Determinants of Behavioral Intention and Usage of Mobile Money Services in Ethiopia

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에티오피아 모바일화폐 서비스의 채택의향과 사용행태 결정요인

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Abstract Mobile Money is a key factor of financial inclusion that can revolutionize the financial service delivery and hence enhance access to finance in emerging economies, especially the East African countries. This study therefore aims to study the determinants of individual's behavioral intention and usage of Mobile Money services in Ethiopia by usiing the UTAUT2 model. The research model was tested by sampling 200 respondents from different areas of Ethiopia. The analysis results found that Government Support, Facilitating Conditions, Performance Expectancy, Trust and Effort Expectancy are the key factors that affect the usage of Mobile Money service, while Lower Transaction Cost factors and Social Influence were not statistically significant. The findings provide useful information that only government's active efforts and support to promote mobile money services, through appropriate policies and regulations rather than lower transaction cost, can facilitate the adoption and dissemination of such services in Ethiopia.

Key Words : Mobile Money Services, UTAUT2, Behavioral Intention, Usage Behavior, Ethiopia

요 약 모바일 화폐는 금융 서비스 제공에 혁명을 일으켜 신흥국, 특히 동 아프리카 국가의 금융에 대한 접근성을 향상시킬 수 있는 금융 포용을 가능하게 하는 핵심 요소이다. 따라서 본 연구는 UTAUT2 모델을 이용하여 에티오피아에서 모바일 화폐 서비스를 채택하려는 개인의 행동 의도 및 실제 사용에 영향을 미치는 주요 결정 요인을 분석하는 것을 목표로 한다. 본 연구 모델과 가설은 에티오피아의 여러 지역에서 200명의 응답자를 추출하여 테스트했다. 데이터 분석 결과는 정부 지원, 성과 기대, 촉진 조건, 모바일 화폐 서비스에 대한 신뢰 및 노력 기대가 에티오피아의 모바일 화폐 서비스 사용에 영향을 미치는 주요 요인으로 도출된 반면, 사회적 영향과 낮은 거래 비용 요소는 통계적으로 유의하지 않은 것으로 나타났다. 본 연구 결과는 모바일 화폐 서비스의 낮은 수수료 책정보다는 적절한 정책과 규정을 통한 모바일 화폐 서비스 활성화를 위한 에티오피아 정부의 적극적 노력과 지원만이 자국의 모바일 화폐 서비스 채택 및 보급을 촉진할 수 있다는 유용한 정보를 제공한다.

주제어 : 모바일화폐서비스, UTAUT, 사용의도, 사용행태, 에티오피아

1. Introduction

Information and Communications Technology (ICT) has long been a important factor to the success of Financial Services sector. The fast technological advances over the decades has created chances for service providers to develop different type of services and to provide end users with a more convenient, secure and efficient way.

Therefore, banks and financial organizations have begun to access other services via new delivery channels like ATM, internet and mobile phones. Expanding access to finance through these digital means can establish more powerful institutions while gaining productivity and investment, reducing poverty, empowering women and reducing corruption[1].

In spite of all of these benefits and efforts to increase digital cash transactions that digital financial services bring, there are still important challenges in rapidly and effectively utilizing ICT to meaningfully improve financial inclusion. Because of many policy and regulatory environmental issues, the potential of Mobile Money has not still been achieved. In developing countries, there are still two billion people who lack a feasible alternative to the cash economy as well as the informal financial services. But, 1.7 billion of them have mobile phones[2].

Mobile financial services trends in developed and emerging economies depend on market needs and the type of technology they use[3]. But, mobile finance services are the newest wave of growth that make cell phone a key to bringing real socio-economic benefits and bridging the digital divide. In addition, Mobile Money services are one of the most promising mobile solutions in developing countries and have become a common platform that changes the economy as a whole through financial inclusion, increased efficiency, reduced transaction costs, and new job opportunities[4].

