The Influence of Trust on User Interactions in e-Transaction Platforms: The Context of a Developing Country

Godfrey O. Kingsley[(✉)], Sónia Sousa, and Abiodun Ogunyemi

School of Digital Technologies,
Tallinn University, Narva mnt 25, 10120 Tallinn, Estonia
{godfrey,scs,abnogn}@tlu.ee

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. [26], 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 part of an ongoing research on 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

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 [17], 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 is of a main concern in developing countries [12]. The cause of this has been mostly attributed to 'lack of trust' in various studies [1, 18, 19, 22, 25].

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 [21]. A lot of researchers have tried to study 'trust' in software applications (online or otherwise), because of its importance [5, 8, 13, 26, 29]. Several researchers have proposed design approaches, guidelines, patterns and 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 [17, 18].

This study seeks to take a design approach in the context of Nigeria (a developing country) and employ the socio-technical model of trust [26] to explore the design characteristics that engender trust on a third party indigenous electronic payment service platform called 'Remita'.

The goal is to identify trust enhancing components in e-transaction service interface, to investigate the awareness of users of these components. The general aim is to analyze visual cues by evaluating certain variables that promotes or deter trust and thus propose heuristic design guidelines to foster trust in online.

Our contribution, therefore, is in providing insightful guidelines to designers by constructively informing design ideas and identifying characteristics that will help develop e-transaction applications and systems that promote perceived trust in developing countries. This is expected to encourage more patronage of users in e-transaction platforms and consequently contribute in narrowing the digital divide.

The paper is organized as follows. The next section situates the reader and gives a foundation of the work undertaken by providing a relevant literature review, short and clear definition of the terms and concepts being used in this paper. The Sect. 3 gives a description of the methodology. Section 4 presents the data analysis, findings and discussion. We provide limitations of the study, implications and future research directions and then conclude.

2   Related Studies

Individuals, from different cultures and backgrounds, are willing to trust software systems, as they trust other humans, knowing that there are potential risks, [10]. 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, [30]. 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 transactions [28]. 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.

Okoro et al. [15] investigated the issue of customer trust in mobile commerce to identify which factors had more influence on customers' trust during online shopping. The authors found that security design and content are the factors, which had the most 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 were taken into account.

Tsiakis and Sthephanides G. [27] explained that the fundamental prerequisite for e-payment systems adoption was that all participants ought to have absolute trust in the system that they participate. They discussed the contraction of trust in an electronic payment system which must take into consideration: data, identities and role behavior and that the adoption of e-commerce must consider trust and risk as important determinants of adoption behavior.

Kim et al. [11] in their study conducted in Korea, examined the effect of perceived trust, perceived security and their causes on intention to use electronic payments. They found that 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.

The study of Chellappa and Pavlou [3] on the other hand, propose 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 consumers and hence contribute to actual consumer 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.

Pei Y. et al. [20] examined the factors influencing Chinese users' perception and adoption toward e-payment. Their results showed that perceived benefits and trust are significantly associated with consumers' use intention. Their findings suggested that users might value more on benefits (easy registration, learnability, convenience, fast processing and usability of the e-payment instead of financial benefits such as lower fees) of the e-payment system than trust on them. They inferred that the 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 in China and even so when they perceive the potential risks they still trust and would accept them.

Mukherjee and Nath [14] re-examine the commitment-trust theory (CTT) of relationship marketing in the online retailing context and sought 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 behavior; (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.

Grabner-Kräuter and Kaluscha [7] discussed the idea of a pattern language for trustworthy Internet storefronts to facilitate B2C electronic commerce. The authors argued that trust in e-commerce is influenced by several 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. Yet, they believe that the idea of a pattern language for trustworthy Internet storefronts can be one promising element in building consumers' trust towards Internet merchants and in fostering B2C electronic commerce.

Mouratidis and Cofta P. [13] argued that successful online systems are those developed to also meet a number of non-functional requirements such as security, reliability and trust". Their 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.

Sabi et al. [23] 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 of Cameroon. The aim was to explain user preference and trust in western designed banking software systems in developing countries. The findings from the study revealed that user engagement at an early stage in the implementation of a western designed software package in developing countries would greatly enhance user acceptance and usage of the system. However, this lack of engagement did not influence user preference of local systems or trust for imported western designed software systems. 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. However, trust in western designed systems was not significantly influenced by the cultural and environmental factors.

