

## **SOCIO – ECONOMIC FACTORS DETERMINING THE USE OF FINTECH IN NORTH MACEDONIA**

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### **ABSTRACT**

This paper analyzes the level of usage of digital financial applications or financial technology (FinTech) to make payments by individual users in North Macedonia, as well as identifies factors associated with these activities. The goal of the paper is to provide guidance to banks, financial institutions and other stakeholders by describing FinTech usage among adults according to various socioeconomic characteristics such as gender, age, education, social status, and previous knowledge and skills related to computer, as well as their financial literacy. The analysis employs logistic multivariate analysis to identify possible factors affecting individuals' probability of using FinTech for payments.

**Keywords:** Clients' behavior, financial services, FinTech, financial technology.

### **INTRODUCTION**

In a rapidly evolving world, innovation permeates every area of life and it especially affects the financial sector. Although the technology development has already enabled innovation in financial companies, it should be noted that this process has been accelerated by the Covid-19 pandemic and will lead to the creation of a stronger digital economy. According to Deloitte Center for Financial Services (2020), as the Covid-19 pandemic continues to create uncertainty at a global level, there is a tremendous growth in the use of digital financial services or financial technology (FinTech) which will result in creation of new and transformative solutions in this sector.

Dalkilic and Kırkbeşoğlu (2015) emphasizes that in time of economic fluctuation and financial crisis, new and more sophisticated financial products developed each day which increase the importance of the level of individuals' financial literacy. Financial literacy represents having knowledge of financial services and products and the ability to take sound financial decisions to confidently manage and grow money and wealth. In their 2020 study, authors Tony and Desai concluded that financial literacy leads to financial inclusion, development and stability, hence it contributes to the country's progress and economic development.

Conrad et al. (2019) investigated socio-economic and demographic factors that influence the demand for digital access to financial services. Using customer data from banks in Germany and relating them with socio-economic and demographic data, they identified a so-called informational divide among areas in Germany, with rural, sparsely populated regions with older population/or less educated inhabitants losing access to basic financial services.

The focus of this study is to determine the relevance of the socio-economic factors affecting FinTech usage among adults in North Macedonia. In addition, the objective is to assess whether there is a relationship between the level of users' financial literacy and the usage of FinTech payment applications in North Macedonia.

The research methodology follows a combination of different steps that are based on:

- Exploration of the background studies and research papers that are dealing with FinTech services and financial digital literacy; followed by
- A descriptive statistical analysis of FinTech usage according to various socioeconomic characteristics.
- Finally, the analysis employs logistic multivariate analysis to identify possible factors affecting individuals' probability of using FinTech for payments.

This research and results make a significant contribution to the existing literature in the field of FinTech, since this topic is still insufficiently explored in North Macedonia. Despite the existing global interest in this topic, only few studies have addressed this issue. For example, The Alternative Financial Services Association of North Macedonia (2019) has carried out a similar research on the level of financial literacy in North Macedonia but only in the field of borrowing from non-bank financial companies. Their results indicated that the respondents do not have or have little information about the available financial services. They concluded that there is a real need for financial educational events that will contribute to improvement of the financial knowledge and skills of the population.

This paper is structured as follows. Section two presents the literature review, followed by the research design and the methodology applied in section three. The results of the data analysis are presented within the fourth section of the paper, alongside a discussion about the empirical findings. The last section of the paper presents the conclusion and recommendations of the study.

## LITERATURE REVIEW

A series of recent studies have highlighted the fact that the FinTech industry is playing a crucial role toward creating a broader financial inclusion where clients can safely use various types of adequate financial services. The recent empirical analysis conducted by Sahay et al (2020, p.11) points out that digital finance is an effective tool that can help to the GDP and employment growth as well as for reduction the inequalities in financial access following the COVID-19 pandemic. Furthermore, their analysis showed that “Digital financial services are faster, more efficient, and typically cheaper than traditional financial services and, therefore, increasingly reaching lower-income households and small- and SMEs”.

Kadievska – Vojnovik (2020) found that FinTech industry in North Macedonia is insufficiently developed due to the slow application of technology development in payments, transfer of funds, savings, loan approval, investment, insurance, etc. However, in the last few years, there has been an interest among Macedonian banks to fit into the new era of financial services by investing and developing new products and services such as development of mobile applications for banking services, as well as the digitalization of payment cards for contactless payment with a smart phone instead of a card. In the field of investment, financial innovation is mainly in the form of crowd funding platforms through which companies in early development and growing companies gain access to finance from domestic and foreign investors.

Ilievski (2020) draws attention to the general assessment of financial technologies development and perspective on the Macedonian financial markets by analysing the views of bankers and banks` clients on the FinTech. As indicated by his research results: younger users and those with a good and advanced knowledge of technology would accept the FinTech products and services; the entrance of FinTech companies is poor in North Macedonia due to the market size, weak clients digital financial readiness, legislation etc.; trust, stability and security are the key factors due to which the clients would stay loyal to traditional bank services, mainly in the area of payments, funds transfer and use of loan and deposit products.

