Esensi: Jurnal Bisnis dan Manajemen
Volume 9 (2), 2019

P-ISSN: 2087-2038; E-ISSN:2461-1182
Halaman 143 - 154

The Effect of Electronic Payment Systems on Financial Performance of Microfinance Banks in Niger State

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Abstract

This study employs the cross sectional survey research design and the descriptive and ordinary least square regressions to examine the impact of Electronic-Payment Systems on the financial performance of Microfinance Banks and Institutions in Niger state, Nigeria. The results of the analysis indicate the presence of e-payment systems in the bank, which enjoys impressive acceptability, due to its ease of use and convenience. In addition, ATM facility, Internet payment options, e-payment cards, and mobile banking platforms shows a significant positive impact on the financial performance of COE-Minna microfinance bank. In essence, the improvement and review of e-payment platforms' security, so as to attract more users, coupled with the reduction of charges associated with the use of the platforms as well as sensitization of potential users were recommended.

Keywords: *e-payment systems, financial performance, microfinance banks*

Abstrak

Studi ini menggunakan desain penelitian survei cross sectional dan regresi deskriptif, serta regresi OLS untuk menguji dampak Sistem Pembayaran Elektronik terhadap kinerja keuangan Bank dan Lembaga Keuangan Mikro di negara bagian Niger, Nigeria. Hasil analisis menunjukkan adanya sistem pembayaran elektronik di bank, yang menikmati penerimaan yang mengesankan, karena kemudahan penggunaan dan kemudahannya. Selain itu, fasilitas ATM, opsi pembayaran Internet, kartu pembayaran elektronik, dan platform mobile banking menunjukkan dampak positif yang signifikan terhadap kinerja keuangan bank mikro COE-Minna. Intinya, perbaikan dan peninjauan keamanan platform pembayaran elektronik, sehingga menarik lebih banyak pengguna, ditambah dengan pengurangan biaya yang terkait dengan penggunaan platform serta sensitivitas pengguna potensial direkomendasikan.

Kata kunci: *sistem pembayaran elektronik, kinerja keuangan, bank keuangan mikro*

First draft: July 20, 2019; Revision: September 5, 2019; Accepted: September 30, 2019
http://journal.uinjkt.ac.id/index.php/esensi
DOI: https://doi.org/10.15408/ess.v9i2.12273

INTRODUCTION

The emergence of Information and Communication Technology (ICT) had completely changed the lives and modus operandi of individuals and organizations respectively (Kabir et al., 2015). Its advent together with Digital technologies has made great evolutionary development in finance, economics, operational costs and enhanced organizational performance (Slozko & Pello, 2015, cited in Kabir et al., 2015). This development coupled with global proliferation of the internet and its rapid usage over the years is responsible for the dynamic change in business transactions in the business world, from the traditional cash-based transactions to electronic-based payments (Mohamad et al., 2009, cited in Kabir, Saidin & Ahmim, 2015), and the facilitation of electronic commerce in global business environment (Fernandes, 2013, cited in Kabir et al., 2015).

In business and financial transactions generally, the introduction of Electronic-based payment system (EPS)—exchange of an electronic worth of payment from the buyer to the seller by means of an online payment channel that permits clients to remotely access and deal with their financial accounts and exchanges over an electronic system (Teoh et al., 2013)—has shifted financial operations from the traditional relatively stable environment to an electronic-based operation, without visiting a brick-and-mortar institution (Asiimwe, 2015), which guarantees faster transactions, due to reduction of queues at points of sales; improve hygiene (eliminating the bacterial spread through handling notes and coins); increased sales; ease in cash collection (elimination of time spent on collecting, counting and sorting cash); and managing of staff entitlements (Ugwueze & Nwezeaku, 2016). The benefits of the adoption of electronic based payment systems also includes the facilitation of secured and faster access to capital resources (Khan et al., 2017), faster pay-outs, better tracking, transparent transactions, reduced time use, cost and time savings, increased number of clients, more service for customers, greater efficiency, enhancement of bank's reputation (Yang et al., 2018), larger customer coverage, international products and services, promotion and branding, increase in customer satisfaction and personalized relationship with customers, and easier documentation and transaction tracking (Ugwueze & Nwezeaku, 2016), increased trust between sellers and buyers (Fatonah et al., 2018), ease-up of difficulties and securities associated with the conventional cash-based and cheque payment systems, and the added advantage of pliability in usage which placed the electronic-based payment system options on a celebrated stride than the paper-based payment options (Khan et al., 2017), thus decreasing the relative importance of using cash as the only means of exchange.