Despite a high potential to enhance financial inclusion benefits by new services, Ethiopia lags behind the introduction and adoption of mobile money service in the financial sector, compared to registered developments in neighboring African countries such as Kenya and Uganda. Developing Mobile Money services in Ethiopia can promote economic developments through efficient financial services. However, only 22% of all citizens have bank accounts, but most people use mobile phones, so Mobile Money services are the best financial service means for the country's non-banking citizens. Nowadays, a global trend is that each country introduces new changing services such as mobile money and mobile banking. The poor Mobile Money service market in Ethiopia is also expected to grow rapidly if the government implements the Mobile Money service promotion policy considering the mobile communication market and potential users' needs. However, there is few studies on Mobile Money or Banking services in Ethiopia[1]. Therefore, this study aims to investigate the major factors influencing the adoption of Mobile Money services by customers in Ethiopia where there is a large population and a high potential in economic growth in the future. It is also focused on providing some recommendations on how to accelerate financial inclusion using such services.

2. Research Background

2.1 Mobile Money Services

Mobile Money is not well defined in literatures and there is currently no normal definition. But this is a very typical term in digital banking era and the key driver of financial engagement. Mobile Money refers to depositing, withdrawing or sending funds using a mobile phone handset. And it has great potential as a policy tool to promote financial inclusion[5]. This service

provides a practical and cost-effective channel for expanding basic banking services for many who are not currently in banks in urban and remote rural areas. Mobile Money also means a mobile-based trading service that uses mobile networks and allows people to send money electronically using any mobile phone model(basic, feature or smart phone). The Mobile Money issuer may be a third party such as a mobile network operator (MNO) or a bank, depending on local law and business model[5].

Similar to Mobile Money, mobile banking is used only for customers with bank accounts and is defined as using a mobile phone to enter banking services and conduct financial transactions[6]. Mobile banking is explained as the link between a mobile phone and a personal or business bank account, which enables customers to utilize their mobile phone as another channel for banking services[7]. We can access mobile banking services using one or more channels such as short messaging services(SMS), client-based (downloaded applications) and browser-based services using internet connection.

In particular, Mobile Money services focus on unbanked and underprivileged customers to provide financial inclusion to lower tiers where banks are not available or excluded from bank services[5]. Mobile Money is a popular alternative to existing banking services in most. The mobile banking services, which use a mobile phone as another channel for accessing existing banking products, are not included in the Mobile Money service. Like Apple Pay and Google Wallet, payment services linked to existing banking products or credit card are not included in the Mobile Money services[2].

There exist some more differences between Mobile Money and mobile banking[6,7]. The former doesn't require Internet access, but the latter mostly need Internet(but not must). Mobile Money uses unstructured supplementary service data(USSD) code and SMS technology without requiring advanced ICT infrastructure, whereas mobile banking utilizes web based, client based, SMS services or any advanced technology. Mobile Money requires phone number as account number, while mobile banking needs bank account number as primary transaction identity.

Most African countries are using Mobile Money services effectively. In 2015, 19 African countries, including Kenya, Rwanda, Tanzania and Uganda, use more Mobile Money services accounts than bank accounts[8]. The success of this Mobile Money industry extended beyond East Africa to Asia, Latin America, West Africa, the Caribbean, North Africa, and the Middle East.

Most Mobile Money business models, including Kenya's M PESA launched in 2007, are driven by mobile operators in developing countries[8]. This is because Mobile Money in developing countries acts as another infrastructure to traditional financial services. Another reason is that mobile operators can control the mobile platform and has significant distribution capacity using their existing retail agent networks.

2.2 Mobile Money Services in Ethiopia

Ethiopia's financial inclusion rate is 22%, which is the proportion of the population with accounts at official financial institutions, including banks and microfinance[6]. In country with a population of 100 million in 2018 and a wide geographical range, this is very low. Only 14% of the population uses financial institutions for savings, whereas other 29.8% up to 48.1% save in an informal savings club or a person outside the family.

Ethiopia has a vision of becoming a middle class economy by 2025. To achieve these ambitious goals, developing the financial sector as the backbone of all other sectors is the key solution. The Ethiopian government has a target to increase the financial inclusion rate from its

current 22% to 70% in 2020, This is focused on increasing self-sufficiency and resilience within rural areas, and raising savings rate to finance national development as well as public investment program.

