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## Adoption factors in digital lending services offered by FinTech lenders

**JEL Classification:** D12; G23; G51; O33

**Keywords:** *FinTech; TAM; loan; financial services; consumer behavior*

### Abstract

**Research background:** Traditional financial institutions are facing new competitors – FinTech lenders. The development of these entities and their services depends on many factors, including the level of their acceptance and use by potential and/or current customers. This acceptance determines the ability to create desired financial results and defines the set of FinTech lenders' activities and also their environment aimed at shaping the offer which meets their consumers' expectations. The limited number of studies addressing the identification and assessment of the impact exerted by the adoption factors of lending services offered by FinTech lenders and the lack of such analyzes relating to these decisions made by consumers from Central and Eastern Europe argue for the need to conduct such research.

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**Purpose of the article:** Identify factors driving consumers' adoption of digital lending services offered by FinTech lenders in Poland.

**Methods:** Critical analysis of the source literature, descriptive and comparative analysis, diagnostic survey, econometric methods (PCA, SEM used in the TAM). Empirical data come from the surveys carried out in May 2022 using the CAWI method and covering a representative sample of 1,000 Poles.

**Findings & value added:** The study identified factors driving consumers' adoption of digital lending services, including perceived trust, risk, usefulness and financial health. It has been proven that the perceived ease of use and innovation do not represent the statistically significant constructs influencing the accepted adoption attitudes. The adopted research model shows a considerable power to explain the intention of using digital loans. The article is the first scientific study of this type discussing the identification of adoption factors for loan services offered by FinTech lenders operating on the Central and Eastern European market. The presented example of Poland being the leader in this dynamically developing market provides the background for conducting international comparative studies in the future.

## Introduction

Information and communication technologies are completely changing business models, including the way financial services have been delivered so far. This process is particularly visible on the financial market, as it is favored by the intangible features of the offered products, which can be easily digitalized. Traditional financial institutions are facing competitors in the form of FinTech lenders, i.e. companies providing services combining finance and modern technologies. The increasing interest in the offer of these entities is influenced by: decreasing customer loyalty towards banks, their more advanced digital skills, or changing preferences in terms of functionality, quality and security of the consumed services. Brainard (2016) claims that the potential of the FinTech sector lies in the benefits of using innovative financial services supporting households in the real-time control over their finances. FinTech lenders, understood in this article as non-bank loan institutions, represent the type of entities in the case of which the entire process of granting a consumer loan takes place remotely, via digital information technologies.

Ever since FinTech lenders appeared on the financial services market, their activities have attracted the interest of researchers. Tang (2019) investigates the answer to the question whether the loan offer of traditional lenders and FinTech lenders is of a complementary or substitutive nature. A similar research problem is posed by Buchak *et al.* (2018), D'Acunto and Rossi (2022) and Fuster *et al.* (2019), with their attention focused on the

mortgage loan market. Researchers examine the reasons for the dynamic increase of interest in digital loans among Fintech borrowers. Some point to changes in the conditions of lending activities caused by the COVID-19 pandemic. Limited access to traditional lenders' branches gave rise to an increase in the number of loans granted by FinTech lenders (Bao & Huang, 2021). In turn, Liu *et al.* (2022) identify the opposite relationship, namely the lockdown policy conducted by the Chinese authorities resulted in a decline in demand for digital loans among farmers from the regions most affected by the COVID-19 pandemic. Other researchers, among the reasons underlying the development of the FinTech lenders sector (Di Maggio & Yao, 2021; Hamarat & Broby, 2022), mention less restrictive legal provisions allowing non-bank lenders address their offer to the higher-risk segment of customers.

According to the data presented in the report prepared by the European Banking Authority (2022), in the EU countries a significant increase in the volume of digital lending can be observed since 2017. At the end of 2020, this amount reached EUR 6,214.96 million, while in 2017 it was EUR 2,389.51 million, which means an increase of about 160%. The value of digital loans granted in Poland amounted to EUR 266.85 million, placing it in the eighth position among the EU member states in 2020. Only seven countries were ranked higher from the so-called old fifteen (i.e. Italy, France, Germany, Spain, the Netherlands, Sweden and Finland). These data also indicate that the Polish digital loan market and the entities operating on it are the leaders in the group of Central and Eastern European countries belonging to the EU.

