**The Determinants of the Adoption of Mobile Money in Cameroon**

Mbenga Bindop Kunz Modeste[[1]](#footnote-1); Ambombo Bella Généviève La Reine[[2]](#footnote-2); Atangana Ondoa Henri[[3]](#footnote-3)

**Abstract**

This paper analyzes the determinants of the adoption of mobile money services in Cameroon, marked by strong competition between three main operators: Orange, MTN and Express-Union. Unlike much of the literature, which limits it self to a binary approach to usage (user/non-user), this research proposes a detailed analysis of the different possible combinations of usage of the available services. The data used come from the « FinScope Consommateur Cameroun » Survey carried out in 2017 by the National Institute of Statistics (INS) representing 2984 individuals. The study identifies the socioeconomic profiles associated with each mode of use using a series of logistic regressions derived from utility theory and technology adoption models (TAM). We use the approach via multinomial model marked by exhaustive treatment in each mode of adoption and or use. The results reveal that factors such as telephone use, level of education, income, place of residence and gender influence adoption choices differently depending on whether services are used exclusively or in combination. For example, exclusive use of the Express-Union service is more associated with precarious populations, while the combination of Orange and MTN services is more common among educated and urban individuals. One of the main contributions of this study lies in the combinatorial multinomial approach, which overcomes the limitations of conventional analyses by taking into account the competitive structure of the market. The practical implications suggest that financial inclusion strategies need to be differentiated according to user profiles and adapted to the competitive reality of services. In addition, the study highlights the importance of public policies that promote interoperability, tariff transparency and access to information to encourage more equitable adoption of mobile money services.

**Keywords:** mobile money, adoption, use, multinomial model, Cameroon.

***JEL Classification:*** *O31, O33*

1. **Introduction**

The importance of financial services tends to make mobile money an essential tool for the financial integration of unbanked and underbanked populations. Mobile financial services offer convenient access to money transfers, payments, savings, and credit. Also, through mobile money, providers can improve their offerings to better meet the needs of potential users. Thus, poor populations tend to benefit from the satisfaction of their needs through the reduction of transaction costs offered by mobile money services, and the expansion of geographic coverage of these services in neglected areas. Mobile telephony is essential in accessing these benefits. With a penetration rate of approximately 80% in Cameroon (INS, 2016), mobile telephony presents the appropriate profile of an effective lever for combating the exclusion of vulnerable populations from the financial system. Its ability to encourage and convince these populations to adopt mobile money services is not negligible. This is because of its power to act on   
the accessibility of services, on user confidence and the costs of using services. The literature classifies these factors of the decision to adopt a technology as environmental factors. Indeed, the literature identifies three main explanatory factors for the adoption of mobile financial services. Environmental factors include the availability and accessibility of information   
on the operation of services; user confidence in the technology and the costs associated with its use (Geroski, 2000). Socioeconomic factors include the standard of living, level of education, household size, age and ownership of a mobile phone (Avom & al, 2021; Douanla et al., 2022; S. D. Meli & Kamga, 2020). Regarding functional and extra-functional factors, there are convenience, design, perceived risk, perceived usefulness and ease of use (Lai, 2016).

Since the launch of M-Pesa in 2007 by the operator Safaricom, several studies have focused on the determinants of the adoption of mobile money services. The transformations of the market for the supply of mobile money services require the literature to adapt to the multiple changes in this sector, including its competitive dynamics. While in a monopolistic environment in which the offer of a single service requires analyzing the explanatory factors of the use of said service, oligopolistic competitive dynamics direct the analyses not only towards understanding the factors of use of services individually, but also opens up avenues for analyzing the determinants of particular combinations of available services. Cameroon is a fairly striking example in Central Africa of the dynamics of the mobile money sector with a market in which several companies are competing for market share. However, the majority of work on the determinants of the use of mobile money services both in Cameroon and elsewhere   
tends to neglect this field of analysis of the determinants of particular combinations   
of available services. The latter are content to analyze use in its dichotomous form of use or non-use of available services. This is the case of Avom & al. (2021) who carry out a comparative analysis of the adoption and use of the mobile money service in the two main cities of Cameroon and Ndoya & Tsala (2021) who analyze the explanatory factors of financial inclusion differentials by breaking down the differential in the use of mobile money services according to gender.

If it is true that Meli et al., (2024) and Douanla Meli & Kamga (2020) explore   
the scope of comprehensive analysis of the use of several mobile money services by   
studying the profile of adopters (passive, partial and complete)[[4]](#footnote-4) , it is important to emphasize that the approach via the multinomial model that they adopt remains limited. Indeed, the   
multinomial approach advocated by these works aggregates the modes of adoption of the available services without exhaustively studying the isolated cases within each mode. The exhaustive treatment in each mode of adoption and or use, the absence of which marks the entire literature of the determinants of the use of mobile money services in an environment provided by several services, constitutes a first contribution of this study. Also, in a Cameroonian context marked by the presence of more than two providers of mobile money technologies, the choice of Douanla Meli & Kamga (2020) to conduct an analysis exclusively based on the two main operators presents a limitation that we propose to address by increasing a significant operator of the mobile money market in Cameroon. A consequence of this approach is that in addition to increasing the number of modes of use (from three to four)[[5]](#footnote-5), it increases the number of isolated cases of partial modes[[6]](#footnote-6) resulting in a better understanding of the adoption and use behavior of AR services mobile money in an oligopolistic environment. That being said, the objective of this study is to analyze the behavior of using mobile money services in a context marked by the provision of more than two mobile money services.

The remainder of the paper is structured around five sections. The first provides a   
literature review, the second presents the data and methodology used, the third   
presents the main results, the fourth section verifies the robustness and sensitivity   
of the results found in the previous section, and finally, the fifth section concludes.

1. **Literature review**

This section first presents the theories used in the literature to identify the factors that explain the adoption and use of mobile money and secondly the results of certain empirical works that have addressed this question.

* 1. **Theoretical review**

The theoretical foundations of the adoption of innovations are based on a set   
of models that describe the behavior of individuals in the presence of innovation. Among   
these models, we can cite the theory of reasoned action by authors such as Ajzen & Fishbein (1975), which is among the most widely used theories to describe the decision   
to adopt and use an innovation (Williams et al., 2015). This theory is based on three main components, namely: beliefs, attitudes, and intentions of individuals. These authors have prioritized the mode of action of these components on human behavior; beliefs reflecting the possibility for an individual to think that an action may or may not cause a result, combined with attitudes that reflect the thought that the result may be positive or negative, generates the intention. Intentions, in turn, determine the observed behavior. Thus, according to the theory of reasoned action, subjective norms (beliefs) and attitudes generate intention which is strongly correlated with the adoption of actual behavior. However, studies have led to the result that behavioral intention does not always lead to the adoption of actual behavior. This limitation of the theory of reasoned action has led to the evolution of planned behavior theory including the impact of non-voluntary factors on behavior (Mimiaga et al., 2009).

Davis (1989) technology acceptance model explains that the decision to use a new technology is guided by intention. However, unlike Ajzen & Fishbein (1975), Davis describes intention as the result of three factors: perceived usefulness, perceived ease of use, and attitude toward use. According to the latter, perceived usefulness and perceived ease of use shape the attitude toward the use of technology. The attitude toward the use of technology shapes the behavioral intention to use the technology, which itself determines the behavior of use. It is important to emphasize, however, that perceived usefulness and perceived ease of use, according to Davis, do not act independently in building the attitude toward the use of technology. Indeed, ease of use can influence perceived usefulness.