Although there are 2,502 bank branches only in Ethiopia, the distribution is still quite low in the rural areas in the country where eighty percent of the populations are living in agriculture. Digital finance platforms are therefore regarded as a strategic tool that offers great potential for broadening access to finance. But, Ethiopia's financial industry is underdeveloped with quite low digital financial means and instruments implemented nationwide[1]. In Ethiopia, the contribution of digital payment services is less than 1%, which is the lowest compared to other African countries.

Meanwhile, mobile phone subscribers in Ethiopia are 58.3% of the total population, pointed out that mobile phone penetration in the country is accelerating, and that undeveloped mobile phones should improve access to domestic finance. Despite its strong growth potential, Ethiopia lags behind Mobile Money adoption compared to East African countries such as Kenya, Tanzania, Uganda and Rwanda.

There are some advantages to adopting Mobile Money services in Ethiopia. First, Mobile Money is a digital financial service and can be quickly implemented without having to invest a lot of expensive additional infrastructure. Second, Mobile Money has also revolutionized financial services in most sub-Saharan African countries by reducing transaction costs, enhancing financial inclusion, and providing easy, economical and secure business practices for consumers and small businesses. Last, only 22% of all citizens in Ethiopia have bank accounts, but most of them use mobile phones, so mobile money services are the best means of financial support for people with no bank accounts. So, the Ethiopian government will be able to create

a new financial industry if the current weak Mobile Money services market grows.

The most common services offered by Mobile Money services consist of agent deposits and withdrawals, money transfers, payments (Buy mobile top-up, and Pay for DSTV(digital satellite TV service)), loan repayments and check balances. The M-Birr Mobile Money service has 158, 280 users as of June 2017 and Hello Cash has 700,000 users. Currently Mobile Money users in Ethiopia are nearly 0.8% of the population. Even though Mobile Money services are at early stages, the take-up rate clearly shows that no effort was made on large unreached market of the country.

Ethiopia is a highly state owned country. The most controlled sectors in particular are the telecommunications and finance sectors. Government policy prohibits foreign banks or companies from investing in the financial business or the telecommunications industry. Ethio-telecom Telecom is a 100% government-owned mobile operator and all financial sectors, including banks and microfinances (private or public), come from domestic investments.

Before 2012, the laws on Mobile Money were not declared. Since then, the Ethiopian National Bank has developed a set of guidelines for regulating mobile and agent banking referred to as "Regulations of Mobile and Agent Banking Services Regulation No.FIS/ 01/2012,"[1,2]. Following these guidelines, Ethiopia attempted to adopt a bank-led Mobile Money model, named "Mobile and Agent Banking".

2.3 UTAUT Model

The UTAUT (Unified Theory of Acceptance and Use of Technology) model is focused on explaining user intentions to adopt an Information System and later usage behavior. UTAUT was developed by consolidating the constructs of eight models including Technology

Acceptance Model(TAM) and so on. UTAUT includes four key factors: Effort Expectancy, Performance Expectancy, Facilitating Conditionse and Social Influenc. These factors are direct constructs of usage intention and behavior[9].

However, it is more important to examine how UTAUT can be applied to other contexts like consumer technologies. In this respect, the extended UTAUT(UTAUT2) was designed to make theoretical and managerial contributions with particular attention to the consumer's usage situation[10]. UTAUT2 incorporates three constructs into UTAUT: price value, hedonic motivation, and habit into the existing four constructs[10].