Past studies presented have indicated that trust is a major indicator that spurs the acceptance to use an electronic payment system. Most studies identified security and privacy issues as prerequisites for trust, [3, 11, 14]. Some studies tried to investigate trust from a design perspective [13, 15, 23]. However, past studies reviewed, did not critically consider the social and technical dimensions of examining trust with a design approach, from different lenses in other cultures, especially in the developing world to shed new light on its effect. Hence, this study seeks to look at the influence of perceived trust to use an electronic payment system from the perspective of users in a developing country context.

3 Theoretical Foundation

3.1 Trust in e-Transaction and Online Systems

e-transaction refers to electronic transaction and in this paper is simply defined as the use of electronic means to settle financial transactions among individuals, private and corporate [15]. Trust in electronic transactions was defined by Chellappa, R. and Pavlou, P. [3] as the subjective probability with which users believe that a particular transaction will occur in a manner consistent with their confident expectations.

3.2 The Socio-technical Model of Trust

The proposed model (Fig. 1.), which we advocate to be used as a design tool for informing the design of e-transaction platforms, depicts trust as a construct informed by 7 (seven) individual qualities. The model determines the extent to which one relates

with one's social and technical environment. These constructs explain the individual qualities of trust: Motivation represents the degree to which an individual believes (even under conditions of vulnerability and dependence) he/she has the ability to perform specific beneficial actions when using a computer. 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 behaviors 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. [26] are depicted in Fig. 1.
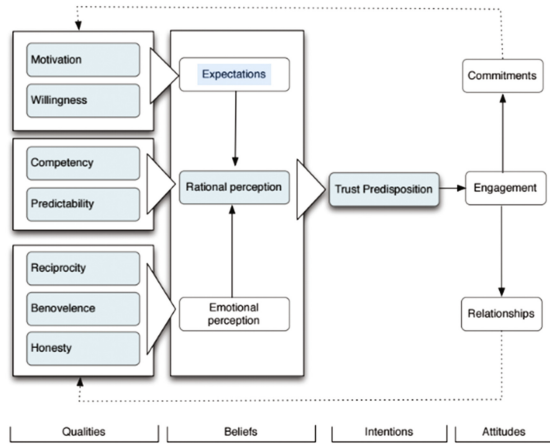
Fig. 1. Socio-technical model of trust (Sousa et al. [26])

3.3 The Case of Remita

One major recurring problem in Nigerian Banks is the overcrowding of banking halls, that had led to the movement of customers from one bank to the other, where they can obtain banking services without much delay, [2]. 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, [9]. 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. The developers of Remita observed these procedures 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 development company and other key members of the team brainstormed and brought multidisciplinary skills into conceptualizing Remita.

Remita is institutionalized in Nigeria having been endorsed by the Central Bank of Nigeria (CBN)[1] as the major 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 Institutionalised service. Using the socio-technical trust model (Fig. 2.), we examined Remita's platform for trust-enabling interactions.
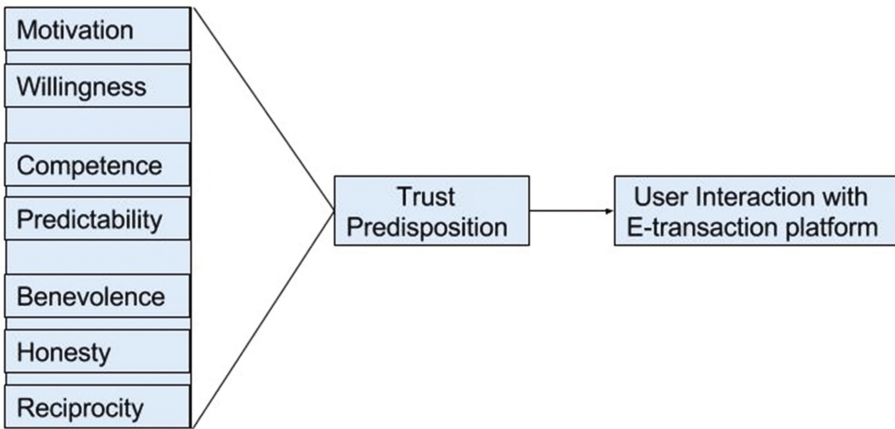

Fig. 2. Conceptual model of the study

Based on the theoretical and conceptual model proposed above, the following hypotheses 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

H_0:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

$H2_0$:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

$H3_0$:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

---

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

H4$_0$:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

H5$_0$:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

H6$_0$:   Users are not predisposed to use an e-transaction platform, as trust is not 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.