Another theoretical framework that can explain the decision to adopt a technology   
is the theory of planned behavior. It was developed by Ajzen (1991). According to   
this theory, the intention to adopt a technology is influenced by three main factors: attitude toward the technology, subjective norms, and perceived behavioral control. Attitude toward the technology could include beliefs and positive or negative evaluations about the ease of use, perceived benefits, and risks associated with the technology. Subjective norms, on the other hand, refer to the opinions of others; if individuals perceive that these other people support   
the adoption of mobile money, they will be more motivated to use it. Perceived behavioral control refers to individuals' perceptions of their ability to adopt and use the technology. This may include factors such as confidence, competence, and available resources.

* 1. **Empirical review**

Empirically, three types of factors can be distinguished that can explain the adoption and use of mobile financial services: (1) environmental factors; (2) socioeconomic factors; (3) functional and extra-functional factors.

Indeed, regarding environmental factors, Geroski (2000) shows that the adoption of mobile money could be linked to factors such as: the availability and accessibility of information on the operation of the mobile money service; user confidence in the technology and the costs associated with its use. According to him, the information available regarding the implementation of the service, associated with a specialized service attentive to customers, causes the adoption of this technology. In the same vein, Laukkanen & Kiviniemi (2010) using a quantitative approach to survey data from 1551 bank customers, they analyze the factors that influence consumers' intention to adopt a financial technological innovation. They find that ease of use, confidence in the technology and perceived benefits are important factors that influence the intention to adopt mobile money. A lack of this information would tend to dissuade consumers from adopting and using this technology. Furthermore, using a regressed selection model on a sample of 100 consumers, Chanel & M’chirgui (2009) found that confidence in the security of transactions is a key factor in the decision to adopt mobile money. Individuals who have confidence in the security of this technology are more likely to use it.

Regarding the socioeconomic factors of mobile money adoption, Aker & Mbiti (2010) found that education and income level are important factors in the decision to use this service. In addition, they found that mobile money use is associated with an increase in household savings and consumption expenditure. In the same vein, Weil et al., (2012) showed that age, education level and social status significantly influence the adoption of M-Pesa, through fixed effects instrumental variables of 6598 individuals from FinAccess 2006 and 2009 in Kenya. Furthermore, based on survey data on a sample of 4141 Senegalese, Fall & Birba (2019) show that gender, level of education, employment, literacy, and opening a bank account increase the probability of adoption regressed using a logistic model. Similarly, using a three-step sequential Logit, Douanla Meli & Kamga (2020) analyze the adoption of MM from a sample of 1200 individuals selected in the city of Yaoundé. They find that age and level of education are significant factors in explaining the process of adoption and use of mobile money. The work of Avom & al. (2021), based on a survey of 1222 households in the cities of Douala and Yaoundé, carries out a comparative analysis of the determinants of the adoption and use of MM between these two cities. The results obtained from a logistic regression show that the use of MM depends mainly on income and household size in Douala. For Yaoundé, the reduced cost is the main factor in the use of MM. Douanla et al. (2022), based on data collected on 1000 households from the Global Findex survey conducted in 2017 by the World Bank, and using multivariate regression reveal that socio-economic factors such as age, level of education, standard of living and ownership of a mobile phone differentially affect the adoption and use of MM services in Cameroon.

Furthermore, regarding functional and extra-functional factors, Subramaniam (2013) found through survey that individuals' perceived risk and their geographical distance from banks are key determinants of mobile money use in Kenya. According to him, the geographical proximity of an agent to the mobile money service is a key factor in the decision to adopt mobile money.   
Also, Zhou (2014) found that performance expectations, trust in mobile payment and flows are the factors that affect the continued use of mobile money. Among these factors, throughput has a relatively larger effect. Bankole & Brown (2011) estimate structural equations on 231 individuals and show that culture influences MM adoption in Nigeria. Furthermore, Bereket & Hwang (2020) using the UTAUT2 model studies the determinants of mobile money usage   
in Ethiopia, their analysis reveals that government support, facilitating conditions,   
performance expectation, trust and effort expectation are the key factors that affect   
the use of mobile money service. In addition, Boonsiritomachai & Pitchayadejanant (2019) from survey data collected on a sample of 480 respondents estimated using a structural equation model, show that hedonic motivation is the most important factor encouraging the use of mobile banking. Lai (2016) from survey data on 638 respondents and estimated by structural equations, shows that convenience, design, perceived risk, perceived usefulness and ease   
of use most influence the intention to use the electronic payment system among households in Malaysia. Lai & Zainal (2015) arrive at almost the same result from survey data on a sample of 450 users who used both card, internet and mobile phone to pay in all Asian countries. Hanafizadeh et al. (2014) using survey data collected from 361 bank customers and estimated by structural equations identify at least eight variables capable of galvanizing individuals to mobile money: perceived usefulness, ease of use, trust, cost of use, perceived risk,   
need for personal interaction, credibility and compatibility with lifestyles.

1. **Methodology**

As highlighted in section 2, the decision to use a technology is explained by several theories, including Rogers (1995) Diffusion of Innovation Theory (DIT); models based on Ajzen & Fishbein (1975) Theory of Reasoned Action (TRA); and Davis (1989) Technology Acceptance Model (TAM). All these theories converge on the principle of rationality that guides the decision to use a new technology. In economic terms, the expression of the rationality guiding such a choice derives from the comparison of the utilities associated with the different choice modalities presented to the individual.

Assuming a binomial choice whose terms concern the adoption of a technology. It is possible to define the adoption decision variable as follows:

 (1)

With the latent variable defined as:

 (2)

In equation (2), represents the set of explanatory variables of technology adoption, represents the vector of parameters to be estimated associated with the explanatory variables and represents the realization of random events. Recall that the value of the latent variable results from a maximization program such that the latter is positive when the utility resulting from the decision to adopt the technology is greater than the utility resulting from the decision not to adopt the technology.

In a competitive market where the individual faces several choices of competing technologies, the choice of technologies is no longer based on a dichotomous variable, but on a multinomial variable. The individual's choice can therefore be made between several modes of adoption depending on the number of service providers available. By defining N as the number of service providers, we can deduce that the individual is faced with N+1 decisions.

In a competitive market where the individual faces several choices of competing technologies, the choice of technologies is no longer based on a dichotomous variable, but on a multinomial variable. The individual's choice can therefore be based on several modes of adoption depending on the number of service providers. By defining N as the number of service providers, we can deduce that the individual is faced with N+1 possible choice modes that we translate by the index j. Given that in the Cameroonian context three main operators provide mobile money services (Orange, Mtn and Express-Union), individuals therefore face j=N+1=4 modes of adoption defined as follows:

(3)

Each of the modes defined in (3) is a dichotomous variable that takes the value 1 if individual i chooses a modality of j and 0 otherwise. Given the unordered and non-repeating character of the sets that can be formed in each mode, combinatorial analysis leads us to combinations of k in n, with k=0, 1, 2 and 3, and n=3. That is to say that the number of sets of each mode can be obtained according to the formula:

(4)

Considering n fixed at 3 for equation (4), and according to the variations of k, the number of sets of each mode can be easily obtained by referring to the Pascal triangle as follows:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| k | 0 | 1 | 2 | 3 |
| n |  |  |  |  |
| 0 | 1 |  |  |  |
| 1 | 1 | 1 |  |  |
| 2 | 1 | 2 | 1 |  |
| 3 | **1** | **3** | **3** | **1** |

(5)

That being said, the number of triplets that can be formed is obtained by the formula:

(6)

Let us consider the triplet (1 0 0) as the exclusive use of the Orange service; (1 1 0) as the simultaneous use of the Orange and Mtn services and (1 1 1) as the simultaneous use of the three services; this results in possible combinations of use of the available services.