3. Research Model and Hypothesis

3.1 Research Model

This study is focused on investigating the users' behavioral intention on the usage of Mobile Money services by Ethiopia's citizens. Basically, Mobile Money services are delivered as a product of converging ICT and finance. Understanding individual adoption and use of information system is one of the most developed streams of information technology research[10]. However, the UTAUT2 model was not applied in this study in that the cultural environment greatly differs between Africa and western countries that was first developed in[11,12]. In particular, introducing the new innovative program such as Mobile Money services in Ethiopia requires strong government sponsorship and promotion leadership. The service costs should be low and the transaction process should be transparent and reliable because the vulnerable people who do not have bank accounts are mainstream in Ethiopia. So, this research adopted the extended UTAUT2 model by integrating two factors such as government support and trust on Mobile Money

services in order to represent Ethiopia's specific context(see Fig. 1). The Both hedonic motivation and habit variables in UTAUT2 were replaced by trust on mobile money service and government support to provide a reasonable research model for studying the usage of Mobile Money based on technical characteristics and Ethiopia's national conditions.
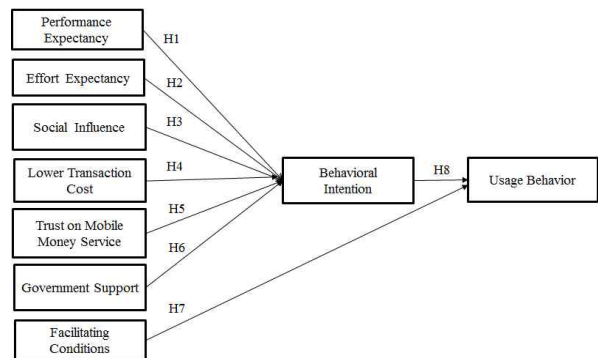

Fig. 1. Integrated Research Model

Another reason of integrating two factors is lack of supportive policy and enabling regulatory circumstances from the government of Ethiopia[6], whereas building trust of customers are the most common challenges of Mobile Money service development[2]. The security, safety and dependability of the mobile transaction process should be rigidly controlled by the characteristics of the financial services. It is therefore thought that Government Support about policy and legal environments, and Trust on the mobile service would be the important determinants of Mobile Money usage in Ethiopia.

The study model in Fig. 2 includes seven independent factors such as Effort Expectancy, Social Influence, Performance Expectancy, Lower Transaction Cost, Government Support, Trust on Mobile Money Service, and Facilitating Conditions. The study model has Behavioral Intension to adopt Mobile Money as an intermediate factor and Usage Behavior as a dependent factor.

3.2 Research Hypothesis

This study has examined Mobile Money services from the point of view of UTAUT2. Customers are assumed to use an information technology only when it suits their tasks at hand and enhances their performance. Mobile Money services are delivered on wireless networks using USSD code and SMS technology[7]. One of the most critical benefits of Mobile Money is that it provides customers with ubiquitous and real-time services[4].

Performance Expectancy is defined as user perception of performance enhancement by using Mobile Money like convenient payment, speedy response, and high service effectiveness. Effort Expectancy defines users' perception of how easy they use Mobile Money. When users feel that Mobile Money is easy to use and take less effort, they will have more choice of Mobile Money as a means of meeting the expected performance. Performance Expectancy and Effort Expectancy were the main factors of behavioral intention in adopting mobile services in Finland[11]. Social Influence means the effect of environmental factors like the opinions of user's important others on usage behavior[10]. Their opinions will influence users' adoption and usage of Mobile Money.

There are three new constructors integrated to UTAUT 2. Among them, Lower Transaction Cost refers to customers' awareness of the cost or expense spent on Mobile Money services as fair and reasonable value price or charges, and cheaper price than other banking channels[13]. In similar, some studies[14,15] empirically proved that mobile banking adoption is strongly encouraged by economic factors like favorable transaction service fees.

Trust on Mobile Money Services means a measure of consumer's degree of assurance that the service can be provided with the least amount of possible hindrance[16]. Trust has been proven to be a key factor influencing consumer behavioral intent for mobile financial services adoption[17,18].

An empirical case study in five sub-Saharan African countries conclude that ICTs in financial service innovations for low-income societies are more effectively implemented when government support and regulation is promoted and used[18,19]. Regulatory environment is associated with an environment that includes government laws, polices and rules that all organizations and citizens must follow.