In the banking sector, the adoption of Electronic-based payment system is associated with improvement in the efficiency of banks in provision of financial services (Yang et al., 2018), in term of increased customer satisfaction and personalized relationship with customers, easier documentation and transaction tracking, reduced transfer/processing fees, increase of processing transaction time, offering of multiple payment options and giving of immediate notification on all transactions on the part of customers (Ugwueze & Nwezeaku, 2016), convenience, speed of transfer (Oyetayo & Fatokun, 2015), reduced risk, and cost control on the part of the banking public. Furthermore, aside from relieving the means of making monetary exchanges (Khan, et al., 2017) and processing transactions (Junadi, 2015, cited in Fatona et al., 2018), it has been asserted that the greater usage of instruments and

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DOI: https://doi.org/10.15408/ess.v9i2.12273

facilities of Electronic Payment Systems (EPS) such as credit cards, card fees, debit cards, e-money, online credit card payment, electronic-cash (E-cash), electronic-checks (E-checks), small payments, electronic-wallet (E-wallet), value systems online stored, digitally collecting balance systems, wireless payment systems, digital check payment systems, Automated Teller Machine (ATM), Point-of-Sale (POS) terminal, among others (Hsiao-Cheng et al., 2002; Fatonah et al., 2018), has the tendency of enhancing financial performance—the measure of achievement on the goals, policies and operations stipulated in monetary terms (King'ori et al., 2017)—of banks and financial institutions, especially in countries with more developed retail payment services like ATMs, and POS terminals, among others (Titko et al., 2016).

However, though it has been empirically proven that the adoption of electronic-based payment system in the delivery of financial services has a significant positive effect on the financial performance of conventional banks and financial institutions (see Asiimwe, 2015; Barasa et al., 2017; Kombe & Wafula, 2015; Yang, et al., 2018; Mateka et al., 2016; Siddik et al., 2016; Mawutor, 2014; Yasin, 2018; Njoroge & Mugambi, 2018; David & Kaulihowa, 2018; Abaenewe et al., 2013; Ugwueze & Nwezeaku, 2016; Chimaobi, 2018), due to its obvious cheapness, in comparison to physical branches delivery, which most often results in the reduction of operational cost, in form of reduced and better utilized workforce, equipment, space and operational savings (Yang, et al., 2018).

However, it is vague if the adoption of electronic payment systems also influences the financial performance of Microfinance Banks (MFBs) and Institutions—specialized institutions that provide and make financial services available such as savings, micro-credit, among others accessible to the poor and low income groups or individual, who are conventionally not served by the standard formal financial sector, both in the rural and urban areas (Ahmed, 2014), even in the absence of securities, thereby making even the poorest in the economy financially included (Sakanko et al., 2019)—due to the inherent characteristics of its customers, and the growth of the institution, which does not favour the implementation and usage of electronic-based payment systems whom are very critical in the economy, due to

For instance, in Nigeria, like most developing economics which Microfinance Banks are prevalent, the groups of people that mostly patronizes Microfinance Banks (MFBs) include, artisans, traders, farmers, Small and Medium Scale Enterprises (SMEs), and more generally low-income earners and poor individuals, whom are mostly uneducated or semi-educated, unlike in the standard banks and financial institutions. Hence, the introduction and adoption of electronic-payment systems in MFBs might discourage most potential customers from accessing the financial services of the financial institution, due to the lack of trust in the technology, complexity of the technology, as well as the perceived risk in using electronic-based payment technologies in comparison to the traditional cash-based payment system, which ultimately tends to affect the financial performance of the MFBs in form of Return On Asset (ROA), Net Interest Margin (NIM), Return On Equity (ROE), Profit After Tax (PAT), among other financial indicators.

