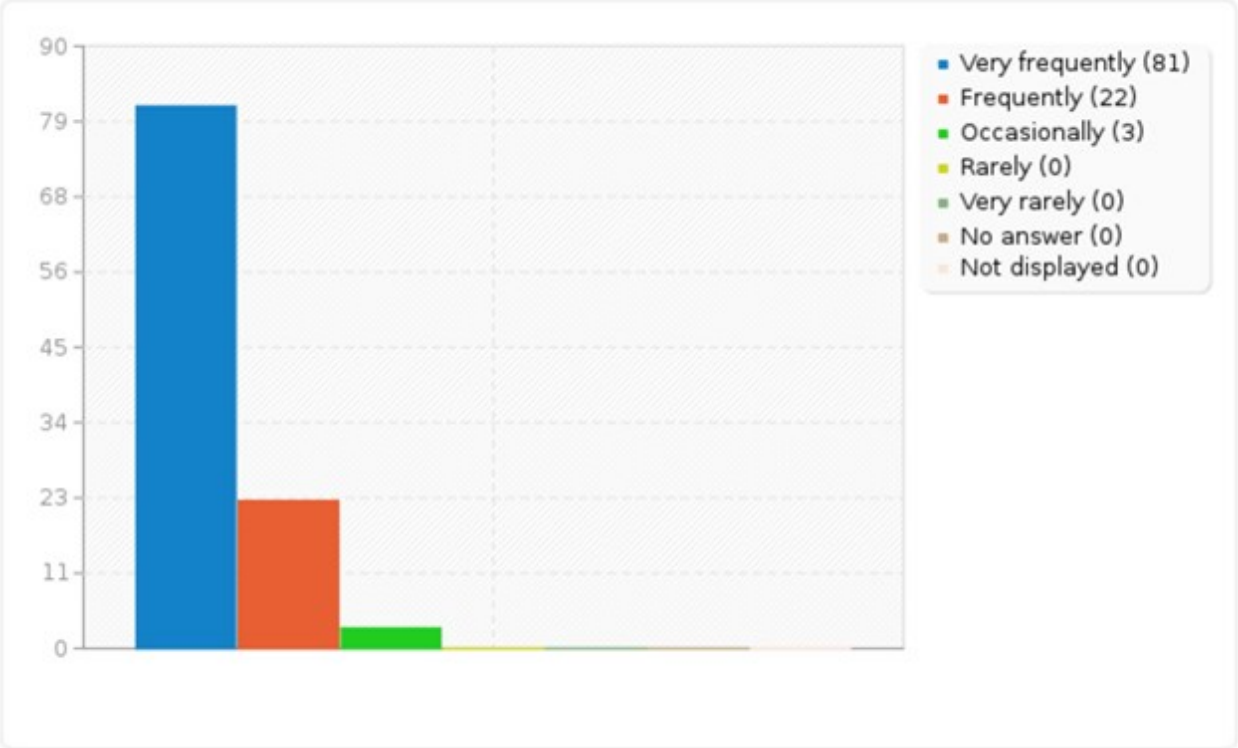


Figure 13 - Internet usage distribution

Using a Likert scale, respondents were asked how often they use the internet to access their familiarity with web usage. 81 users choose very frequently, 22 frequently and 3 occasionally, no user of the platform uses the internet rarely or very rarely as suggested by the response. Apparently, users who answered to the survey and very familiar with using the internet. Further questions were asked on how important certain activities were when using the internet. E.g. reading and sending emails, interacting with organizations such as banks, education institutions etc. and a similar distribution of responses were recorded where a large majority of respondents marked very important or important. This can be extrapolated to mean that most users of the platform savvy with internet and computer usage.

REGRESSION ANALYSIS

Regression analysis was carried out to evaluate the impact of the independent variables on the dependent variable. The items for the dependent variables were transformed using SPSS into a composite variable and it was carried out for the independent variables. The data from this study has helped us evaluate certain aspects of user trust in the developing country context.