The 3-tuples of equation (6) constitute the basis from which the set of comparison pairs necessary to analyze the adoption behaviors of said services are derived. Said analyses can range from the decision to use a defined number of available services exclusively or simultaneously, to the preferences to use a particular service compared to another or a combination of services compared to another. The ordered and non-repetitive nature of the set of non-distinct possible comparison pairs noted *NDPC* makes it possible to describe this set of pairs through the formula of an arrangement that can be expressed as follows:

(7)

Equation (7) unfortunately contains pairs of *3-* twin tuples and redundant pairs due to the order of arrangement (see note on the set of comparison pairs in appendix x). This favors the transition to an unordered arrangement without repetition which makes it possible to define the distinct set of possible comparison noted *DPC* according to the formula:

(8)

Equation (8) indicates the set of pairs needed to analyze adoption and usage behaviors in an environment provided by *3* mobile money services.

Such a provision provides a total of 28 dichotomous analyses of adoption behavior of different services that we can present and explain as follows:

**(1 0 0)**



**(0 1 0)**



**(0 0 1)**



**(1 1 0)**



**(1 0 1)**



**(0 1 1)**



**(1 1 1)**



We can summarize all possible behavioral analyses of adoption of mobile money services available through the function:

 (9)

With the dichotomous dependent variable of the adoption model *j,* the error term associated with the estimation of individual *i* for a combination of behavior j, and the set of explanatory variables in which we find: the use of a mobile phone, the individual's level of education, sex, age, age squared, the logarithm of monthly income, the source of income, the residential environment captured by the region of residence in the economic or political capital as well as in an urban or rural environment. The fact of having a bank account or not.

The dichotomous nature of the variable leads us to estimate the different probabilities of scenarios of use of the available services according to the relationship of the following logistic function:

 (10)

Considering that they follow a logistic law, equation (10) translates a set of logistic regressions that we estimate by the maximum likelihood method.

1. **Results**

Table 1 shows the results of the estimation of the determinants of the exclusive use of one of the three mobile money services. Overall, the influence of the explanatory factors differs according to the type of service used. Several factors appear to be determining factors in the use of the Orange and MTN services, without however influencing the decision   
to use the Express service. For example, while the use of a mobile phone positively and significantly influences the use of the Orange and MTN services, this factor appears to be non-determining in the use of the Express-Union service. This result is explained by the fact that while the operators Orange and MTN are specialized in mobile phone services, which are a complementary factor to the mobile money service, Express-Union is more specialized in services associated with microfinance. Thus, before the arrival of the mobile money service, while users of Orange and Mtn services were conditioned by the use of a mobile phone,   
customers of the Express-Union structure were not conditioned by the use of a telephone. Regarding the level of influence, it appears that the use of a mobile phone turns out to have a slightly greater effect on the use of the Orange operator's service. This result can be explained by the weight of this operator on the mobile telephony market in Cameroon. Indeed, Orange has 70% of the market share in the sector, unlike Mtn which only has 30%. Like the use of a telephone, education is found to have a positive and significant effect only at the level of Orange and Mtn services, with a greater influence on the use of the Orange service.

Gender does not appear to be a factor in the exclusive use of mobile money services, regardless of the service considered. Age, on the other hand, appears to have a positive influence the probability of using the Orange service exclusively up to a certain threshold where this influence becomes negative. An additional unit of income is found to positively and significantly influence the exclusive use of the Orange and Mtn service. The influence of income is more important in the exclusive use of the Orange service. In other words, the increase of one unit of income increases the probability of using the Orange mobile money service exclusively much more than that of Mtn. Income does not seem to be a determining factor in the exclusive use of the Express-Union operator's mobile money service. However, the fact of not working increases, all other things being equal, the probability of using this mobile money service. This influence, which is not significant at the level of the services of the operators Orange and Mtn, is explained by the fact that the operator Express-Union, originally specialized in sending and withdrawing funds from one city to another within the national territory, is more likely to migrate to its mobile money service vulnerable populations (the unemployed) who are likely to see in this service an opportunity to save time when withdrawing money they receive. It is important to remember that long waits during the procedures for withdrawing funds at the counters of Express-Union agencies were already a major concern of this operator's customers. These concerns later contributed, with the advent of cash withdrawals from the call boxes of Orange and Mtn services, to the decline in the activities of the operator Express-Union.

The residential environment is a significant explanatory factor in the probability of using the Orange service exclusively, as well as that of Mtn. In other words, living in a city tends to increase the probability of using the mobile money service of the operators Orange and   
Mtn exclusively. This factor is not a determining factor in the use of the Express service. Also, we note that the exclusive use of a service is significantly explained by the region of residence of individuals. Thus, we note that while the Douala region positively and significantly influences the exclusive use of the Mtn mobile money service, the Yaoundé region positively influences the exclusive use of the Orange service. Since the use of services is not always exclusive, it is important to see how the factors that determine the use of mobile money services vary according to the mode of use of the different services.