24 FinTech lenders are more and more active on the Polish digital loan market, including Wonga, Smartney, Vivus.pl, Kuki.pl, Smart loan (Polish Map of LendTech, 2021). The dynamic development of these entities observed in recent years depends on many elements, including the factors underlying the decision to accept and use their services. The factors supporting the adoption of technological innovations, which undoubtedly include digital lending services offered by FinTech lenders, can be considered in the light of various perspectives for their division, as a function of the adopted theories explaining their essence, significance and way of affecting consumer decisions. By influencing the adopted attitudes and decisions about the acceptance or rejection of the product offer, they ultimately shape both the ability of Fintech lenders to create financial results desired by their stakeholders as well as model a set of activities undertaken by

these entities and their environment, aimed at profiling the product offer (analyzed, e.g., from the perspective of: its scope, type, method and distribution tools or desired legal regulations), corresponding to consumer expectations in terms of loan services.

To the best knowledge of the authors of this study, the source literature review proves that the public space offers either a very limited number of studies on the identification, analysis and assessment of the impact exerted by the selected factors on decisions to use digital loan services offered by FinTech lenders, or a complete absence of such analyzes covering these decisions made by the consumers from Central and Eastern Europe. Having the above in mind, the research purpose of this study is to identify factors driving consumers' adoption of digital lending services offered by FinTech lenders in Poland.

In this case, an example based on the analysis of Polish consumer behavior constitutes the basis for filling the identified research gap and allows formulating conclusions which can provide the point of reference for comparative studies and analyzes conducted by other researchers. In addition, the content of this study may become a contribution to comparative studies addressing the determinants and manifestations of specific behavior presented by the consumers of digital loans in the group of Central and Eastern European countries.

In the application dimension, the research findings can provide the basis for formulating conclusions focused on the directions and scope of relevant activities, intensifying and facilitating the development of FinTech lenders, addressed to parties interested in the expansion of innovative digital financial services and entities providing them. In addition, they can offer a tool for learning about the behavior of potential customers interested in using financial services provided by foreign FinTechs which implement the strategy of their activity internalization.

The intention of the article authors is to supplement and expand the poorly analyzed problems related to the adoption factors of digital loan services offered by FinTech lenders, and thus contribute to WoS and Scopus literature.

The applied research methods include: critical analysis of the source literature, descriptive and comparative analysis, diagnostic survey as well as econometric methods, i.e. principal component analysis (PCA) and structural equation modelling (SEM) used in the Technology Acceptance Model (TAM). Empirical data were collected based on the nationwide survey

studies carried out using the authors' own survey, conducted in May 2022, applying the CAWI (Computer-Assisted Web Interview) method covering a representative sample of 1,000 Poles.

The structure of the article has been arranged to support the implementation of the research task and divided into six essential parts. After the introduction (part one), the source literature addressing the TAM model as well as the selected adoption factors related to the services offered by the FinTech sector entities (part two) are reviewed. The third part of the study presents the adopted research methodology. By creating their own research tool, constructs and formulating hypotheses presented in the research model, the authors considered it reasonable to draw on the existing scientific output in the field of research on the adoption of services offered by FinTech. Next, in the fourth part, the research results are discussed. The following, fifth part of the article describes the findings, while the final part – Conclusion, presents the implications and recommendations for practice along with the research limitations and suggestions for future research.

## **Literature review and research hypotheses**

The process of digitalization brought about significant changes in the economy known as the modern industrial revolution. They fall within the concept of Industry 4.0 based on creating value through close cooperation of all economic entities, possible as a result of digitalization (Bilan *et al.*, 2019, p. 70). Information and communication technologies transform the traditional mode of delivering financial services into a digital one. In the light of the changes presented in the source literature, the term “FinTech” was created as an abbreviation of combining two words: finance and technology (Gimpel *et al.*, 2018, p. 245). Kaji (2021) claims that the term was used for the first time in the 1980s, but it gained popularity only after the financial crisis in 2007–2008, when the FinTech sector began to develop dynamically. Bank for International Settlements (BIS, 2018, p. 8) defines FinTech as “a technological financial innovation and results in new business models, applications, processes or products. They have a significant, material impact on the performance of financial markets and institutions and on the provision of financial services”.