So, Government Support represents government initiatives and interventions, providing support policies and enabling a regulatory environment for Mobile Money service adoption. Therefore, we hypothesize:

H1: Performance Expectancy positively affects individual Behavioral Intension for using Mobile Money.
H2: Effort Expectancy positively affects individual Behavioral Intension for using Mobile Money.
H3: Social Influence positively affects individual Behavioral Intension for using Mobile Money.
H4: Lower Transaction Cost positively affects individual Behavioral Intension for using Mobile Money.
H5: Trust on Mobile Money Service positively affects individual Behavioral Intension for using Mobile Money.
H6: Government Support positively affects individual Behavioral Intension for using Mobile Money.

Facilitating Conditions refer to the level to which an individual believes that an organization and technology infrastructure exists to support the use of the Mobile Money services, including the validity of resources required for the use of the service, technical support and compatibility of the service with other banking channels[8]. A

study in Tanzania shows that poor agent network and user support are key factors influencing the adoption of Mobile Money[20].

Behavioral Intention to use is explained as a measure of the possibility that an individual will adopt the technology. For UTAUT, Customer's Usage Behavior is a dependent factor measured by both behavioral intention and facilitating conditions, while customers' behavioral intention is influenced by Effort Expectancy, Performance Expectancy, and Social Influence[9,10]. The powerful correlation exists between behavioral intention to use Mobile Money and actual usage[29]. So, we assume:

H7: Facilitating Conditions positively affect individual Behavior to use Mobile Money.

H8: Behavioral Intention positively affect individual Behavior to use Mobile Money.

4. Empirical Results

Our study model includes nine constructs and each of them is assessed in multiple items. The survey questionnaires were based on the proposed research framework, using seven Likert points scale. Such items have been selected from the existing literature related to mobile money, mobile banking, electronic banking and commerce and mobile payment in order to support content validity. The questionnaire was written in English and then translated into Ethiopian. We have selected 200 completed responses by removing uncompleted ones. The data were then analyzed using statistical software such as SPSS 18.0 and AMOS 18.0.

4.1 Sample profile

The analysis of total respondents shows more mail than female in the sample(female 20%, mail 80%,). With education level, 16.3% of total numbers were from high school and lower, 16.5 % from TVET graduate, 47.7 % from bachelor degree and 19.5% from the master and higher. On the other hand, the distribution of respondents' age is as follows; 2% for the age 20 and less, 59.5% for 21-30, 34% for 31-40 and 4.5% for 41 and more. The income distribution per month is 3.5 %(no income), 18%(less than 3000 birr), 29%(3000 to 6000 birr), 31%(6000 to 9000 birr and 18.5% (more than 9000 birr). Respondents are from 79.5%(Addis Ababa and around) and 20.5%(other cities).

4.2 Reliability and validity test

Exploratory factor analysis (EFA) is a method to measure the correlation between the variables. EFA enables to find common variables that best constitute data and to decrease the number of variables. Maximum likelihood method was selected for exploratory factor analysis, while Varimax rotation method was used as the rotation method. Factor Loading revealed a minimum of 0.67 and a maximum of 0.93, which means that the validity was proved. The Cronbach's alpha test was undertaken to test internal consistency. All of them showed internal consistency of 0.76 or more(see Table 1).

Amos 18 was applied for confirmatory factor analysis to test both validity and reliability of potential variables. Only two items in Social Influence factor were deleted from the analysis. Construct reliability value was over 0.76, whereas Average Variance Extracted value was greater than 0.52. So. convergent validity was approved. Discriminant validity test was also performed to identify the gap between different latent variables. The square root of the mean variance extracted value was greater than the correlation coefficient between the variables, showing the discrimination validity.

Table 1. Reliability and Discriminant Validity test

Var	α	CR	AVE	1	2	3	4	5	6	7	8	9
PE	.76	.76	.52	0.72								
EE	.84	.86	.67	0.382	0.827							
SI	.77	.78	.64	0.201	0.251	0.795						
TC	.86	.87	.68	0.392	0.084	0.563	0.823					
TR	.92	.92	.73	0.278	0.199	0.478	0.584	0.850				
FC	.85	.86	.62	0.301	0.237	0.508	0.535	0.499	0.819			
GS	.79	.79	.66	01287	0.046	0.526	0.511	0.416	0.700	0.783		
BI	.90	.90	.75	0.395	0.317	0.205	0.229	0.318	0.394	0.368	0.866	
UB	.86	.86	.76	0.362	0.22	0.286	0.326	0.441	0.523	0.392	0.779	0.879

Note) The diagonal value refers to Square Root of AVE.