While customer's ability to subscribe to the electronic-based payment services depend on several factors such as user-friendly interface, level of Internet experience, types of services provided, attitude and perception, access and delivery time (Asiimwe, 2015), however, aside from issues of perceived level of illiteracy and poverty, which is inherent among most

MFBs' customers, which tends to barricade the use of e-payment gateways and facilities, issues such risk exposure (security); fraudulent practices (Abaenewe et al., 2013); lack of anonymity (transaction details are stored on payment database/absence of privacy); necessity of internet access; restrictions (daily maximum transaction restrictions); the risk of being hacked (Oyetayo & Fatokun, 2015); special charges which the use of e-payment systems such as POS terminals and ATM, among others, attracts, which are usually higher than those associated with traditional payment systems (Ugwueze, & Nwezeaku, 2016); coupled with the difficulties associated with accessing and acquiring e-payment and internet facilities; poor telecommunication network; poor electronic payments and inter-bank connectivity; absence of effective legal system (Ajisegiri & Oyebisi, 2014); and epileptic power supply, among others, which abound in e-payment systems, specifically in developing countries, tend to generally discourage the use of e-payment system in favour of the traditional payment system.

Empirically, though research has addressed the potential impact of the internet on different industries including the banking industry (Asiimwe, 2015), however, research on the effect of electronic-based payment systems on financial performance in the banking sector has been largely targeted on the conventional commercial banks (see Barasa et al., 2017; Kombe & Wafula, 2015; Matekaet al., 2016; Ogare, 2013; Njoroge & Mugambi, 2018; David & Kaulihowa, 2018; Mawutor, 2014; Yasin, 2018; Yang et al., 2018; Siddik et al., 2016; Bantegeye, 2017; Abaenewe et al., 2013; Ugwueze & Nwezeaku, 2016; Chimaobi, 2018; Oyewole et al., 2013; Harelimana, 2018), while neglecting its (electronic payment systems) impact on the financial performance of Microfinance banks (MFBs).

Notwithstanding, very few studies also examined the effect of electronic-based payment systems on the financial performance of Microfinance Banks (and Institutions). For instance, Harelimana, (2017a) examines the impact of ICT utilization on the financial performance of microfinance institutions in Rwanda, with the case study of Réseau Interdiocesain de microfinance (RIM) Ltd, within the period of 5 years (2011-2015). Employing descriptive survey using both qualitative and quantitative methods for a total sample size of 132, collected using purposive and simple random sampling, results indicate that ICT has a significant impact on financial sustainability and profitability, financial efficiency and productivity, and portfolio quality. In addition, correlation result shows that ICT usage has a significant positive impact on financial sustainability and profitability, although the strength of the impact is low, due to the low level of investments in ICT among microfinance institutions. Similarly, Harelimana (2017b) investigates the impact of mobile banking in financial performance of Unguka Microfinance Bank Ltd, within the period of 2012-2016. Results revealed that mobile banking products offered by Unguka Bank Ltd (Fund Transfer between Accounts, Bill Payment, order for cheque books and bank statements, and mobile money) has a significant positive effect on the financial performance (revenue) of Unguka Ltd in the last three years. In contrast, Atavachi (2013) adopt a descriptive survey design to assess the effect of electronic banking on financial performance of nine registered deposit taking micro-finance institutions in Kenya as at June 2013. The results indicate the existence of a negative relationship between electronic banking and financial performance of deposit taking microfinance institutions in Kenya.

Unequivocally, there is an obvious absence of study on the impact of electronic payment

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DOI: https://doi.org/10.15408/ess.v9i2.12273

systems on the financial performance of microfinance banks (and institutions) in Nigeria. However, this study will add to existing studies on electronic-based payment systems and financial performance, by explicitly examining the effect of the adoption and implementation of electronic-payment systems on the financial performance of microfinance banks (and institutions) in Niger state, Nigeria, with respect to the ROA, ROE, NIM, PAT, among other financial performance indicators.

METHOD

For the purpose of this study, the survey research design is adopted, specifically, the cross sectional survey research design. The method enables the collection of data at one point in time. The choice of the design is due to the inability to access the annual financial statement of the study area (COE-Minna Microfinance Bank Ltd. Niger state), coupled with the short period of time in which electronic-based payment system was adopted in the bank. Due to the location of the researcher, time and budgetary limitations, the target population for this study includes all employees/staffs of COE-Minna Microfinance Bank Ltd Niger State, irrespective of cadre. The rationale behind this is to capture all the staffs of the bank, due to the tendencies of being aware of the financial performance of the bank at the adoption of different payment systems. However, considering the size of the population (23), all the staffs which are drawn from the operations, marketing, credit and audit departments will serve as the sample size.