The enterprises included in the FinTech sector are undoubtedly characterized by innovation, which manifests itself in the so-called digital prox-

imity (Tanda & Schena, 2019). It changes the relationship between the company and the customer, for whom using the service offer becomes more convenient, faster, cheaper, free from time or geographic barriers.

FinTech lenders are active in the key segments of financial services such as: payments and remittances, lending, crowdfunding, enterprise financial management, enterprise technologies for financial institutions, insurance, trading and capital markets, personal financial management, wealth management and digital banking (Murinde *et al.*, 2022). From the perspective of the subject matter discussed in this article, its further part is focused on the lending activities of FinTech companies (FinTech lenders, LendTech), also referred to as FinTech lending (Berg *et al.*, 2022) or FinTech credit (Cornelli *et al.*, 2023). According to Agarwal and Chua (2020), FinTech lenders stand for the entities where the entire loan granting process takes place remotely, applicants do not have to contact an employee or visit the lender's facility. In turn, according to Berg *et al.* (2022) an explanation of the term FinTech lending is based on the nature of the customer-lender interaction or on the technology used to screen and monitor borrowers. In this case:

- Customer-lender interaction is purely app-based or purely online, such a lending process is faster, can reduce costs and improve the comfort of using it, it is especially attractive for borrowers who value convenience over personal interaction and advice, and it also increases lender elasticity to demand shocks and reduces errors that may result from interpersonal interactions in the credit granting process (cf. Fuster *et al.*, 2019);
- The screening and monitoring technology of borrowers is used to improve traditional banking models, it allows expanding the set of information about a potential borrower, e.g., through the use of digital footprints (Berg *et al.*, 2020) or the application of machine learning algorithms to improve the information content of a given set of information. This use of technology can improve default and recovery rates, change price and non-price conditions, and impact the pool of borrowers accessing finance.

FinTech credit initially referred to decentralized platforms (Peer-to-Peer lending), where individual lenders select borrowers or projects to grant loans in a market framework. Over time, some platforms started to finance loans from institutional investors, not just from individuals, and currently, according to the Cambridge Center for Alternative Finance FinTech credit covers the following business models: P2P/marketplace lending to consumers, businesses or for property; balance sheet lending to consumers,

businesses or for property; invoice trading, debt-based securities (debentures and bonds) and mini-bonds (Cornelli *et al.*, 2023).

Due to the fact that currently many traditional banks have invested in modern technology allowing the processing of loan applications via the Internet and/or using non-standard data sources to screen and monitor borrowers, some researchers add additional criteria to qualify a given entity to the FinTech lenders sector, e.g., the requirement of representing a non-bank lending institution, deriving from outside the traditional banking system (Ziegler *et al.*, 2021) or not accept deposits (Gopal & Schnabl, 2022).

FinTech lenders are understood in this article as non-bank lending institutions, in the case of which the entire process of granting a consumer loan takes place remotely, via digital information technologies.

The research addressing the conditions for accepting new information technologies used in finance, including those used by FinTech, is based on a wide spectrum of theories, models and conceptual frameworks. They form the theoretical basis for the identification and analysis of factors and reasons shaping the intentions and/or supporting the application of innovative technological achievements.

A review of contemporary studies on the adoption of FinTechs proves that the Technology Acceptance Model (TAM) is the tool most often used by researchers to help identify and assess acceptance factors for various services offered by the representatives of FinTech sector (see Aye, 2021; Balcázar & Rivas, 2021; Hu *et al.*, 2019; Marakarkandy *et al.*, 2017; Putranto & Sobari, 2021; Setiawan *et al.*, 2021; Tun-Pin *et al.*, 2019). Its high popularity and usefulness result from: the effectiveness of forecasting and explaining the adoption of new technologies (Setiawan *et al.*, 2021), as well as its plasticity allowing the inclusion of other constructs in the respective analysis process, which broadens the perception of both determinants and reasons supporting the adoption of modern information technologies (Hu *et al.*, 2019).

According to Davis's (1985) concept, the decision to apply a new information technology by its user should be treated as a behavioral reaction. It can be explained and predicted on the basis of individualized motivations shaped by specific extrinsic incentives, resulting from the perceived characteristics and capabilities assigned to technology. Having adopted, e.g., the assumptions of Self-determination Theory (SDT) (Deci & Ryan, 1985), the respective motivations can be divided into intrinsic and extrinsic ones.