4.3 Structural model fit test

The model fit of structural equation was evaluated to determine the ability of a model to reproduce the data before hypothesis testing. There are three fitness indexes used for model fit. In absolute fit index, the calculations of x^2(CMIN)p, GFI (Goodness of Fit Index), RMSEA (Root Mean Square Error of Approximation), AGFI (Adjusted Goodness of Fit Index), and PGFI were calculated as 611.284(0.000), 0.918, 0.070, 0.964, and 0.630 respectively. In incremental fit index, NFI (Normed Fix Index), NNFI, and CFI (Comparative Fit Index) were calculated as 0.931, 0.975, and 0.896 respectively. For parsimony fit index, both PNFI and PCFI were calculated as 0.690 and 0.744 respectively. The analysis proves that the model fit index satisfies all acceptance criteria(see Table 2).

Table 2. Structural Model fit test

Fit indices	Indicator	Desirable range
χ^2(CMIN)p	611.284 (P=0.000)	p≦0.05~0.10
χ^2(CMIN)/df(Q)	2.264	1.0≦CMIN/df≦3.0
RMSEA	0.070	≦0.08
GFI	0.918	≧0.8~0.9
AGFI	0.964	≧0.8~0.9
PGFI	0.630	≧0.5~0.6
NFI	0.931	≧0.8~0.9
NNFI(TLI)	0.975	≧0.8~0.9
CFI	0.896	≧0.8~0.9
PNFI	0.690	≧0.6
PCFI	0.744	≧0.5~0.6

4.4 Hypothesis test

The path analysis presents the temporary paths, containing normalized path coefficients and variance explained for each equation in the presumed model. The hypothesis testing determines whether independent variables prominently contribute to the dependent variables[21−23]. The hypothesized relationships within the research model were tested on path analysis using structural modeling. The result reveals that hypotheses H3 and H4 are rejected, while the remainder hypotheses H1, H2, H5, H6, H7 and H8 are accepted. The hypothesis testing results with path coefficients are described in Table 3.

Table 3. The Summary of hypothesis testing

Hypo	Estimate	S.E.	C.R	P	Result
H1	.301	.152	3.051	.0002***	Supported
H2	.185	.073	2.214	.0027**	Supported
H3	−0.094	.069	−0.857	.391	Unsupported
H4	−0.153	.081	−1.312	.190	Unsupported
H5	.198	.054	2.132	0.033*	Supported
H6	.366	.064	3.851	.000***	Supported
H7	.264	.036	3.995	.000***	Supported
H8	.673	.076	8.643	.000***	Supported

Note) *P<0.05, **P<0.01, ***P<0.001 2−tailed

The hypothesis testing results indicate that Performance Expectancy, Effort Expectancy, Trust on Mobile Money Serice, and Government Support affect individual Behavioral Intension to use Mobile Money, whereas Social Influence and Lower Transaction Cost don't influence individual Behavioral Intension to use Mobile Money Services.

Finally, Facilitating Conditions and Behavioral Intension have an effect on Usage Behavior of Mobile Money services in Ethiopia.

5. Research discussions

This study was designed to investigate factors that affect Behavioral Intension to use Mobile Money and Usage Behavior of Mobile Money services in Ethiopia. We used an integrated research model of UTAUT2 by adding two factors such as government support and trust on mobile money service. As a result of hypothesis testing, H1 is supported($\beta = 0.301$, $p < 0.01$). Performance Expectancy has a significantly positive affect on Behavioral Intension to use Mobile Money services in Ethiopia. The finding was identical with existing studies on the usage of mobile financial services[16,23]. This result indicates that the consumer's perception on Performance Expectancy, the benefit and usability of Mobile Money services and the ease of carrying out financial activities, has vital impact by accounting for 30% of the variation in behavioral intention for Mobile Money use and this would result in more potential adopters.