**Table 1:** Exclusive use of a mobile money service

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | Orange | |  | Mtn | |  | Express | |
|  | coefficient | mfx |  | coefficient | mfx |  | coefficient | mfx |
|  |  |  |  |  |  |  |  |  |
| using\_phone | 1,134\*\*\* | 0.161\*\*\* |  | 1,443\*\*\* | 0.119\*\*\* |  | 0.273 | 0.020 |
|  | (0.174) | (0.018) |  | (0.267) | (0.014) |  | (0.311) | (0.021) |
| education | 0.101\*\*\* | 0.018\*\*\* |  | 0.119\*\*\* | 0.014\*\*\* |  | -0.0225 | -0.002 |
|  | (0.0119) | (0.002) |  | (0.0154) | (0.002) |  | (0.0282) | (0.002) |
| sex | 0.0191 | 0.003 |  | -0.111 | -0.013 |  | -0.132 | -0.010 |
|  | (0.0932) | (0.016) |  | (0.115) | (0.013) |  | (0.221) | (0.017) |
| age | 0.0547\*\*\* | 0.010\*\*\* |  | 0.0254 | 0.003 |  | 0.0359 | 0.003 |
|  | (0.0192) | (0.003) |  | (0.0229) | (0.003) |  | (0.0388) | (0.003) |
| age2 | -0.000854\*\*\* | -0.000\*\*\* |  | -0.000419 | -0.000 |  | -0.000301 | -0.000 |
|  | (0.000236) | (0.000) |  | (0.000275) | (0.000) |  | (0.000436) | (0.000) |
| log\_monthly\_earning | 0.278\*\*\* | 0.049\*\*\* |  | 0.225\*\*\* | 0.026\*\*\* |  | 0.0151 | 0.001 |
|  | (0.0585) | (0.010) |  | (0.0726) | (0.008) |  | (0.115) | (0.009) |
| source\_earning | 0.133 | 0.023 |  | 0.484\*\*\* | 0.050\*\*\* |  | -0.314 | -0.026 |
|  | (0.142) | (0.024) |  | (0.181) | (0.017) |  | (0.335) | (0.030) |
| dont\_work | 0.0244 | 0.004 |  | 0.173 | 0.021 |  | -0.924\*\* | -0.055\*\*\* |
|  | (0.145) | (0.026) |  | (0.187) | (0.023) |  | (0.464) | (0.020) |
| region3 | 0.165 | 0.030 |  | 0.527\*\*\* | 0.071\*\*\* |  | 0.209 | 0.017 |
|  | (0.149) | (0.028) |  | (0.176) | (0.027) |  | (0.420) | (0.037) |
| region12 | 0.350\*\* | 0.066\*\* |  | 0.0569 | 0.007 |  | 0.0309 | 0.002 |
|  | (0.152) | (0.031) |  | (0.205) | (0.024) |  | (0.413) | (0.033) |
| residence | 0.775\*\*\* | 0.138\*\*\* |  | 0.532\*\*\* | 0.063\*\*\* |  | -0.154 | -0.012 |
|  | (0.107) | (0.019) |  | (0.133) | (0.016) |  | (0.262) | (0.020) |
| dont\_have\_regular\_account | -0.0434 | -0.008 |  | -0.155 | -0.017 |  | -0.273 | -0.020 |
|  | (0.0985) | (0.017) |  | (0.125) | (0.014) |  | (0.257) | (0.018) |
| Constant | -7.002\*\*\* |  |  | -7.154\*\*\* |  |  | -2.852\*\* |  |
|  | (0.631) |  |  | (0.782) |  |  | (1.206) |  |
|  |  |  |  |  |  |  |  |  |
| Observations | 2,984 | 2,984 |  | 2,534 | 2,534 |  | 1,074 | 1,074 |
| LROC | 0.76 |  |  | 0.74 |  |  | 0.62 |  |
| Standard errors in Parenthes  \*\*\*p<0.01,\*\*p<0.05,\*p<0.1 |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |

* 1. **Determinants of usage in the face of a provision of three mobile money services: cases of missing number of responses (non-missing data)**

With three mobile money services available, and no missing data on the use of each service, 28 choices of use are available to researchers. Table 2 below displays the results of the first seven cases which allow us to analyze the determinants of the choice of exclusive use of the Orange mobile service. This table presents the marginal effects successively in the context of the probability of using only the Orange service (1), the probability of preferring to use the Orange service rather than Mtn (2), the probability of preferring to use the Orange service   
rather than Express-union (3), the probability of preferring to use exclusively the Orange service rather than using Orange and Mtn simultaneously (4), the probability of preferring to use the Orange service rather than using Mtn and Express-Union simultaneously (5), the probability of using exclusively Orange rather than using Orange and Express-Union (6) and finally the probability of preferring to use Orange rather than all three services simultaneously (7).

In general, the influence of factors differs depending on the type of decisions the individual is faced with. The mobile phone therefore seems to be a factor in the exclusive use of the Orange service. Education, on the other hand, has a positive and significant influence on the probability of using Orange exclusively and on the probability of using Orange rather than Express-Union. Conversely, education has a negative influence on the probability of using Orange exclusively rather than using Orange and Mtn simultaneously. Thus, education tends to influence the decision to use the Orange service differently depending on the competing choice combinations. Age tends to favor the probability of using the Orange service exclusively, although the relationship is quadratic and reverses at one level. Being a woman does not prove to be a   
determining factor in the probability of using the Orange service exclusively, but has a   
negative effect on the probability of using Orange exclusively rather than Orange and Mtn. One   
explanation lies in the fact that using Orange and MTN simultaneously may be a   
strategy for maximizing the receipt and sending of funds for women, which requires using several services. However, we note that being a woman has a positive effect on   
the probability of using Orange exclusively rather than using MTN and Express-Union, which may constitute a more expensive combination that maximizes the receipt of funds given the high rates offered by this combination. Increased income positively affects the probability of using Orange exclusively, and the probability of using Orange rather than Express-Union. On the other hand, income negatively affects the probability of using Orange exclusively rather than Orange and Express-Union.

Living in an urban environment tends to favor the exclusive use of Orange mobile money and the probability of using Orange rather than Express-Union. Living in the political capital Yaoundé offers a higher probability of using the Orange mobile service exclusively; of using Orange rather than Mtn, of using only Orange rather than Orange and Express-Union. On the other hand, this environment tends to favor a preference for combining Orange and Mtn rather than using Orange exclusively. Douala, the economic capital, only influences the probability of using Orange exclusively and preferring this single service rather than the combination of this service with the Express-Union service. Not having a regular account seems to be a negligible factor in explaining the probability of using Orange both exclusively and in combination with other mobile services. In light of the above, it appears that the explanatory factors of the use of a service act differently depending on the combinations of competing services.

**Table 2:** Pure VS impure orange

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1) |  | (2) |  | (3) |  | (4) |  | (5) |  | (6) |  | (7) |
|  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |
| VARIABLES | 0\_0\_0 |  | 0\_1\_0 |  | 0\_0\_1 |  | 1\_1\_0 |  | 0\_1\_1 |  | 1\_0\_1 |  | 1\_1\_1 |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| using\_phone | 0.238\*\*\* |  | -0.037 |  | 0.067 |  | 0.073 |  |  |  | -0.001 |  |  |
|  | (0.031) |  | (0.107) |  | (0.077) |  | (0.124) |  |  |  | (0.096) |  |  |
| education | 0.021\*\*\* |  | -0.006 |  | 0.009\*\*\* |  | -0.016\*\*\* |  | 0.002 |  | 0.000 |  | -0.004 |
|  | (0.003) |  | (0.005) |  | (0.003) |  | (0.005) |  | (0.003) |  | (0.004) |  | (0.004) |
| sex | 0.005 |  | 0.030 |  | 0.013 |  | -0.083\*\* |  | 0.039\* |  | -0.014 |  | 0.050 |
|  | (0.027) |  | (0.037) |  | (0.026) |  | (0.037) |  | (0.023) |  | (0.031) |  | (0.037) |
| age | 0.016\*\*\* |  | 0.008 |  | 0.001 |  | 0.000 |  | -0.003 |  | -0.002 |  | 0.007 |
|  | (0.006) |  | (0.008) |  | (0.005) |  | (0.009) |  | (0.006) |  | (0.007) |  | (0.008) |
| age2 | -0.000\*\*\* |  | -0.000 |  | -0.000 |  | -0.000 |  | 0.000 |  | 0.000 |  | -0.000 |
|  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |
| log\_monthly\_earning | 0.055\*\*\* |  | 0.008 |  | 0.034\*\* |  | -0.013 |  | -0.013 |  | -0.043\* |  | -0.036 |
|  | (0.017) |  | (0.026) |  | (0.017) |  | (0.023) |  | (0.016) |  | (0.022) |  | (0.027) |
| source\_of\_income | 0.009 |  | -0.008 |  | -0.009 |  | -0.082 |  | -0.006 |  | 0.019 |  | -0.067 |
|  | (0.040) |  | (0.051) |  | (0.036) |  | (0.051) |  | (0.031) |  | (0.047) |  | (0.050) |
| dont\_work | -0.022 |  | 0.016 |  | 0.030 |  | -0.128\*\* |  | 0.045 |  | -0.011 |  | -0.127\* |
|  | (0.042) |  | (0.059) |  | (0.039) |  | (0.061) |  | (0.028) |  | (0.055) |  | (0.067) |
| region3 | 0.100\*\* |  | 0.048 |  | 0.037 |  | -0.052 |  | -0.016 |  | 0.062\* |  | 0.045 |
|  | (0.045) |  | (0.046) |  | (0.037) |  | (0.051) |  | (0.031) |  | (0.034) |  | (0.049) |
| region12 | 0.071\* |  | 0.154\*\*\* |  | 0.018 |  | -0.096\* |  | 0.027 |  | 0.074\*\* |  | -0.072 |
|  | (0.042) |  | (0.045) |  | (0.038) |  | (0.050) |  | (0.027) |  | (0.033) |  | (0.050) |
| residence | 0.163\*\*\* |  | 0.051 |  | 0.089\*\* |  | 0.010 |  | -0.013 |  | 0.024 |  | -0.000 |
|  | (0.030) |  | (0.047) |  | (0.040) |  | (0.052) |  | (0.027) |  | (0.039) |  | (0.051) |
| dont\_have\_regular\_account | -0.033 |  | 0.030 |  | 0.017 |  | -0.002 |  | 0.022 |  | -0.014 |  | -0.010 |
|  | (0.029) |  | (0.042) |  | (0.028) |  | (0.043) |  | (0.024) |  | (0.036) |  | (0.043) |
| Constant |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Observations | 1,388 |  | 729 |  | 561 |  | 786 |  | 511 |  | 569 |  | 648 |