Model Summary[b]

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.967[a]	.935	.931	.25369

Table 2 -Model Summary

Model Summary, Table 2, displays the R .967 (the Multiple Correlation value representing the correlation between the actual scores of the dependent variable and the scores for the dependent variable predicted by the regression equation), the R squared .935 (the Multiple Squared Correlation value that if multiplied by 100 can be interpreted as a percentage to indicate that the independent variables account for 93.5% of the variability in the scores of the dependent variable), the Adjusted R square .931 and the Standard Error of the Estimate .254.

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	90.977	7	12.997	201.947	.000[b]
	Residual	6.307	98	.064		
	Total	97.283	105			

a. Dependent Variable: TRUST

b. Predictors: (Constant), HONESTY, MOTIVATION, PREDICTABILITY, WILLINGNESS , RECIPROCITY, BENEVOLENCE, COMPETENCY

Table 3 -Anova table

ANOVA, displays the Sum of Squares, df (degrees of freedom), Mean Square, F 201.947 which measure the size of the effects, $F(7,98) = 201.947$ and Sig. 0.000 where $P \leq 0.01$, shows the probability that the results are by random chance.

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.027	.144		.184	.855
	MOTIVATION	-.012	.040	-.008	-.290	.772
	WILLINGNESS	.161	.050	.140	3.189	.002
	RECIPROCITY	.109	.057	.110	1.903	.060
	COMPETENCY	.265	.075	.280	3.543	.001
	PREDICTABILITY	.182	.041	.209	4.475	.000
	BENEVOLENCE	.180	.066	.191	2.709	.008
	HONESTY	.121	.069	.133	1.772	.079

a. Dependent Variable: TRUST

Table 4 - Coefficients of the latent variables

The coefficient analysis in table 4, shows the correlation between trust and trust indicators (motivation, willingness, reciprocity, competency, predictability, benevolence and honesty) using the socio technical model of trust by Sousa et al [26]. Using a cutoff at $p \leq 0.01$ for the level of significance, with reference to table 3, we can confidently infer the following:

3.3.3 DISCUSSION

As can be observed, the relationship between Motivation (operationalized through self-efficacy) and Trust is statistically not significant as P = .885 at $P \geq 0.01$. Therefore, the null hypothesis for H1 is accepted. Even though self-efficacy predicts motivation [24] and we hypothesized that trust is significantly associated with perceived motivation in the system, this was not the case in our research. Motivation features with regards to this e-payment system are insignificant to the trust levels of users.

There exists a statistical significant relationship between Willingness (operationalized through outcome expectations) and Trust. Here the null hypothesis for H2 is accepted as P = 0.002, at $P \geq 0.01$. On similar lines, willingness was measured based on outcome expectations on a paper by Compeau and Higgins [4], as it appears from the responses, users already knew what to expect from the e-payment system and somewhat knew what the outcome of using the platform would be.

There exists a statistically non-significant relationship between Reciprocity and Trust. Where P = 0.060, at P ≥ 0.01. On similar lines, reciprocity in the information systems literature has been operationalized based on the premise of social capital. Social capital includes physical (e.g., driving a friend to the airport), emotional (e.g., giving a friend a hug), and informational (e.g., giving a friend advice about a big decision) resources, among others with expected returns at some future point; in other words, reciprocity is a key component of social capital [6]. In a user technology interaction such a scenario would not hold fit, as there does not exist social capital.

The relationship between Competency and Trust was statistically significantly as P = 0.001, at P ≥ 0.01. This was expected as high competency levels of the system was hypothesized to enhance trust.

As expected also, the relationship between Predictability and Trust was statistically significantly. P = 0.000, P ≥ 0.01. It appears that users of the platform are certain of what to expect from the platform with regards to their transactions.

The relationship between Benevolence and Trust is also statistically significant. P = 0.008, P ≥ 0.01. Therefore, a perception or experience of goodwill or kind consideration from the e-payment service heightens users trust.

On the contrary the relationship between Honesty and Trust is statistically non-significant. P = 0.079, table 3. This implies that users perceived honesty of the e-payment system has no impact on their relation to trust in the system. In other words, it is of no relevance to user trust whether or not honesty hints are present in the system.

Therefore, what was important to the users was the functionalities, degree of ease of use and efficiency of the e-payment service (competence), if the e-payment service was designed with the user's best interest in mind and will always operate in such a way (benevolence), knowing that their expectations will be met (predictability) and finally knowing that the e-payment service will proffer expected outcomes which leads to a predisposition to interact with the system (willingness).