Intrinsic motivation results, by its nature, in behavior generating contentment, satisfaction and challenge. According to Niemiec and Ryan (2009), this motivation is maintained by satisfying basic psychological needs of a human being, in the form of competence and autonomy. Extrinsic motivation, in turn, refers to doing something because it leads to a separable outcome (Ryan & Deci, 2000). According to Wen *et al.* (2011), the research covering human relations with information technologies shows that the extrinsically motivated people aim at multiplying and enhancing the results of a specific action/behavior by focusing, e.g., on increased effectiveness, which is a function of using information technology. In turn, people driven by intrinsic motivation expect, to a greater extent, interest, pleasure, a sense of their own competence and self-determination. The findings of Davis *et al.* (1992) prove that the basis for using IT tools by people in the place of performing their professional duties is both the belief in their usefulness and effectiveness in improving the efficiency and effectiveness of their work, as well as the sense of satisfaction resulting from applying innovative technological achievements. Thus, e.g., perceived usefulness and perceived ease of use represent typical examples of extrinsic motivation (Childers, 2001), whereas, e.g., perceived pleasure should be treated as intrinsic motivation (Van der Heijden, 2004). According to Nkwe and Cohen (2017), extrinsic motivations regarding the use of modern information technologies become a derivative of the functionalities attributed to them, supporting and/or enabling their user to perform the assigned tasks in a more convenient, practical or useful way. Therefore, when this technology, owing to its functions or instruments, is considered the means of achieving goals, the motivation to use it grows (Akdim *et al.*, 2022).

TAM creates a foundation for explaining the information technology user motivations based on three main factors, i.e.: perceived ease of use (PEOU), perceived usefulness (PU) and attitude towards usage (ATT). Subsequent modifications of this model, i.e. TAM2 (Venkatesh & Davis, 2000) and TAM3 (Venkatesh & Bala, 2008) allowed supplementing, developing and specifying the set of components shaping the PEOU and/or PU construct by the social factors and cognitive instrumental factors as well as anchor and adjustment determinants.

The above-mentioned flexibility and effectiveness of the TAM model enabled expanding it by additional constructs, taking the form of, e.g., perceived risk, trust, brand image, satisfaction with using modern technologies, government support or perceived innovation and reliability. The



combinations of these factors along with the original elements of the TAM model (PEOU, PU and ATT) allowed the empirical verification of hypotheses regarding their impact on the intentions of their usage or the actual use of the services provided by FinTech.

The authors of this article used seven constructs to assess the adoption factors of digital loan services offered by FinTech lenders in Poland. Their choice was not a random one. Firstly, it was a consequence of the original assumptions of the TAM model used, in which, regardless of the authors' own modifications, the presentation of variables in the form of Perceived Ease of Use (PEOU), Perceived Usefulness (PU) or Attitude (AT) is a necessary condition. Secondly, it was also subordinated to the conclusions drawn from the analysis of the source literature and the authors' research assumptions. In accordance with these determinants, constructs of significant importance in the adoption of digital financial services offered by FinTechs were identified and their impact was assessed (Ali *et al.*, 2021; Aye 2021; Hasan *et al.*, 2021; Nathan *et al.*, 2022; Tiwari *et al.*, 2021; Tu-Pin *et al.*, 2019; Xia *et al.*, 2022) in the form of: Personal Innovativeness (PI), Perceived Risk (PR), Trust (T). This set was also supplemented with the Financial health (FH) variable, poorly analyzed from the perspective of its impact on the adoption decisions of FinTech services. This predictor becomes particularly important for the adoption decisions in the situation of economic and financial consequences of the Covid-19 pandemic and the war in Ukraine, which, by affecting the level of available financial resources and the way they are used by consumers of digital financial services, influence their physical, mental and social welfare.

The description of the adopted constructs, along with the research hypotheses formulated on their basis, are included in the further part of the study.

#### *Perceived usefulness – PU*

Perceived usefulness (PU) expresses the level of belief in the potential or actual use of modern information technology that its application is/will be beneficial to its user through increasing the efficiency and effectiveness of the activities performed (Davis, 1985). Rogers *et al.* (2014), in turn, indicate that this concept covers the degree of perceiving the advantage of a given innovation over its predecessor.