With H2, Effort Expectancy showed significant positive affect on behavioral intention to adopt Mobile Money services in Ethiopia($\beta = 0.185$, $p < 0.05$). The finding was identical with previous studies on adoption of mobile financial services by some studies[16,23,24]. This result indicates that if customers perceive lower effort to using Mobile Money services like easy use, clarity and feasibility of the service, they would have affirmative intention to using Mobile Money, which will result in having more potential adopters.

In H3, Social Influence affect to behavioral intention was not statistically significant(p-value>0.05, $p = 0.391$), therefore this hypothesis was rejected. The research finding reveals that most respondents did not assure the positive effect of Social Influence

on behavioral intention to use Mobile Money service in Ethiopia. This implies that users were not influenced by interpersonal word-of-mouth and peer groups. This was contradictory to previous studies on mobile banking adoption[10,24,25].

For H4, Lower Transaction Cost to behavioral intention was not statistically significant (p-value>0.05, which is $p=0.19$), so this hypothesis was not supported. The result reveals that for most respondents, lowering transaction costs did not have a positive effect on behavioral intentions. This was contradictory to previous studies on mobile commerce and mobile banking[24-26]. Because Mobile Money service is in the infant stage in Ethiopia, the respondent is not able to obviously distinguish the gain or loss of Mobile Money transaction cost compared to other financial services.

For H5, Customer's Trust had significant positive effect on behavioral intention to adopt Mobile Money services in Ethiopia($\beta = 0.198$, $p < 0.05$). The result is identical with previous studies on the usage of mobile finance services[16,26-29]. This results show that citizens tend to use the Mobile Money services if their systems are safe, confidential and reliable from uncertainties like loss of data and misuse of financial information.

With H6, Government Support has significant positive effect on behavioral intention to adopt Mobile Money services in Ethiopia($\beta = 0.366$, $p < 0.001$). The finding was identical with existing studies relevant to Mobile Money services[18,29,30]. The result shows that Government Support has the greatest affect by accounting for 37% of the variation in behavioral intention. For government-led economy of Ethiopia, this result reveals that if there exist supportive policy and activating regulatory environment for Mobile Money service, there will be potential users or adopters of Mobile Money services.

For H7, Facilitating Conditions showed significant positive effect on usage behavior of Mobile Money services in Ethiopia($\beta = 0.264$, $p < $

0.001). The finding was consistent with previous studies related to adoption of mobile banking services[9,10,31]. This result suggests that Facilitating Conditions which comprise resources necessary to adopt Mobile Money like availability of mobile network, Mobile Money agents, technical assistance and compatibility of Mobile Money service with other banking channels should be supplied to motivate citizens to adopt Mobile Money services in their living and working circumstances. The result also reveals that following Performance Expectancy, Government Support and Facilitating Conditions has large impact by accounting for 26% of the usage behavior.

With H8, Behavioral Intension showed significant positive affect on Usage Behavior of Mobile Money services in Ethiopia(β = 0.673, p <0.001), as confirmed by some studies[9,10,32]. The findings reveals that Behavioral Intention has very strong effect on Usage Behavior of Mobile Money, which is greater than 0.6. In this research, Performance Expectancy, Effort Expectancy, Government Support and Trust on Mobile Money Service also have an influence on Behavioral Intention. This result shows that all significant independent factors have great affect on the Usage Behavior, enhancing Mobile Money adoption in Ethiopia.

6. Conclusion and Implications

The key objective of this research is to boost theoretic Mobile Money adoption studies and investigate the factors that influence the usage of Mobile Money. For this, by integrating "government support" and "trust on Mobile Money service" constructs to the existing UTAUT2 model, this research found that Effort Expectancy, Performance Expectancy, Trust on Mobile Money Service, Government Support and Facilitating Conditions strongly affect the usage

of Mobile Money service in Ethiopia. However, Social Influence and Lower Transaction Cost have no significant affect. Based on these findings, both theoretical and practical implications are described below.