H7$_0$:   Users are not predisposed to use an e-transaction platform, as trust is not significantly enhanced by perceived reciprocity in the system.

4   Methodology

This is an exploratory research using a case study of an e-payment service in Nigeria. We employed the socio-technical model of trust [26] to examine trust indicators on a third party indigenous electronic payment platform called 'Remita'. We partnered with the company that developed Remita in order to reach out to the actual users. The use of a survey method was adopted and online questionnaires were distributed to 500 current users of Remita using the LimeSurvey open source toll. A total of 106 responses were received and these respondents were from different states in Nigeria. Thus, the response rate was 21.2%.

We adopted the Analysis of Variance (ANOVA) statistical correlation coefficient method to analyze the relationship between the dependent and independent variables (trust indicators) where the core coefficient significant value P $\leq$ 0.01.

This study is intended to determine on the one hand, why existing users are using the e-payment system? If it is because they trust such e-payment system hosted by a third party company outside well known financial institutions (banks), then we explore further with what trust components they see, use or feel. On the other hand, the trust enabling factors can be enhanced to attract others who are not users. Then we further investigate how to incorporate trust features into the e-payment platform to strengthen user trust.

5   Data Analysis, Findings and Discussions

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. Secondly, based on well-established social psychological theories, we empirically contributed to refining

the socio technical trust model proposed by [26]. The data from this study has helped in evaluating certain aspects of the model.

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.

Table 1. Model Summary

Model	R	R square	Adjusted R square	Std. error of the estimate
1	.967[a]	.935	.931	.25369

Model Summary, Table 1, 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.

Table 2. Anova table (Dependent Variable: TRUST)

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

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

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 (Table 2).

The coefficient analysis in Table 3 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:

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

Table 3. Coefficients of the latent variables (Dependent Variable: TRUST)

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

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 $\geq$ 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 $\geq$ 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 $\geq$ 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 $\geq$ 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.

5.1 Design Reflections

Using the socio-technical trust model (Fig. 1.) as a design critique, we examined Remita platform for 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.
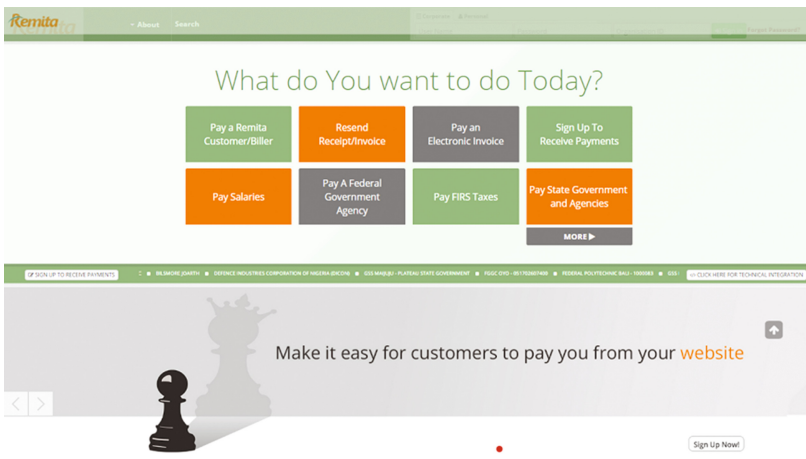

Fig. 3. A screenshot of the welcome homepage of Remita (Color figure online)

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.