The results with regards to competency (which reflects the degree of ease of use and efficient functionalities) are consistent with the study of [20], which investigated the factors influencing Chinese users' perception and adoption toward e-payment. Their study revealed that the benefits users are most concerned about are the easy registration, learnability, convenience, fast processing and usability of the e-payment.

4 CONCLUSIONS

In the current study, the socio-technical model of trust [Sousa] was employed to investigate the influence of trust predictors on users of on an e-payment platform in the context of a developing country. There are two fundamental questions raised in this study, formulated as; first, what are the design considerations for promoting the trust appeal when designing e-payment systems? And secondly, what are users' perceptions regarding trust enabling indicators with interactions on e-payment platforms? To achieve the answer to these questions, online questionnaires were administered to current users of the platform and a critical evaluation of the e-payment service was carried out.

The study revealed that users are attentive to competency, benevolence, predictability and willingness features in the design of trust-enabling e-services as opposed to motivation, honesty and reciprocity. The implication is that design features incorporating the latter factors in order to foster and enhance the trust appeal of an e-payment system and engender the trust of users are not being supported and this provides some opportunities for future research.

Finally, this study provides a basic framework to explore e-transaction service models in developing countries. We encourage a trust-enabling evaluation carried out by a User experience (UX) specialist to investigate trust concerns "with users" to proffer design directions on e-transaction platforms. Therefore, trust evaluation and redesign should be a continuous process on an e-transaction platform.

4.1 STUDY LIMITATIONS

This study is not without its own limitations, first, the online survey raises the problem of generalizability. This study selected certain socio-technical indicators but some latent factors may have an effect on trust in e-payment use. Furthermore, regarding why motivation (self-efficacy) was statistically non-significant to trust, we could argue that such a limitation might only be specific to our study. Since in the current study, data was collected from users who were tech savvy and in such a situation technological self-efficacy might not matter. Also, the current study focused only on existing users (employing the use of a survey), the exclusion of non-users may have had an effect on the research construct validity.

4.1.1 IMPLICATIONS AND FUTURE WORK

The work undertaken and presented in this paper classified under the category of Human Computer Trust, presents an analysis of an indigenous e-payment service used in a developing country. The lessons derived from this study provide some implications. For the researchers, there is a need to look more closely into characteristics that engender trust in developing countries, and this outcome is consistent with a recent study in Nigeria [16], which drew a conclusion that trust is one of the challenges to developers because of failures to give attention to user experience considerations.

Apparently, developers in developing countries fail to employ participatory design approaches, proper user testing, prototyping, and other Human Computer Interaction (HCI) techniques when designing services and most importantly e-payment platforms where users tend to be skeptical as evident in literature. We suggest for further studies; investigating non-users' awareness of e-payments services, here the question is 'why they do not use third party hosted e-payment service beside well known and insured financial institutions (banks)?' Is it trust-related? If yes, then how do we enhance trust? Else how do we address the reasons and trust alongside? This is to elicit clues, which may have been missed in the current study. We suggest also using a mix of questionnaires and interviews for richer data, to complement and expand the results found here. Also, data gathered revealed that over 90% of the users of the platform are proficient in navigating and using typical computer programs for a given task. This indicates that less tech savvy users are not using the platform; this leaves room for further investigation.

Furthermore, perceived motivation, reciprocity and honesty have no significant influence on users' predisposition to trust deserve further study in the future. This however, suggests that online payment providers should enhance user experience and design their platforms by strengthening the significant trust indicators investigated in this study and including users in the design process to clearly see and understand features to engender trust.

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A The inspection method used

Design for Trust [**Toolkit**]

Design Challenge: The Sharing Economy has brought new attention to the everyday practice of sharing. Digital tools are changing both what we can do together across neighbourhoods and how we think about sharing our time, materials and skills. It is possible to design to boost resource management, economic wellbeing and social resilience by fostering trusting sharing practices.
Your challenge is to create imaginative futures on how we can use trust values to reshape our sharing behaviours. A set of Trust enabling sharing scenarios to persuade TLU students to share time, materials and skills among themselves.

Context the TLU student community in general or the exchange student dormitory.