Previous academic research showed that there are several key factors that affect the FinTech adoption among current and potential clients. Specifically, many researchers emphasize that the adaptability, security and trust are the most often mentioned factors that have a positive impact on the adoption of the service (Lal et al. 2020). In addition, the results of a study conducted by Hu et al (2019, p.12 ) are as follows: “Brand image, government support, and user innovation have significantly positive impacts on the adoption of FinTech services. These impacts are not only direct effects but can also have indirect impacts on trust in services, while trust will have a positive impact on the adoption of the service. Second, perceived risk has a significantly negative impact on trust, while trust actively guides users to engage with FinTech services.”

The work by McAuley (2015), point out that FinTech is an economic industry composed of companies that use technology to make financial systems more efficient. In “The Business Research Company” (2020) recent research, the FinTech market is segmented by type of service, by service provider, by technology and by geography. According to their segmentation we can identify the following types of services: payments, wealth management, insurance, personal loans, personal finance, fund transfer and others. In their carefully designed study, Dorfleitner et.al (2017) classified FinTech companies into four segments: financing, asset management, payment and other FinTech. As for payment-related products, a separation exists between alternative payment methods, blockchain and cryptocurrencies and other FinTech. (Quevedo, 2019). This research will focus on identifying the current Macedonian client usage of FinTech payment applications as an alternative method for online payments regardless of the type of companies that provide these kind of services.

## RESEARCH METHODOLOGY

This section will provide the research methodology applied in the study. Driven by the theoretical and empirical findings following research questions are of interest:

- Which socio economic factors have an effect on the FinTech usage among the examined users?
- Which factors are related with negative client experience with this kind of financial services?

To meet the goal and to answer these research questions, primary and secondary sources are included in the analysis. A survey questionnaire was designed (Survey, hereafter) and divided into three sections. I. General Information; II. Data on Usage of FinTech payment applications; and III. The

Level of digital financial literacy. The data were obtained by sending an online survey questionnaire to 296 individuals. Data collection was conducted from October 26<sup>th</sup> to November 30<sup>th</sup> 2020.

The first six questions within the questionnaire refer to general characteristics of examinees (gender and age structure, place of residence, level of education, employment status and level of computer knowledge and skills). The second group of questions requires data on the types and level of usage of FinTech applications and the reasons for using or not using this type of applications. The third group of questions is conceptualized to obtain data on digital financial literacy level of the respondents and whether there is interest for attending informational and educational events in the field of digital financial literacy.

Based on the data, this paper firstly provides extensive descriptive statistical analysis of FinTech usage for payments in North Macedonia according to various socioeconomic characteristics, offering insight into factors associated with it. In addition, empirical modeling is employed to evaluate relevant factors affecting probability to use FinTech for payments.

The decision to use FinTech for payments is modelled by using the binary choice model (logit model), which estimates the probability that the dependent variable  $y_i$  takes the value of one, representing FinTech usage, versus the value of zero (FinTech non-usage).

The estimated model is given by the equation:

$$Y = P(y_i = 1) = f(X\beta) \quad (1)$$

Where  $y$  is FinTech usage of the respondent  $i$ .  $Y$  is an indicator variable taking the value of 1 if a FinTech usage is confirmed,  $X$  represents the vector of covariates, while  $\beta$  is the vector of the coefficients on the covariates. Various regression specifications were tested and, based on the Akaike information criterion (AIC) and Bayesian information criterion (BIC) and likelihood ratio, the best performing model was chosen.

The variables used in the descriptive and econometric analyses are gender, age group, employment status, education level and computer and internet related skills and knowledge.

## RESULTS AND FINDINGS

### DESCRIPTIVE STATISTICS

With respect to age groups, almost quarter of the respondents above the age of 50 answered that they do not use digital financial applications (FinTech) to make payments, which is probably due to the lower computer

and internet literacy. In addition, relatively high percent of young population in the age group of 18-24, that is 23.8% of them, do not use financial applications to make payments, but in this case the reasoning might be rather in fact that this group comprises youngsters with status of supported student, mainly unemployed with no or lower incomes. On contrary, the age group of 25 to 30 years of age is the biggest user of FinTech with 93.3% using them for payments.

With respect to gender distribution, man and woman almost equally use FinTech for payments, with males with slightly higher percent- 81.9% for women vs. 86.0% for men.

Education hugely determines the use of FinTech for payments. With complete lack of usage of the FinTech among the respondents with primary education that is 100 % answered “no”, while the highest use of 90.2% is recorded among the respondents with highest level of education. The relationship among the level of education and the use of FinTech is obvious, suggesting that the increase of education increases the use of FinTech, with it spiking after secondary education.

Occupation also determines the usage of FinTech. According to the survey data, the pensioners the least use FinTech (40% of them answered “no”), while student that are employed almost 100% use FinTech for payments. Expectedly, great majority of employed respondents use FinTech (more than 85%) irrespectively whether they work in private or public sector.

Finally, the level of computer and internet knowledge or skills related to the use of digital financial applications also determine their use by the respondents, with lowest usage (75%) among the respondents with no knowledge or skills. As the knowledge increases, the usage of the specific FinTech also increases, with only 11.2% of respondents with advanced level of knowledge not using FinTech for payments, mainly due to security reasons.