Source: Author

1. **use of Mtn service versus others**

The following six combinations allow us to assess the determining factors in the choice of the Mtn service. The results obtained are similar to those obtained for the Orange service in that the explanatory factors for the use of a service act differently depending on the combinations of competing services. Table 3 indicates that the use of a mobile phone shows a positive and significant influence only in the decision to use the Mtn service exclusively.

**Table 3:** Pure Mtn VS Impure

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (8) | |  | (9) |  | (10) |  | (11) |  | (12) |  | (13) |
|  | mfx | |  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |
| VARIABLES | 0\_0\_0 | |  | 0\_0\_1 |  | 1\_1\_0 |  | 1\_0\_1 |  | 0\_1\_1 |  | 1\_1\_1 |
|  |  | |  |  |  |  |  |  |  |  |  |  |
| using\_phone | 0.160\*\*\* | |  | 0.219 |  | 0.063 |  | -0.002 |  |  |  |  |
|  | (0.022) | |  | (0.154) |  | (0.141) |  | (0.158) |  |  |  |  |
| education | 0.020\*\*\* | |  | 0.026\*\*\* |  | -0.018\*\*\* |  | 0.006 |  | 0.007 |  | -0.003 |
|  | (0.003) | |  | (0.006) |  | (0.006) |  | (0.006) |  | (0.005) |  | (0.007) |
| sex | -0.015 | |  | 0.005 |  | -0.120\*\* |  | -0.048 |  | 0.065 |  | 0.038 |
|  | (0.022) | |  | (0.049) |  | (0.047) |  | (0.050) |  | (0.041) |  | (0.053) |
| age | 0.001 | |  | -0.009 |  | -0.008 |  | -0.010 |  | -0.012 |  | 0.005 |
|  | (0.005) | |  | (0.009) |  | (0.010) |  | (0.012) |  | (0.010) |  | (0.012) |
| age2 | -0.000 | |  | 0.000 |  | 0.000 |  | 0.000 |  | 0.000 |  | -0.000 |
|  | (0.000) | |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |
| log\_monthly\_earning | 0.029\*\* | |  | 0.060\* |  | -0.021 |  | -0.066\* |  | -0.022 |  | -0.051 |
|  | (0.013) | |  | (0.031) |  | (0.027) |  | (0.036) |  | (0.028) |  | (0.036) |
| source\_of\_income | 0.040 | |  | 0.042 |  | -0.091 |  | 0.025 |  | -0.019 |  | -0.105 |
|  | (0.030) | |  | (0.074) |  | (0.068) |  | (0.077) |  | (0.054) |  | (0.077) |
| dont\_work | -0.012 | |  | 0.056 |  | -0.156\*\* |  | -0.032 |  | 0.076 |  | -0.187\*\* |
|  | (0.034) | |  | (0.072) |  | (0.067) |  | (0.094) |  | (0.052) |  | (0.086) |
| region3 | 0.071\* | |  | 0.078 |  | -0.113\*\* |  | 0.057 |  | -0.042 |  | 0.005 |
|  | (0.040) | |  | (0.064) |  | (0.057) |  | (0.063) |  | (0.057) |  | (0.072) |
| region12 | -0.031 | |  | -0.047 |  | -0.260\*\*\* |  | -0.018 |  | -0.030 |  | -0.276\*\*\* |
|  | (0.031) | |  | (0.088) |  | (0.053) |  | (0.079) |  | (0.069) |  | (0.067) |
| residence | 0.067\*\*\* | |  | 0.094 |  | -0.044 |  | -0.005 |  | -0.049 |  | -0.062 |
|  | (0.025) | |  | (0.060) |  | (0.061) |  | (0.059) |  | (0.046) |  | (0.066) |
| dont\_have\_regular\_account | -0.022 | |  | 0.038 |  | -0.050 |  | -0.035 |  | 0.043 |  | -0.020 |
|  | (0.024) | |  | (0.052) |  | (0.055) |  | (0.061) |  | (0.043) |  | (0.062) |
| Constant |  | |  |  |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |  |  |
| Observations | 1,149 | |  | 322 |  | 547 |  | 330 |  | 279 |  | 416 |
| Standard errors in parentheses | |
| \*\*\*p<0.01, \*\*p<0.05, \*p<0.1 | |

An additional school year tends to significantly favor the decision to use only Mtn even when the competing choice is to use the Express service. However, an additional year of education tends to tip the balance in favor of the combination of Orange and Mtn services. The strategy of adding the Orange service to the use of the Mtn service is favored by being a woman. This combination seems to be a maximizing strategy for the receipt of funds given that it is positively influenced by the fact of not working. Although residing in the economic capital tends to favor the choice of this combination to the detriment of the exclusive use of the Mtn service, we still note that residing in the economic capital tends to favor the choice of using the Mtn service rather than using nothing. The political capital also favors the strategy of combining Orange and Mtn services compared to the exclusive use of the Mtn service. It is noted, among other things, that this environment positively influences the simultaneous use of the three services compared to the strategy of using only the Mtn service. Living in an urban environment also tends to favor the exclusive use of the Mtn service.