Analysis: existing inspect digital product sequences

http://neighborgoods.net
http://www.streetbank.com/
https://www.peerby.com/
http://www.justshareit.com/
https://www.airbnb.com/

Evaluation of Date

Instructions:

1. You will assume the expert role and explore/observe the existing actions that satisfy the observe the characteristics described below
2. Then, illustrate or express your ideas using items, images, graphs or text.

A **action** is define as a physical activity that the user can perform.

User's intentions of trust (Motivation and Willingness)

Observe actions that motivate people to share goods. What users care about?

Incentive or Motivate: Represents the degree to which an individual believes (even under conditions of vulnerability and dependence) h/she has the ability to perform specific beneficial actions when using a computer.

Tasks and/or actions that create Interest. What users care about? If I am interested then I will pay attention.

[Enter examples of activities that satisfy above characteristics] Express your ideas using items, images, graphs or text.

Design features that create trigger actions. What triggers their actions? When aroused we are fully engaged and hence more likely to be motivate to pay attention

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Setting clear goals achievements. We are compelled to strive to achieve a goal if it is achievable. We like to be challenged and tested, but not too much.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Observe actions that persuade users' will to act even when considering the risk and incentives involved.

Persuade the Will to act: Reflects positive or negative feelings about performing a given action while considering the risk and incentives involved

Illustrations of pleasing visual stimuli. The "first impression" can shape your perceptions. The halo effect, users overall impression influences their feelings and thoughts about an entity's character or properties. Opinions based on visual stimuli happen very quickly.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Incentivate Commitment. If we make a commitment, we often feel bound to follow through on it. Action leads to commitment. If I involve in something, I become more committed to it success**.**

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Showing Confidence. If I show confident on what I am doing, then you can be confident.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

User's incentives to use and accept certain technologies (Competency and Predictability)

Observe actions that reflects the idea that the system facilitates the sharing processes.

Competency: Transmits positive feeling of being a capable product to use to achieve your desired goals.

Associate actions to outcomes. We trust an authority that is plentiful with knowledgeable. Our perception is influenced by the information we are presented**.** Up-to-date content indicates freshness and responsiveness.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Transparency. Be be transparent If the users have to go hunting, then they worry that something is being hidden from them. that takes them less trusting. Look for indicators that show that the system clearly acts by open and transparent principles (e.g. it provides information about the trusted party to ensure that the self-interest of both are aligned).

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Be available. If a higher level of icons are not available on every page, or not at the point of action that can lead to user frustration or mistrust

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Observe actions that leads the user to gain confidence that the system is the right tool to fulfill their need to exchange goods with others students.

Predictability: Represents a user's confidence that the system will help h/she to perform a desired action in accordance with what is expected.

Be consistency. We respond favorably to learned, expected behaviours. We like to maintain consistency between what we think, say and do.The system needs to be perceived by users as a whole rather than as a collection of components (e.g. Making it easy to forget that technology is there).

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Providing knowledge of about my actions. Tell me what the consequences of my actions are. We continue our actions if we are shown evidence of their success. We need to acknowledge the completion of what we started**.** Creates self-confidence and a sense of accomplishment.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

*Clear guideline what to do and what will happen after the actions

*it it because Tallinn does not have enough users to activate the service here.

Re-use existing interactions. If it works like something we already know, it feels easier and we like it more usage rates & satisfaction due to familiarity. e.g Facebook, Amazon and eBay have set expectations for complex interactions such as image uploading, rating, liking, commenting.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

User's are supported in their engaging activities (Benevolence, Reciprocity and Honesty)

Observe actions that lead the user to think they share similar behaviours and values.

Express benevolence: reflects a user's perception that most people share similar behaviours and values.

Linking people. Encourage an emotional bond with your audience. We judge other based on their recommendations and affiliations. Create active passive care teasers. Add surprise, delight and playful elements.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Argue against self interest. We trust recommendations that are not in self interest.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Create Empathy. Find subtle ways to add illustrative imagery, interactions, visual cues and visual feedback. e.g using their name show you know them and trigger their concern for you. Encouraging feedback and provide timely response.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Social Proof. When uncertain we take cues other people. People will do things that they see other people are doing.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Similarity. We trust people who are like us or who are similar to people we like. Famous people and common people. I trust people like me, and celebrities I admire.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Observe actions that leads the user to think that his/her contribution is important for the group success.