The impact of PU on the attitudes and/or behavioral intentions of the individuals applying modern information technologies used by financial institutions has been confirmed by many authors (cf. e.g. Alalwan *et al.*, 2016; Chakiso, 2019; Singh *et al.*, 2020; Souiden *et al.*, 2021). For example, Liébana-Cabanillas *et al.* (2017) indicated that PU plays the role of an important predictor explaining the intentions of using mobile payments. A similar conclusion, but related to the intention of using mobile banking services, was formulated by Altin Gumussoy *et al.* (2018). According to these authors, the recognition of mobile banking as useful results in the willingness and/or increase in the frequency of its use.

This construct has become the most frequently quoted reason underlying the adoption of services provided by FinTech lenders. In their research, i.a. Hu *et al.* (2019), Luna *et al.* (2018), Zhang *et al.* (2018) and Khatri *et al.* (2020) prove that the higher the PU level of a given technology represented, e.g., by financial services provided as part of FinTech activities, the higher the probability of this factor influencing the intention to adopt technological innovations, and thus their actual use. The importance of this predictor for the adoption intentions of FinTech services is also confirmed by the fact of its strong relationship with shaping personal satisfaction resulting from the use of digital financial services offered on various types of IT platforms. As indicated by Tun-Pin *et al.* (2019), perceived usefulness becomes an effective factor influencing consumer satisfaction, because they assess their satisfaction based on the usefulness and strengths of the system or product offered by representatives of the FinTech industry.

In the light of the conclusions resulting from the source literature analysis, the following research hypothesis was put forward:

H1: *perceived usefulness (PU) of digital lending services offered by FinTech lenders has a significant and positive impact on the attitude towards their usage (ATT).*

#### *Perceived ease of use — PEOU*

In accordance with Davis's (1989) assumption, the perceived ease of use (PEOU) is a function of convincing an individual about the effort they have made, associated with the use of a new technology. The vast majority of research integrating the PEOU factor with the use of new technologies, including mobile banking or FinTech services, confirms a significant and

positive relationship and the impact of this construct on the attitudes towards technological innovations and the intentions of their use, as well as the actual use (Hu *et al.*, 2019; Singh *et al.*, 2020; Souiden *et al.*, 2021; Tun-Pin *et al.*, 2019). This relationship is based on the belief that the ease of access and use of any information technology significantly affects its adoption and an intention to use it. Such approach can be implemented in the lending services offered by FinTech lenders, indicating that the ease of acquiring knowledge and skills supporting their usage along with an uncomplicated access to and interaction with the appropriate systems of their service determine the level of adoption and use of this type of financial products (Chuang *et al.*, 2016; Nanggala, 2020).

PEOU should also be considered as the factor shaping the perceived usefulness (PU) of new information technology (Davis *et al.*, 1989; Venkatesh *et al.*, 2003). It has been indicated that a useful technological innovation, including the one offered by FinTech lenders, may not be adopted by its potential clients if it is difficult to use (Luna *et al.*, 2018; Setiawan *et al.*, 2021; Singh *et al.*, 2020).

Balcázar and Rivas (2021) and Marakarkandy *et al.* (2017) are of the opinion that although PEOU affects the usefulness level of a given service, this impact, at the initial stage of using new information technologies, may be limited because the people taking advantage of this technology are not familiar with using it. A similar judgment is made by Chuang *et al.* (2016) and Contreras Pinochet *et al.* (2019), who indicate that this construct has a smaller impact on the intention to use a new technology than its perceived usefulness. When referring to the relationship between PEOU and PU services provided by FinTech lenders, a strong and positive correlation between these factors is emphasized, which directly affects the manifested attitudes and/or the use of these services (Aye, 2021; Hu *et al.*, 2019; Luna *et al.*, 2018; Singh *et al.*, 2020).