In Information System theories, the UTAUT2 model was studied to be more powerful than other competing research models[9,10,24]. However, there are few UTAUT2-based studies compared to huge TAM-based ones. Therefore, the key theoretic contribution of this research is to demonstrate the feasibility and generality of UTAUT2 research model in relation to Mobile Money use in developing countries.

In addition, regarding the phenomenon that the introduction of Mobile Money service in Ethiopia is in its infancy and there are few studies related to mobile financial services, this study will be useful for future literature and its findings will contribute as fundamentals of Mobile Money study in developing countries including Ethiopia.

From the practical viewpoints, this research identified 'government support' or supportive policy and enabling regulatory environments, as key factors that affect Mobile Money usage in Ethiopia. The adoption of new technologies in most developing countries requires special emphasis and participation from the government. Mobile Money adoption is one of new ICT convergence innovations that need the existence of suitable government policies and regulations[28,32]. Consequently, more work needs to be done to develop Mobile Money services in Ethiopia, especially to introduce a regulatory environment for Mobile Money services, consumer privacy and protection laws, national policies that boost digital finance in the country.

In Ethiopia, the telecommunications, financial and ICT sectors are state owned, so the government should use them as a good opportunity to encourage cooperation between the sectors in order to both provide efficient

service delivery and establish a foundation for the country's technology development and adoption. Additionally, by considering the required participation of new players for developing Mobile Money services, the government is also in charge of facilitating Public-Private Partnerships to enhance the usage level of Mobile Money services and then improve financial inclusion in Ethiopia[31,32].

More specifically, the Performance Expectancy analysis recommends using the existing platform to provide a comprehensive and convenient Mobile Money services. This includes facilitating the traditional financial cooperative 'Ekub' using Mobile Money services, providing billing and tax payment service, integrating existing community-based projects like Ethiopia Commodity Exchange (ECX) platform, enriching small-scale farmers who have limited access to financial service, integrating Health Extension Program (HEP), and providing health insurance saving service to the majority.

Facilitating Conditions is a main requirement for the adoption of Mobile Money services. Therefore, service providers should focus on providing basic facilities like nearby Mobile Money agents, mobile networks and technical support to their living and work environments. Besides, all service providers and stakeholders must plan for interoperability of Mobile Money services with other bank channels in order to increase consumer acceptance[8,31].

The Ethiopian government needs to devise a variety of policies and support measures to promote Mobile Money services, such as the case of Kenya's M PESA. For example, the government can guide all service providers and stakeholders to plan and implement various customer care mechanism of Mobile Money services to increase consumer acceptance. On the other hand, in cash based Ethiopia, people can trust digital money through its awareness and experience for use, so service providers must strengthen consumer confidence in the use of Mobile Money though a variety of technologies, such as

awareness creation, promoting 'free-at-first-use' services which is providing a free trial of Mobile Money without registering as user. In addition, service providers must consider the ease of use and simplicity associated with Mobile Money service applications, such as the availability of services in local languages, user-friendly interfaces, and access to user guides for services.

On the other hand, the study presents another implication for donor countries, such as Korea, which provide official development aid(ODA) to developing countries. When conducting ODA projects in the financial sector, Korea should not only build a reliable ICT infrastructure and provide software products for developing countries, but also make more efforts to establish a legal system that strengthens government support in developing countries. This implies that Korea should beforehand communicate with government stakeholders to fully understand their ICT environment, and legal and regulatory systems when doing financial ODA project in developing countries such as Ethiopia.

Finally, this study is just the beginning to study the key factors influencing customers' intention to use Mobile Money and its use. As mobile technology evolves rapidly and the convergence of ICT and finance accelerates, more research on the use of Mobile Money is needed over time. This study should include both quality of service and traceability factors to enable Mobile Money customers to recognize high quality services[12, 25]. Finally, the study was carried out in Ethiopia, where the mobile industry was not fully developed and Mobile Money was an infant stage. The results of this study can be applied in an environment similar to this study.

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