Reciprocity: represents the degree to which an individual sees oneself as a part of a group.

Reciprocation. If I give something to you, you are obliged to return the favour
Reciprocal teasing affirms the relationship. e.g Link certain tasks with consequences in the process, the overall achievements comes associated with clear rewards and/or penalties.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Association: Our thoughts are connected. Think one thing and the next is automatic.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Social contagion. Our emotions are affected by the actions of those we see around us. When uncertain people will do things that they see other people are doing

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Affiliation, Peer advice or certifications. We trust established, certified organisations and trademarks. We judge other based on their recommendations and affiliations. We trust our peers more than we do official marketing.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Observe actions that make the user believe s/he is not being deceived?

Transmit honesty: reflects an insurance quality when facing apprehension, or even fear with the possibility of being deceived.

Avoid opaque statements of Privacy and/or security policies**.** If an system requests permission clearly explains why it is needed. Clearly and simply outline the consequences of a choice. If a system request for a permission that don't need and offers no explanation people aren't likely to agree to giving up the information.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Add value proposition and consequence. Appeal to trust. Why should I do this? give a reason why certain actions are valued, Avoid design for user deception.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Testimonials. We trust organisations who trust and value their customers opinions**.**

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Reliability. We always expect technology to work, trust is damaged if it does not. From a Human perspective deliver on your promises. From a technical perspective the tools seems to work in a reliably and deterministically.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

Embed open actions and information: Don't make me hunt for it. Add a link to additional information and help me find it easily when I am interested in finding more information. If I have to hunt for more explanations this can be perceived as "trickery", eroding trust.

[Enter examples of activities that satisfy above characteristics.] Express your ideas using items, images, graphs or text.

B The questionnaire

A survey on Trust in e-payment service

A survey on Trust in e-payment service

Dear Participant, My name is Godfrey Kingsley, I am Nigerian, studying for a degree in Human Computer Interaction at Tallinn University, Estonia. As a part of my MSc studies, I am conducting a survey which aims to understand the role of trust in Remita e-payment service.

I humbly request for your participation in this study by completing the following questionnaire. Please answer these questions based on your personal experience. The questionnaire will require no more than 10 minutes of your time. In case you have any questions, you can contact me via email: godfrey@tlu.ee
Thank you very much for your time and kind help!
Godfrey Oyinkepreye Kingsley

General Information

* What is your Gender?

○ Female ○ Male

* What is your current employment status?
Check any that apply

☐ Employed ☐ Self-Employed ☐ Student ☐ Other:

* Please indicate your age group. Choose one of the following answers

Please choose... ▼

* Where is your location?
Choose one of the following answers

Please choose... ▼

* How often do you use the Internet ? Choose one of the following answers

Please choose... ▼

* How important to you are the following activities when using the Internet?

	Very important	Important	Neutral	Unimportant	Very unimportant
Reading and sending e-mail					
Sharing documents [doc, pictures, videos, music]					
Chatting and Socializing					
Publishing short messages, comments, opinions, etc					
Sharing/Exchange information [Skype, Facebook etc]					

	Very important	Important	Neutral	Unimportant	Very unimportant
Learning, sharing ideas in formal education contexts [school, institutions, etc]					
Organizing or initiating activities, meetings and events					
Interacting with various organizations [banks, State office, etc]					
Entertainment [playing games, listening music, watch TV, etc]					

*
Please enumerate, which of the following e-payment services do you currently use or have used in the past?

Check any that apply

- [ ] Remita
- [ ] Quickteller
- [ ] 2Checkout
- [ ] Simplepay
- [ ] Cashenvoy
- [ ] Other:

* How often do you use e-payment services? Choose one of the following answers

- ○ Everyday
- ○ A couple of times a week
- ○ Once a week
- ○ Once a month
- ○ Less frequently as above
- ○ Other:

* Which device(s) do you use to access e-payment services? Check any that apply

- [ ] Desktop/Laptop
- [ ] Smart Phone
- [ ] Basic Cell Phone
- [ ] Tablet
- [ ] Other:

* Have you used the Remita e-payment service before?