To effectively examine the individual characteristics and responses of the respondents (staffs of the bank), the descriptive statistics will be employed. In addition, to empirically examine the nature and impact of electronic payment systems' adoption on financial performance of Microfinance bank, the Ordinary Least Square (OLS) technique will be employed. The econometrics model to be estimated is expressed as;

$$FinPer_i = a_0 + b_1 EPayS_i + \mu_i \quad (1)$$

Where; *FinPer* denotes Financial Performance; *EPayS* is the Vector of Electronic Payment Systems employed in the MFB. Equally, μ_i is the error term; i is number of observation; a_0 denotes intercept of the equation; and b_1 is the slope coefficient of the explanatory variable(s).

To measure financial performance, in term of ROI, ROA, NIM a PAT, weighted average of the financial performance (based on staffs' response) of the bank during the period under review will be employed. The response of the respondents based on the financial performance of the bank takes the value 3 if growing; 2 if static; 1 if declining; and 0 if unknown, and ranked 4, 3, 2, and 1 respectively. Though subjective, it is assumed that with the nature of the size of the bank, the staffs will not be unaware of the financial status of the bank. Equally, electronic payment system was measured with the use of close-ended question taking the value 1 if an indicated e-payment system is in place and 0 if otherwise.

RESULTS AND DISCUSSION

This study observed 20 respondents, which are staffs of COE-Minna Microfinance Bank. From the result of the descriptive statistics of the characteristics of COE-Minna Microfinance Bank presented in Table 1, based on the response of the staffs, it is shown that the microfinance

bank offers several financial services, ranging from deposit taking, to provision of soft loans, and withdrawals of deposits, to broad range of individuals, which includes Small and Medium Scale Enterprise (SMEs) owners, farmers, women, corporate bodies, civil servants, students of College of Education (COE), Minna, Niger state, as well as the general public. Equally, while there is a uniform agreement on the use of electronic payment systems in COE-Minna microfinance bank in the delivery of financial services, there exist diverse opinion on the actual period in which e-payment system was adopted, likely due to the difference in the years of joining the bank, as well as the difference in respondents' view of what actually constitutes e-payment systems. Notwithstanding, based on the majority view, the period of e-payment systems adoption can simply be put between 2 – 3 years.

Table 1. Characteristics of COE-Minna Microfinance Bank

Variables	Observation (=20)	Percentage
Financial Services Offered		
Can't Say	1	5
Loan only	2	10
Deposit taking, loan, withdrawal, etc.	17	85
Group of People Covered		
Can't Say	3	15
General Public	5	25
SMEs, farmers and Women	9	45
Corporate Bodies, Civil Servant & Student	3	15
Use E-Payment Systems in providing Financial Services?		
Yes	20	100
No	0	0
Duration of E-payment Adoption		
Less than a year	4	20
1 years	2	10
2 years	6	30
3 years	5	25
4 years	2	10
5 years and above	1	5

Source: Data Processing

Furthermore, from the descriptive statistics of the characteristics of E-Payment System in COE-Minna Microfinance Bank presented in Table 2, it was discovered that ATM facility, Credit/debit/ATM cards, mobile banking, and internet payment option of electronic payment systems (such as E-transfer, Quickteller, and Remita payment services) were indicated as the electronic payment systems in use in the bank, although internet payment services of Quickteller, Remita and E-transfer happens to be the most preferred e-payment platforms, which is closely followed by ATM facility. The preference of internet payment options of e-payment systems is due to its perceived ease and convenience of use, ease of transfer, receive of debit or credit notifications (alerts), easy access to the facility or system, its fastness and reliability, coupled with its use in the payment of school fees (for College of Education (COE) Minna students). Based on issues with usually confront the use of e-payment systems, majority of

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the respondents are of the view that customers of COE-Minna microfinance bank do not often experience issues in the use of E-payment systems provided by the bank. Although the absence of issues in the use of e-payment systems might be likely due to the acceptability of the e-payments systems by customers of the bank, which the respondents rate as impressive, or the series of sensitizations which the bank has undertaken on the use of e-payment systems.