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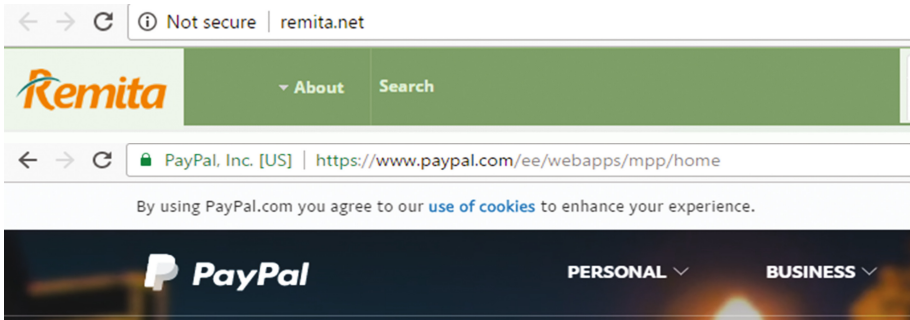
Fig. 4. Comparing Remita's address bar secure connection to PayPal's

Fig. 5. The pre signup page of Remita

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.

We believe 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.

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.

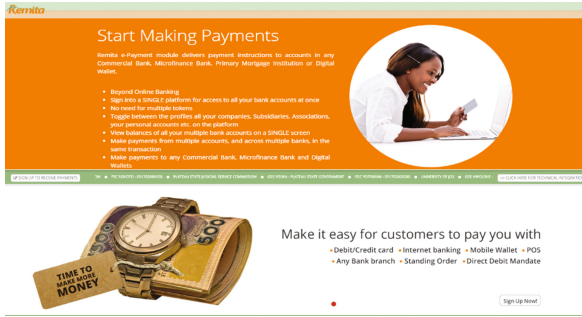**Fig. 6.** The pre signup page of PayPal

Fig. 7. A screenshot of other parts of the Remita 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.

Fig. 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. 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 h 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).

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.

We therefore, propose a redesign of the Remita platform to incorporate the missing visual clues and characteristics highlighted, which we propose might enhance user trust in the system. We also suggest 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.

5.2 Limitations

Our 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.

5.3 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.

6   Conclusions

In the current study, we employed the socio-technical model of trust [26] 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.

Our 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 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.

References

1. Akintola, K.G., Akinyede, R.O., Agbonifo, C.O.: Appraising Nigeria readiness for e-commerce towards achieving vision 20:20. Int. J. Res. Rev. Appl. Sci. **9**(2), 330–340 (2011)
2. Augustine, N.A.: Queuing model as a technique of queue solution in Nigeria banking industry. Developing Countries Study **3**(8) (2013). ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
3. Chellappa, R.K., Pavlou, P.A.: Perceived information security, financial liability and consumer trust in electronic commerce transactions. Logistics Inf. Manag. **15**(5/6), 358–368 (2002)
4. Compeau, D.R., Higgins, C.A.: Computer self-efficacy: development of a measure and initial test. MIS Q. **19**(2), 189–211 (1995)
5. Cyr, D.: Website design, trust and culture: an eight country investigation. Electron. Commer. Res. Appl. **12**(6), 373–385 (2013)
6. Fred, S., Jessica, V., Nicole, B., Rebecca, G., Cliff, L.: Privacy in interaction: exploring disclosure and social capital in facebook. Association for the Advancement of Artificial Intelligence (2012). (www.aaai.org)
7. Grabner-Kräuter, S., Kaluscha, E.A.: Engendering consumer trust in e-commerce: conceptual clarification and empirical findings. In: Petrovic, O., et al. (eds.) Trust in the Network Economy, pp. 55–69. Springer, Wien New York (2003)
8. Lacohée, H., Cofta, P., Phippen, A., Furnell, S.: Understanding Public Perceptions: Trust and Engagement in ICT Mediated Services. International Engineering Consortium, Chicago (2008)
9. John, A.O., Rotimi, O.: Analysis of electronic banking and customer satisfaction in Nigeria. Eur. J. Bus. Soc. Sci. **3**(3), 14–27 (2014). http://www.ejbss.com/recent.aspx. ISSN: 2235-767X
10. Jøsang, A., Marsh, S., Pope, S.: Exploring different types of trust propagation. In: Stølen, K., Winsborough, William H., Martinelli, F., Massacci, F. (eds.) iTrust 2006. LNCS, vol. 3986, pp. 179–192. Springer, Heidelberg (2006). doi:10.1007/11755593_14
11. Kim, C., Mirusmonov, M., Lee, I.: An empirical examination of factors influencing the intention to use mobile payment. Comput. Hum. Behav. **26**(3), 310–322 (2010)
12. Lawrence, J., Tar, U.: Barriers to e-commerce in developing countries. Inf. Soc. Justice **3**(1), 23–35 (2010)
13. Mouratidis, H., Cofta, P.: Practitioner's challenges in designing trust into online systems. J. Theor. Appl. Electron. Comm. Res. **5**(3), 65–77 (2010). doi:10.4067/S0718-18762010000300007
14. Mukherjee, A., Nath, P.: Role of electronic trust in online retailing a re-examination of the commitment-trust theory. Eur. J. Mark. **41**(9/10), 1173–1202 (2007)
15. Nilashi, M., Ibrahim, O., Mirabi, V.R., Ebrahimi, L., Zare, M.: The role of security design and content factors on customer trust in mobile commerce. J. Retail. Consum. Serv. **26**, 57–69 (2015)
16. Ogunyemi, A., Lamas, D., Adagunodo, E.R., Rosa, I.B.: HCI practices in the Nigerian software industry. In: Abascal, J., Barbosa, S., Fetter, M., Gross, T., Palanque, P., Winckler, M. (eds.) INTERACT 2015. LNCS, vol. 9297, pp. 479–488. Springer, Cham (2015). doi:10.1007/978-3-319-22668-2_37
17. Okoro, E.G., Kigho, K.E.: The problems and prospects of e-transaction: the Nigerian perspective. J. Res. Int. Bus. Manag. **3**(1), 10–16 (2013)