1. **Exclusive use of Express union versus others**

In this section, we compare the use of the Express-union operator's mobile money service in a pure way with competing strategies such as non -use, use of a single service and the simultaneous use of two or three services. Table 4 indicates that using a mobile phone increases the probability of preferring to use the Express-union service than not using anything as a mobile money service. This result highlights the fact that Express-Union services are not totally devoid of the use of a telephone as the absence of activities related to mobile telephony of this operator might suggest, unlike its competitors Orange and Mtn. Indeed, sending and particularly receiving funds is often attached to the receipt of a message providing a code or password that allows the beneficiary to take possession of the funds at Express-union agencies. This may explain not only the lesser effect of the telephone in the choice of this service compared to the two cases previously analyzed, but also that the sign reverses when comparing the choice of using the Express-union service rather than the two mobile phone services. This means, as indicated in column 3, that having a mobile phone tends to tilt the preference of populations towards mobile money services offered by mobile phone operators rather than an ordinary economic operator who engages in the offer of mobile money service. The competitive factor should not be neglected in the explanation of such results in light of the trials concerning acts qualified as unfair competition between Express-union and the two mobile phone operators. This is the case of the *"Express-union versus Mtn " case* concerning the removal of the "1 transfer" option of the USSD code \*050# in the mobile services of the operator Mtn. Removal which removed access to the network for customers of the Express-union mobile money service. [[7]](#footnote-7)As well as the increase of more than 600% in the cost of access to the USSD portal by the operator Orange.

Consistent with the results found previously, education tends to discourage the choice of using the Express-union mobile money service rather than Orange or Mtn (column 15). The same observation is made for strategies consisting of adding these services when already using the Express-union service (columns 16 and 17). The results in column 18 indicate a disincentive effect of only using the Express-Union service rather than simultaneously adding the Orange and Mtn services. It emerges that whatever the choice of service combination, there is a disincentive effect to use exclusively the Express-union service as the level of education increases.

Similar to education, increasing income tends to discourage the choice of using only the Express-union service regardless of the alternative usage combinations that are presented. This means that the Express-union service seems to be a service more appropriate for the social classes at the lower end of the social scale. This seems to be confirmed by statistical tests which show that users of this service are on average poorer and have lower incomes compared to the comparison groups in Table 4. Employment status is found to be a determining factor only in the decision to use Orange and Mtn only or to add these two mobile phone services when already using the Express-union service. This factor tends to discourage the exclusive choice of the Express-union service in these scenarios. Living in an urban area tends to favor the use of Orange and Mtn mobile phone services. Residing in the economic capital does not seem to be a relevant determinant in the use of the Express-Union service, unlike the political capital where we note a positive influence in the preference for the combination of Orange and Mtn services and the addition of these two services when already using the Express-Union service.

**Table 4:** Express pure VS impure

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (14) | |  | (15) |  | (16) |  | (17) |  | (18) |
|  | mfx | |  | mfx |  | mfx |  | mfx |  | mfx |
| VARIABLES | 0\_0\_0 | |  | 1\_1\_0 |  | 1\_0\_1 |  | 0\_1\_1 |  | 1\_1\_1 |
|  |  | |  |  |  |  |  |  |  |  |
| using\_phone | 0.048\*\*\* | |  | -0.100 |  | -0.201 |  |  |  |  |
|  | (0.018) | |  | (0.119) |  | (0.197) |  |  |  |  |
| education | -0.001 | |  | -0.024\*\*\* |  | -0.031\*\*\* |  | -0.030\*\* |  | -0.025\*\*\* |
|  | (0.002) | |  | (0.005) |  | (0.011) |  | (0.014) |  | (0.007) |
| sex | -0.004 | |  | -0.093\*\* |  | -0.087 |  | 0.133 |  | 0.032 |
|  | (0.017) | |  | (0.043) |  | (0.096) |  | (0.108) |  | (0.061) |
| age | 0.003 | |  | -0.002 |  | -0.016 |  | -0.010 |  | 0.005 |
|  | (0.003) | |  | (0.008) |  | (0.022) |  | (0.025) |  | (0.012) |
| age2 | -0.000 | |  | 0.000 |  | 0.000 |  | 0.000 |  | -0.000 |
|  | (0.000) | |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |
| log\_monthly\_earning | -0.003 | |  | -0.033\* |  | -0.198\*\*\* |  | -0.176\*\* |  | -0.100\*\* |
|  | (0.008) | |  | (0.017) |  | (0.069) |  | (0.087) |  | (0.041) |
| source\_of\_income | -0.003 | |  | -0.030 |  | 0.134 |  | -0.060 |  | -0.066 |
|  | (0.027) | |  | (0.062) |  | (0.140) |  | (0.146) |  | (0.103) |
| dont\_work | -0.033 | |  | -0.100\*\*\* |  | -0.023 |  | 0.118 |  | -0.155\*\* |
|  | (0.023) | |  | (0.037) |  | (0.173) |  | (0.182) |  | (0.067) |
| region3 | -0.000 | |  | -0.071 |  | 0.054 |  | -0.066 |  | -0.025 |
|  | (0.031) | |  | (0.044) |  | (0.154) |  | (0.165) |  | (0.088) |
| region12 | 0.005 | |  | -0.071\* |  | 0.091 |  | 0.033 |  | -0.137\*\* |
|  | (0.030) | |  | (0.043) |  | (0.148) |  | (0.155) |  | (0.069) |
| residence | 0.002 | |  | -0.133\*\* |  | -0.161 |  | -0.196\* |  | -0.180\*\* |
|  | (0.019) | |  | (0.061) |  | (0.106) |  | (0.118) |  | (0.084) |
| dont\_have\_regular\_account | -0.024 | |  | -0.020 |  | -0.040 |  | 0.106 |  | 0.022 |
|  | (0.017) | |  | (0.040) |  | (0.108) |  | (0.107) |  | (0.070) |
| Constant |  | |  |  |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |  |  |
| Observations | 981 | |  | 379 |  | 162 |  | 111 |  | 248 |
| Standard errors in parentheses | |
| \*\*\*p<0.01, \*\*p<0.05, \*p<0.1 | |

* 1. **Using combinations of at least two services versus others**

In this section we examine the decisions to use at least two services in the face of competing strategies. Three combinations of two services used simultaneously and the combination of all three services are available for our analysis. Regarding the combination of Orange and Mtn services, we note, in accordance with expectations, that the use of a mobile phone favors the adoption of this strategy in the face of not using the three available services. Improving one's level of education tends to increase the probability of using these two services simultaneously, regardless of the combination of competing services.