Table 2. Characteristics of Electronic Payment System in the COE-Minna MF Bank

Variables	**Observation** (= 20)	**Percentage**
E-Payment Systems Adopted		
ATM Facility	20	100
Credit/Debit/ATM cards	20	100
Internet payment options (E-transfer, Quickteller, and Remita)	20	100
Mobile Banking	20	100
Most Used E-Payment Platform		
Can't Say	6	30
QuickTeller & Remita	7	35
E-Transfer	6	30
ATM Facility	1	5
Reasons for Choice		
Can't Say	10	50
Easy to transfer & quick alert	2	10
Ease and convenience	4	20
Fast and Reliable	2	10
Payment of Student School Fees	1	5
Easy Access	1	5
Experience Issues in Use?		
No	15	75
Can't Say	2	10
Yes	3	15
Rating of E-Payment Acceptability		
Can't Say	4	20
Impressive	16	80
Sensitisation of Customer's on E-payment option?		
No	2	10
Can't Say	5	25
Yes	13	65
Financial Performance Rating prior to E-payment Adoption		
Can't Say	3	15
Constant	5	25
Good	12	60
Financial Performance Rating after E-payment Adoption		
Can't say	2	10
Indifferent	3	15
Very impressive	15	75
Period with Significant Financial Improvement		
Can't Say	11	55
After e-payment adoption	5	25
Before E-payment adoption	4	20

Source: Data Processing

In addition, with respect to the financial performance of COE-Minna, in term of ROE, ROA, NIM, and PAT, and in-line with the response of the staffs of the bank, it is observed that there exists a significant improvement in the financial performance of the bank after the adoption of e-payment system, in comparison to the period before the adoption of e-payment systems. Although significant number of the staffs are unsure whether there actually exists a significant difference in the bank's financial performance prior and after the adoption of e-payment system, majority of the staffs were certain in the decrease in the bank's operational cost, coupled with additional revenue accrued as a results of special charges in the use of the e-payment systems.

Table 3. Strategies proffered by Respondents for improved E-payment systems usage

S/N	Strategies	Freq.	Percent
1.	Provision of quality E-payment Services	6	10.0
2.	Availability of stable Network	5	8.33
3.	Efficiency and ease of integration	2	3.33
4.	E-payment systems' reliability	4	6.67
5.	Improvement on Security leakages/loopholes	7	11.67
6.	Creation of awareness and sensitization on E-payments systems	5	8.33
7.	Improvement in mobile banking services/applications	5	8.33
8.	Encouragement of customers to transact cashless	4	6.67
9.	Effective customer service delivery	3	5.0
10.	24 hours internet services	4	6.67
11.	Flexibility of e-payment systems (use of USSD)	4	6.67
12.	Reduction of commission/charges on e-payment services	6	10.0
13.	By increasing the transfer limit on mobile banking apps	5	8.33
	TOTAL	60	**100%**

Source: Data Processing

From the strategies proffered by respondents (staffs of COE-Minna microfinance bank) on ways in which e-payment systems can be further improved and enhanced for productivity, and presented in Table 3, majority of the respondents recommends the improvement of e-payment platforms' security, so as to block loopholes in the system for possible frauds; the creation of awareness and sensitization of customers on the use of electronic payment systems, as well as their various benefits; the reliability of electronic payment systems, so as to build the confidence of users on the systems; the provision of more electronic payment facilities, for easy accessibility; the provision of quality e-payment services; the availability of stable network; the efficiency and ease of integration; encouragement of customers to transact cashless; the presence of 24-hours internet services; the flexibility of electronic payment systems; the reduction of charges/ commission on e-payment services; and the increase of transfer/transaction limits on certain electronic payment platforms.