18. Oreku, G., Mtenzi, F., Ali, A.: A viewpoint of Tanzania e-commerce and implementation barriers: ComSIS. Comput. Sci. Inf. Syst. **10**(1), 263–281 (2013). doi:10.2298/CSIS110725002O
19. Oseni, K., Dingley, K.: Challenges of e-service adoption and implementation in Nigeria: lessons from Asia. World Acad. Sci. Eng. Technol. Int. Sci. Index Inf. Eng. **2**(9), 135 (2014)
20. Pei, Y., Wang, S., Fan, J., Zhang, M.: An empirical study on the impact of perceived benefit, risk and trust on e-payment adoption: comparing quick pay and union pay in China. In: 7th International Conference on Intelligent Human-Machine Systems and Cybernetics (2015). doi:10.1109/IHMSC.2015.148
21. Naimat, P.F.: The effect of trust in adoption of internet banking: a case study of Nigeria. Int. J. Econ Bus. Manag. **1**(2), 19–24 (2013)
22. Popoola Naimat, F., Arshad, B.R.: Strategic approach to build customers trust in adoption of internet banking in Nigeria. J. Internet Bank. Comm. **20**(1) (2015). http://www.arraydev.com/commerce/jibc/JIBC
23. Sabi, H.M., Mlay, S.V., Tsuma, C.K., Bang, H.N.: Conceptualizing user preference and trust in western designed banking software systems in developing countries. J. Internet Bank. Comm. **20**, 126 (2015)
24. Schunk, D.H.: Self-efficacy and academic motivation. Educ. Psychol. **26**(3&4), 207–231 (1991). Copyright @ !1991, Lawrence Erlbaum Associates, Inc.
25. Seckler, M., Heinz, S., Forde, S., Tuch, A., Opwis, K.: Trust and distrust on the web: user experiences and u characteristics. Comput. Hum. Behav. **45**, 39–50 (2015)
26. Sousa, S., Dias, P., Lamas, D.: A model for human-computer trust: a key contribution for leveraging trustful interactions. In: 2014 9th Iberian Conference on Information Systems and Technologies (CISTI), pp. 1–6. IEEE (2014)
27. Tsiakis, T., Sthephanides, G.: The concept of security and trust in electronic payments. Comput. Secur. **24**(1), 10–15 (2005)
28. Turel, O., Gefen, D.: The dual role of trust in system use. J. Comput. Inf. Syst. **54**(1), 2–10 (2013)
29. Yousafzai, S., Pallister, J.G., Foxall, G.R.: Multidimensional role of trust in internet banking adoption. Serv. Indus. J. **29**(5), 591–605 (2009)
30. Zheng, J., Veinott, E., Bos, N., Olson, J.S., Olson, G.M.: Trust without touch: jumpstarting long-distance trust with initial social activities. In: Proceedings of the SIGCHI Conference on Human Factors in Computing Systems, pp. 141–146. ACM (2002)