**Table 5:** Orange and Mtn VS impure

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (19) | |  | (20) |  | (21) |  | (22) |
|  | mfx | |  | mfx |  | mfx |  | mfx |
| VARIABLES | 0\_0\_0 | |  | 1\_0\_1 |  | 0\_1\_1 |  | 1\_1\_1 |
|  |  | |  |  |  |  |  |  |
| using\_phone | 0.136\*\*\* | |  | -0.029 |  |  |  |  |
|  | (0.025) | |  | (0.122) |  |  |  |  |
| education | 0.028\*\*\* | |  | 0.013\*\* |  | 0.011\*\*\* |  | 0.010\* |
|  | (0.003) | |  | (0.005) |  | (0.004) |  | (0.006) |
| sex | 0.056\*\* | |  | 0.057 |  | 0.093\*\* |  | 0.134\*\*\* |
|  | (0.022) | |  | (0.046) |  | (0.036) |  | (0.048) |
| age | 0.005 | |  | -0.007 |  | -0.012 |  | 0.006 |
|  | (0.005) | |  | (0.011) |  | (0.008) |  | (0.011) |
| age2 | -0.000 | |  | 0.000 |  | 0.000 |  | -0.000 |
|  | (0.000) | |  | (0.000) |  | (0.000) |  | (0.000) |
| log\_monthly\_earning | 0.038\*\*\* | |  | -0.029 |  | -0.007 |  | -0.024 |
|  | (0.013) | |  | (0.029) |  | (0.022) |  | (0.028) |
| source\_of\_income | 0.066\*\* | |  | 0.065 |  | 0.066 |  | 0.009 |
|  | (0.029) | |  | (0.075) |  | (0.067) |  | (0.075) |
| dont\_work | 0.076\* | |  | 0.065 |  | 0.084\*\*\* |  | -0.027 |
|  | (0.042) | |  | (0.061) |  | (0.029) |  | (0.077) |
| region3 | 0.129\*\*\* | |  | 0.114\*\*\* |  | 0.014 |  | 0.099 |
|  | (0.044) | |  | (0.044) |  | (0.034) |  | (0.061) |
| region12 | 0.156\*\*\* | |  | 0.147\*\*\* |  | 0.057\* |  | 0.001 |
|  | (0.043) | |  | (0.044) |  | (0.033) |  | (0.059) |
| residence | 0.089\*\*\* | |  | 0.026 |  | -0.008 |  | 0.013 |
|  | (0.027) | |  | (0.056) |  | (0.038) |  | (0.068) |
| dont\_have\_regular\_account | -0.015 | |  | -0.021 |  | 0.041 |  | -0.009 |
|  | (0.024) | |  | (0.053) |  | (0.030) |  | (0.057) |
| Constant |  | |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |
|  |  | |  |  |  |  |  |  |
| Observations | 1,206 | |  | 387 |  | 335 |  | 472 |
| Standard errors in parentheses | |
| \*\*\*p<0.01, \*\*p<0.05, \*p<0.1 | |

Being a woman tends to favor this strategy of combining the two mobile phone operators, except for the strategy of combining Orange and Express-Union services, where the influence, although positive, is not significant. Increased income exerts a positive and significant influence on the choice to use both services compared to the decision to use nothing. This combination of the two mobile phone services presents itself once again as an optimal strategy for vulnerable people, given that it seems encouraged by the status of the unemployed. Note that given that these two operators dominate the mobile money market in the country, vulnerable people have an interest in using these two services in order to benefit as much as possible from the support of those around them, which tends to be channeled through one of these two operators. Residing in both the economic capital and the political capital favors the choice of this combination of services.

The combination of Orange and Express-Union services is favored by telephone use, by increasing education level, by age up to a threshold and by residing in an urban area when this combination is in competition with the non-use of the three services. Few factors are found to be determining factors for the preference of this combination over other combinations. Except for the status of non-worker which positively influences the choice of this combination compared to the combination Mtn and Express-Union and the fact of residing in the political capital which tends to lean the choice in favor of the simultaneous use of the three services, the other factors are not found to be determining factors. The combination of Mtn and Express-Union services is found to be positively influenced by the increase in income in comparison with the non-use of the three services and disadvantaged by the fact of not working. However, this combination is encouraged with age compared to the combination of the three factors and disadvantaged with the status of non-worker and residence in the political capital.

Increasing education and income tend to favor the simultaneous use of all three services compared to not using them. This means that the simultaneous use of all three services seems to be associated with a wealth effect. The fact that living in an urban area and in the political capital tends to favor this combination suggests the importance of environmental quality in terms of infrastructure as a factor favorable to the simultaneous use of these services.

**Table 6:** Orange and Express VS impure

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (23) |  | (24) |  | (25) |  | (26) |  | (27) |  | (28) |
|  | Orange and Express VS impure | | | | |  | Mtn and Express VS impure | | |  | Orange- Mtn -Express VS pure |
|  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |  | mfx |
| VARIABLES | 0\_0\_0 |  | 0\_1\_1 |  | 1\_1\_1 |  | 0\_0\_0 |  | 1\_1\_1 |  | 0\_0\_0 |
|  |  |  |  |  |  |  |  |  |  |  |  |
| using\_phone | 0.051\*\*\* |  |  |  |  |  |  |  |  |  |  |
|  | (0.013) |  |  |  |  |  |  |  |  |  |  |
| education | 0.005\*\*\* |  | 0.008 |  | -0.007 |  | 0.002 |  | -0.008 |  | 0.018\*\*\* |
|  | (0.002) |  | (0.012) |  | (0.007) |  | (0.001) |  | (0.006) |  | (0.003) |
| sex | 0.009 |  | 0.144 |  | 0.089 |  | -0.016 |  | -0.043 |  | -0.020 |
|  | (0.011) |  | (0.090) |  | (0.061) |  | (0.010) |  | (0.051) |  | (0.023) |
| age | 0.005\* |  | 0.004 |  | 0.024 |  | 0.003 |  | 0.022\* |  | -0.000 |
|  | (0.003) |  | (0.025) |  | (0.016) |  | (0.002) |  | (0.013) |  | (0.005) |
| age2 | -0.000\*\* |  | -0.000 |  | -0.000\* |  | -0.000\* |  | -0.000\* |  | -0.000 |
|  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |  | (0.000) |
| log\_monthly\_earning | 0.024\*\*\* |  | 0.020 |  | 0.034 |  | 0.014\*\* |  | 0.008 |  | 0.051\*\*\* |
|  | (0.007) |  | (0.065) |  | (0.044) |  | (0.006) |  | (0.036) |  | (0.015) |
| source\_of\_income | -0.006 |  | -0.025 |  | -0.165 |  | 0.000 |  | -0.057 |  | 0.057\* |
|  | (0.020) |  | (0.138) |  | (0.113) |  | (0.015) |  | (0.093) |  | (0.030) |
| dont\_work | -0.008 |  | 0.222\* |  | -0.121 |  | -0.022\*\* |  | -0.136\*\* |  | 0.065 |
|  | (0.018) |  | (0.115) |  | (0.089) |  | (0.010) |  | (0.054) |  | (0.045) |
| region3 | -0.004 |  | -0.216 |  | -0.055 |  | 0.025 |  | 0.082 |  | 0.051 |
|  | (0.016) |  | (0.132) |  | (0.079) |  | (0.021) |  | (0.078) |  | (0.042) |
| region12 | -0.011 |  | -0.149 |  | -0.221\*\*\* |  | -0.002 |  | -0.102\* |  | 0.123\*\*\* |
|  | (0.014) |  | (0.162) |  | (0.063) |  | (0.013) |  | (0.055) |  | (0.043) |
| residence | 0.031\*\* |  | -0.073 |  | -0.049 |  | 0.028\*\* |  | 0.019 |  | 0.086\*\*\* |
|  | (0.014) |  | (0.110) |  | (0.080) |  | (0.013) |  | (0.064) |  | (0.028) |
| dont\_have\_regular\_account | -0.004 |  | 0.092 |  | 0.019 |  | -0.013 |  | -0.034 |  | -0.022 |
|  | (0.012) |  | (0.099) |  | (0.073) |  | (0.010) |  | (0.056) |  | (0.024) |
| Constant |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |
| Observations | 989 |  | 123 |  | 260 |  | 788 |  | 217 |  | 925 |

|  |
| --- |
| Standard errors in parentheses \*\*\* p<0.01, \*\* p<0.05, \* p<0.1 |