With respect to the more detailed description of FinTech applications usage most of the users use mobile banking application solely (43.7%). Around 12.1% use both, Mobile wallet (KomPay, NLB Pay) and mobile banking application.

Regarding the reasons for using this FinTech applications majority of the users (69.1%) declared multiple reasons such as quick and easy use, possibility for performing transactions from any location, the possibility for saving time and money, better control, tracking and access to payments 24/7, and high security standards and confidentiality. Some respondents, 14.6% declared the urge for FinTech usage as a result of the Covid-19 crisis. On the opposite side, most of the nonusers, almost 85.6% responded that it is out of their habit, or some declared that they feel more confident talking to bank clerks, or they lose visibility over the transactions.

With respect to the self-assessment of digital financial literacy, most of the respondents (56.8%) self-assessed their knowledge as “medium”, 31.1% as excellent and 12.2 % as weak. Despite this, the intended interest for attending informational and educational events in the field of digital financial literacy is relatively low, with 40.9 % declaring that they are not interested or they do not need to, while the rest declared that they would attend such events.

### MULTIVARIATE LOGISTIC REGRESSION RESULTS

As mentioned above, multivariate logistic regression analysis was employed in order to empirically assess several factors affecting probability of FinTech use. Various specifications were tested using various socioeconomic determinants and combinations. Based on the post estimation diagnostic tests, the most plausible model was chosen. In all the various specifications, two variables were consistently significant education and the level of financial literacy. Gender, employment status and level of computer knowledge and skills were insignificant. Link test on model reports statistically insignificant coefficient on  $\_hatsq$ , suggesting that the functional form is correct.

Furthermore, the Hosmer and Lemeshow goodness of fit test for the chosen model suggests that the model is well specified. Further, there were no correlation among the main explanatory variables, suggesting that the multicollinearity is not an issue in the chosen model. Main results are presented in the table below.

Table 1. Logit model results for various variables determining FinTech use in North Macedonia.

Variable	Coefficient	Standard Error	$p >  z $
Gender	.3413299	.3539876	0.335
Age	-.1748183	.1373567	0.203
Education	.1754115	.0928	0.059
Employment	.2006672	.1302618	0.123
Level of computer knowledge	-.0554578	.1278225	0.664
Level financial literacy	.5867222	.2177848	0.007
Willingness to attend educational events	-.0885478	.1967524	0.653
$\_Constant$	2.99111	1.073301	0.005

Source: Authors' own calculations using Stata software.

The results of the model partially confirmed the above descriptive analysis. According to the model, education matters, with high educated users having higher probability to use FinTech. In addition, higher level of financial literacy is related to higher probability of FinTech use. Employment status, gender, age or computer knowledge or skills do not seem to affect FinTech use in statistically significant manner.

It should be noted that the model is heavily dominated by respondents who already use computer and Internet, since the Survey was conducted online, which is a specific weakness of the model. In addition, small sample size is additional serious limitation of the model, as well as the missing data on income, that respondents refused to answer. On the other side, the specific contribution of this analysis is the fact that it is among the few studies in the country that treat this issue.

## CONCLUSION AND RECOMMENDATIONS

Digital technology is becoming increasingly important to all forms of business. One such area that technology helps to progress is the world of finance. (Basul, 2019). The importance of FinTech applications is perceived in their universal access from any device and place, in saving time and money and in their ability for faster transactions processing.

This research study seeks to determine the factors that affect the FinTech usage within the examined users. The research results specify that respondents' usage or intentions toward using FinTech applications are affected by their educational level and financial literacy as well as perception of benefits (speed and ease-of-use, the time and money that respondents are saving, performing transactions from any location, control, monitoring and access to payments) and the emergency of the Covid-19 crisis. The study results highlight the role of respondents' habits, trust and lack of knowledge and skill for using these applications as a main reason that are affecting the users usage of FinTech applications.

While the extent of FinTech usage in North Macedonia might be on a relatively moderate level, there is still space for improvement. Based on the findings, this study offers the following recommendations to the banks, financial institutions and also other stakeholders such as government, educational institutions, NGO:

- Education matters. Better and more specifically IT-oriented education will improve the FinTech use in North Macedonia. The contemporary changes



in the schooling related to the Covid 19 pandemic will have its positive impact, however in longer run.

- Shen, Hu and Hueng (2018) noted that financial literacy positively affects financial inclusion. This was proved in our research, suggesting that financial literacy provides financial knowledge and skills, which could help consumers make sound financial decisions. The sole computer knowledge and skills are not enough for higher usage of FinTech. What matters more is the specific financial literacy. It gives users more self-confidence to use FinTech for payments.
- Furthermore, the research results indicate that there is a significant intent among the respondents to attend informational or educational events in the field of digital financial literacy. Organizing such events, in different life stages, by relevant educational and financial institutions would be of great importance for the adaptation of FinTech applications by prospective users.

Finally, this paper's findings stress the need for continuous observation of the FinTech users with surveys, and analyses that will assess their needs and indicate the knowledge or skills gaps.

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