○ Yes ○ No

About Remita

This section aims to understand how you perceive the Remita service

* Please rate your agreement with the following statements from 1 (Strongly Disagree) to 5 (Strongly Agree)

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I feel that the Remita service is interested in my well-being, not just its own	○	○	○	○	○
I asked for assistance/support to be able to use the Remita platform	○	○	○	○	○
In my dealings with Remita, they have kept to their commitments	○	○	○	○	○
By using Remita, my co-workers will perceive me as competent	○	○	○	○	○
By using Remita, I will increase my chances of getting a raise	○	○	○	○	○

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I could successfully use Remita services if someone showed me how to use it first	○	○	○	○	○
I could successfully use Remita if I had only the instructions for reference	○	○	○	○	○
If I had a challenging problem regarding my transaction processes, I am certain Remita would proffer a solution	○	○	○	○	○
Using Remita helps me spend less time in sending funds or payments to recipients	○	○	○	○	○
I believe Remita performs its role of facilitating electronic payment very well	○	○	○	○	○

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I would confidently act on any transaction related advice given to me by the Remita e-payment service	○	○	○	○	○
I could successfully use Remita if I had just the built-in "help" facility for assistance	○	○	○	○	○
I believe that Remita e-payment service would act in my best interest	○	○	○	○	○
By using Remita, it will increase the quantity of output for the same amount of effort	○	○	○	○	○
I would feel comfortable acting on any related information given to me my by the Remita service	○	○	○	○	○

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I believe Remita is a capable and efficient e-service	○	○	○	○	○
I could successfully use Remita even if it is my first time using the platform	○	○	○	○	○

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I believe Remita is an effective online transaction service	O	O	O	O	O
When I share my concerns about using Remita, I believe that they will respond and be empathetic	O	O	O	O	O
I think of Remita as a sincere and genuine service	O	O	O	O	O

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I am certain of what to expect from Remita e-payment services	O	O	O	O	O
I had to learn a lot of things on how to use Remita before I could get going with it	O	O	O	O	O
Using Remita will increase my effectiveness and I would be able to do transactions from anywhere in the world	O	O	O	O	O
I believe Remita has all the functionalities I would expect from an electronic payment service	O	O	O	O	O
I could successfully use Remita services if I had used similar programs to perform a similar task	O	O	O	O	O

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I would not hesitate to use any information regarding payment or transactions supplied to me by Remita	O	O	O	O	O
I feel I can count on Remita when paying online	O	O	O	O	O
Remita saves me time from tasks such as going to the bank, atm/bank queues etc.	O	O	O	O	O
If I required assistance on the platform, Remita would do its best to support me	O	O	O	O	O
By using Remita, I will be less reliant on local support	O	O	O	O	O

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
By using Remita, I will increase my sense of accomplishment	O	O	O	O	O
I feel that the information given by Remita is truthful and so I can depend on it	O	O	O	O	O
I am certain that my transactions will go as expected when using Remita e-payment service	O	O	O	O	O
Remita is a service on which I feel I can fully rely on for information regarding online transactions	O	O	O	O	O
By using Remita, I will increase my chances of obtaining a promotion	O	O	O	O	O

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I feel it is secure to rely on Remita's e-payment information	O	O	O	O	O
I can always rely on Remita to effectively provide electronic payment services	O	O	O	O	O
I would characterize Remita as being a reliable e-payment service	O	O	O	O	O
By using Remita, It will increase the quality of my job	O	O	O	O	O
By using Remita, I will be seen as higher in status by my peers	O	O	O	O	O

	1 (Strongly Disagree)	2	3	4	5 (Strongly Agree)
I find the Remita platform to be unnecessarily complex	O	O	O	O	O
When I use Remita, I feel I can depend on it completely	O	O	O	O	O
I could successfully use Remita only if someone would help me to get started with it	O	O	O	O	O
I am certain I'll receive help from the Remita service if I have a need and I feel I should help other users if they have a challenge	O	O	O	O	O
I could successfully use Remita services if there was no one around to tell me what to do as I go	O	O	O	O	O

More on Remita services

Please give us additional information on why you trust/or not Remita e-payment service with your financial transactions.

Load unfinished survey | Resume later | Submit | Exit and clear survey