|  |
| --- |
| 1. Conclusion   The aim of this study was to analyze the determinants of mobile money service adoption behavior in a competitive context marked by the presence of three main providers in Cameroon: Orange, Mtn and Express-Union. It starts from the observation that, despite the proliferation of mobile money services, existing literature tends to simplify the analysis by often limiting itself to a dichotomous approach (user or not), neglecting the possible combinations of usage in an oligopolistic environment. Empirical results show that the factors influencing adoption vary considerably depending on the provider and whether usage is exclusive or combined. Cell phone usage, level of education, monthly income, place of residence (urban or rural, political or economic capital) are all determining factors, but their effect is differentiated according to service combinations. For example, the exclusive use of Orange or Mtn services is favored by a good level of education and a high income, while the Express-Union service seems to be adopted more by vulnerable populations, often unemployed and with a lower income. A detailed analysis of service combinations also reveals the logic of maximizing remittance opportunities, particularly among women and unbanked households.  These findings have important implications for public policy and business strategy. To promote financial inclusion, it is essential to design differentiated approaches that take into account the specificities of user profiles and their socio-economic environment. In addition, operators need to adapt their offerings to the heterogeneous needs of users, focusing on service complementarity and the reduction of barriers to entry. However, this research has certain limitations. It relies mainly on cross-sectional data, which does not allow us to capture the temporal dynamics of adoption. Furthermore, although the service combination approach offers a more nuanced reading, it remains dependent on the assumptions of non-ordering of preferences in the choices analyzed. Future research could focus on longitudinal approaches to gain a better understanding of usage trajectories and incorporate more refined behavioral or psychological dimensions, such as risk perception or the quality of the user experience. It would also be relevant to extend the analysis to other national or regional contexts, in order to compare adoption logics in varied competitive environments.  **Bibliographic reference**  Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, *50*(2), 179–211.  Ajzen, I., & Fishbein, M. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Addison-Wesley.  Aker, J. C., & Mbiti, I. M. (2010). Mobile phones and economic development in Africa. *Journal of Economic Perspectives*, *24*(3), 207–232.  Avom, D., & others. (2021). Adoption and use of mobile money in Cameroon: a comparative analysis between Yaoundé and Douala. *African Journal of Economic Policy*, *28*(2), 75–96.  Bankole, O., & Brown, I. (2011). Investigating the impact of cultural factors on mobile money transfer adoption. *Electronic Journal of Information Systems in Developing Countries*, *43*(1), 1–19.  Bereket, A., & Hwang, Y. (2020). Determinants of mobile money adoption in Ethiopia: An integrated model of UTAUT and trust theory. *Journal of African Business*, *21*(4), 455–474.  Boonsiritomachai, W., & Pitchayadejanant, K. (2019). Mobile banking adoption in Thailand: An application of technology acceptance model. *Journal of Asia Business Studies*, *13*(1), 94–111.  Chanel, O., & M’chirgui, Z. (2009). L’impact de la confiance dans la sécurité des transactions sur l’adoption du mobile banking. *Revue de l’Association Française de Marketing*, *225*, 1–21.  Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 319–340.  Douanla Meli, W., & Kamga, D. (2020). Analyse des déterminants de l’adoption du mobile money au Cameroun. *Revue d’économie Du Développement*, *28*(3), 25–49.  Douanla, S., Fosso, Y., & Fouopi, C. (2022). Analysis of the socio-economic determinants of mobile money adoption and use in Cameroon. *Telecommunications Policy*, *46*(9), 102412. https://doi.org/10.1016/j.telpol.2022.102412  Fall, F., & Birba, O. (2019). Digital financial services and household welfare: Evidence from Senegal. *African Development Review*, *31*(1), 83–95.  Geroski, P. A. (2000). Models of technology diffusion. *Research Policy*, *29*(4–5), 603–625.  Hanafizadeh, P., Behboudi, M., Koshksaray, A. A., & Shirkhani Tabar, M. J. (2014). Mobile-banking adoption by Iranian bank clients. *Telematics and Informatics*, *31*(1), 62–78.  Lai, P.-C. (2016). Adoption of mobile banking: A review of technology acceptance model and trust. *Journal of Internet Banking and Commerce*, *21*(S5), 1–23.  Lai, P.-C., & Zainal, A. (2015). An empirical investigation of consumer adoption of mobile payments in Southeast Asia. *Journal of Internet Banking and Commerce*, *20*(3), 1–14.  Laukkanen, T., & Kiviniemi, V. (2010). The role of information in mobile banking adoption. *International Journal of Bank Marketing*, *28*(5), 372–388.  Meli, S. D., & Kamga, B. F. (2020). *Adoption des services financiers mobiles : une application à la ville de Yaoundé* (Vol. 28). https://doi.org/10.3917/edd.344.0083  Meli, W. D., Kamga, D., & Mbia, L. (2024). Profil des usagers des services d’argent mobile au Cameroun. *Revue d’Économie Du Développement*.  Mimiaga, M. J., Goldhammer, H., Belanoff, C., Tetu, A. M., & Mayer, K. H. (2009). Theory of reasoned action and theory of planned behavior: Implications for HIV prevention among MSM. *AIDS and Behavior*, *13*(1), 173–180.  Ndoya, M.-C., & Tsala, J.-F. (2021). *Gendered financial inclusion differentials and mobile money adoption in Cameroon*.  Rogers, E. M. (1995). *Diffusion of Innovations* (4th ed.). Free Press.  Subramaniam, V. (2013). Determinants of mobile money usage in Kenya. *Journal of African Economies*, *22*(1), 74–102.  Weil, D., Mbiti, I., & Mwega, F. (2012). *Les implications des innovations dans le secteur financier sur la conduite de la politique monétaire en Afrique de l ’ Est*.  Williams, M. D., Rana, N. P., Dwivedi, Y. K., & Lal, B. (2015). Technology acceptance models and mobile banking: A comparative analysis. *Journal of Enterprise Information Management*, *28*(3), 327–346.  Zhou, T. (2014). Examining continuance of mobile payment services in China: The roles of network externalities and trust. *Internet Research*, *24*(5), 648–663. |

**Appendix**

***Appendix X: Set of triple comparison pairs***

**(1 0 0)**



**(0 1 0)**



**(0 0 1)**



**(1 1 0)**



**(1 0 1)**



**(0 1 1)**



**(1 1 1)**



1. University of Yaoundé 2 [↑](#footnote-ref-1)
2. University of Yaoundé 2, [genevievbella123@gmail.com](mailto:genevievbella123@gmail.com) [↑](#footnote-ref-2)
3. University of Yaoundé 2. [↑](#footnote-ref-3)
4. Adopt no technology, adopt one technology, and adopt two technologies. [↑](#footnote-ref-4)
5. Adopt no technology, adopt one technology, adopt two technologies, adopt all   
   three technologies. [↑](#footnote-ref-5)
6. Three cases for adopting one technology and three cases for combining two technologies. [↑](#footnote-ref-6)
7. [Express Union wins its lawsuit with MTN Cameroon - Cameroon news - Agence Cameroun Presse (agencepressecamertest.com)](https://agencepressecamertest.com/2021-soci%c3%a9t%c3%a9/express-union-gagne-sont-proc%c3%a8s-avec-mtn-cameroun.html) [↑](#footnote-ref-7)