The result of the Ordinary Least Square (OLS) regression technique presented in Table 4 follows the empirical model specified in the previous section, to examine the impact of e-payment system adoption and financial performance of COE-Minna microfinance Bank. As a

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measure of goodness of fit, the value of the R^2, in addition to the f-statistics jointly indicates the correctness of the model. Similarly, the diagnostics results reported in Table 5 shows that the model passes the diagnostic tests including serial correlation (Durbin-Watson stat. and Breusch-Godfrey Serial correlation LM test), normality (Jaque-Bera) and heteroscedasticity (ARCH LM test), indicating the absence of serial/autocorrelation and heteroscedasticity in the model, coupled with the normal distribution of the mean and variance of the error term. In addition, the plot of the Cumulative Sum of Recursive Residuals (CUSUM) and Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) which lies within the 5% significant lines/critical boundaries, therefore confirms the stability of the model.

Table 4. Estimation Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	0.017562	0.123370	0.142351	0.8883
ARM	0.136137	0.066143	2.058222	0.0591
CARD	0.167866	0.077475	2.166712	0.0392
INTPAY	0.289953	0.103690	2.796346	0.0115
MBANK	0.175900	0.076620	2.295751	0.0332
TELBANK	0.061300	0.085195	0.719524	0.4806
R-squared	0.429036	F-statistic		2.855411
Adjusted R-squared	0.278782	Durbin-Watson stat		2.013236

Source: Data Processing

From the estimation result presented in Table 4, it is shown that Automated Teller Machine (ATM) facility have a positive and statistically significant effect on the financial performance of the microfinance bank. This implies that for a percent change in the use of ATM and POS (Point-Of-Sale) facilities, the financial performance of the microfinance bank will increase by 14 percent. Furthermore, the adoption of credit and debit cards and mobile banking have a positive and statistically significant effect on the financial performance of COE-Minna microfinance bank, at 5 percent significance level. This indicates that for a percent increase in the use of credit and debit cards services as well as the services of mobile banking by customers, it tends to increase the financial performance of the microfinance bank by 17 percent and 18 percent, respectively. In addition, the use and adoption of internet payment (Remita, E-Transfer and Quickteller) options of e-payment systems indicates a strong and statistically significant positive relationship with financial performance of COE-Minna microfinance bank. The implication of this is that for a percent increase in the use of the internet payment option of the system, the financial performance of the bank will grow by 29 percent. Although statistically insignificant, telephone banking also shows a potential positive relationship with financial performance of the bank. The insignificance of the telephone banking is not unconnected with absence of the e-payment service in the bank.

Table 5. Post Estimation Diagnostics

Test Statistics	Result
Autocorrelation: Chi-Sqr(1)	0.010385 (0.9188)
Heteroscedasticity: Chi-Sqr(14)	12.79826 (0.5425)
Normality: Jaque-Bera	1.412822 (0.492412)

Source: Data Processing

Interestingly, these finding validates the previous discoveries (see Ugwueze & Nwezeaku, 2016; Barasa, Obura & Anyira, 2017; Kombe & Wafula, 2015; Mateka, Gogo & Omagwa, 2016; Yasin, 2018; Njoroge & Mugambi, 2018; Chimaobi, 2018; Njoroge & Mugambi, 2018; Siddik, et al., 2016; David & Kaulihowa, 2018; Ogare, 2013; Abaenewe, Ogbulu & Ndugbu, 2013; Oyewole, et al., 2013).

CONCLUSION

This study employs the cross sectional survey research design to capture the entire 23 staffs of College of Education (COE) Minna Microfinance Bank as the sample size of the study, and the descriptive (frequency and percentage table) and inferential (OLS estimation technique) statistics to examine the impact of Electronic-Payment Systems on the financial performance of Microfinance Banks and Institutions in Niger state, Nigeria. The results of the analysis indicate the presence of e-payment systems (ATM facility, debit & credit cards, internet banking and mobile banking) in the bank, which enjoys impressive acceptance, due to its ease of use and convenience. In addition, it was discovered that, ATM facility, Internet-based e-payment system, e-payment cards (credit, debit and ATM cards), and mobile banking platforms have a significant positive impact on the financial performance of COE-Minna microfinance bank.

The findings of this study therefore indicate that the adoption of e-payment systems have a significant effect of the financial performance of microfinance bank and institutions in the state. Based on these findings, this study therefore recommends the improvement and review of e-payment platforms' security, so as to attract more users, in addition to the reduction in the charges associated with the use of the platforms as well as sensitization of potential users.

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