Bearing in mind the above presented conclusions, the following research hypotheses were put forward:

H2: *perceived ease of use (PEOU) of digital lending services offered by FinTech lenders has a significant and positive impact on their perceived usefulness (PU).*

H3: *perceived ease of use (PEOU) of digital lending services offered by FinTech lenders has a significant and positive impact on the attitude towards their usage (ATT).*

*Perceived risk – PR*

Perceived risk (PR) can be equated with a subjective assessment of the risks associated with a purchase decision (Bauer, 1960; Peter & Ryan, 1976). Pavlou (2003), identifying the essence of the risk perceived by a consumer, indicates that it is a subjective expectation of incurring a loss in pursuit of the desired result, creating and shaping consumer's appropriate behavior aimed at avoiding mistakes and/or their consequences. The analysis of perceived risk impact on the acceptance and consumption of e-services carried out by Featherman and Pavlou (2003) indicates that the construct discussed here contributes to: the sense of uncertainty, mental discomfort, anxiety, emergence of conflicts, fears and cognitive dissonance. These feelings and their consequences, taking the form of evaluations they evoke, and as a result, specific behaviors, become a function of subjective opinions developed by a potential user, related to the broadly approached costs and benefits of consuming an e-service. A similar standpoint is represented by Khedmatgozar and Shahnazi (2018). These authors state that the level of risk perceived by e-commerce users, combined with the resulting benefits and costs, becomes an important factor influencing their adoption and usage.

Nowadays, in the period of dynamically developing modern information technologies, by establishing trust and attitudes presented by the potential consumers, PR is treated as the factor determining the adoption of innovative financial services and products, including those offered by FinTech lenders (cf. Balcázar & Rivas, 2021; Hu *et al.*, 2019; Marakarkandy *et al.*, 2017; Putranto & Sobari, 2021).

In the case of this study, this construct refers to the risks being a function of the use of innovative lending services manifested by both financial and privacy risk. Financial risk is approached here as the risk of potential financial losses (related to the use of FinTech services) resulting from, e.g., system failures, moral hazard or additional fees (Ryu, 2018). In turn, privacy risk is combined with the subjective feeling regarding the threat of losing confidential information referring to personal data, wealth, family, etc. According to Nakashima (2018), this risk is a consequence of using modern technologies by FinTech companies in the form of, e.g.: Big Data, artificial intelligence or cloud computing. These innovations, by their nature, create specific risks to the privacy of sensitive data and the security of transactions (Balcázar & Rivas, 2021).

The recognized risks (regardless of their nature), along with the assessment of their potential, result in adopting a specific attitude towards innovative financial services offered by FinTech lenders. Such effect is realized through PR direct influence on this attitude or by establishing trust in this type of entities and their products and/or opinions, e.g., about the ease of use or the usefulness of the discussed services. The evidence confirming the importance of PR in the use of innovative financial services is provided by empirical research supported by theoretical analyses. They indicate that the increased consumption of these services becomes a function of the declining PR potential of their use (see e.g. Li *et al.*, 2020; Xie *et al.*, 2021).

Accepting the presented arguments has resulted in the formulation of the following hypothesis:

H4: *perceived risk (PR) of digital lending services offered by FinTech lenders has a significant and negative impact on the attitude towards their usage (ATT).*

*Perceived trust – PT*

According to Pavlou (2003), trust is an attribute that characterizes and accompanies most social and economic relationships featuring uncertainty. According to Mayer *et al.* (1995, p. 712) trust means “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party”. In accordance with the social exchange theory (Thibaut & Kelley, 1959), it is at the heart of creating exchange relationships between people. Following the assumptions of this theory, the exchange relationship will not be established if the resulting expected benefits are lower than the related costs. Therefore, e.g., assigning a higher level of risk (Keen *et al.*, 1999; Soleimani, 2022; Suh & Han, 2002) to the transactions performed using modern information technologies (e.g. on-line transactions) comparing to the traditional ones determines approaching trust as a prerequisite for consumer participation in e-commerce. As stated by Venkatesh *et al.* (2008) expressing this psychological belief by consumers of goods and services purchased in this way should be considered an important predictor of behavioral intentions of their acceptance and usage.

Identifying the meaning and significance of trust is of multifaceted nature as, i.a. the function of its perception perspective, e.g., institutional

trust, technology trust, interpersonal trust and a theory or model explaining its essence, e.g., trust transfer theory (Lim *et al.*, 2006), knowledge-based trust model (Mayer *et al.*, 1995).

In this study, the addressed construct includes confidence in the brand and loan services provided by FinTech companies. Adopting this perspective is a consequence of the authors' own assumption, following which PT, influencing the decision to accept or reject innovative financial services offered by FinTech lenders, is closely related to: a/security assessment of the products themselves and also the form and methods of their distribution, as well as b/brand image of the entity offering them, the knowledge and assessment of which influence consumer decisions (Caviggioli *et al.*, 2020; Khatri *et al.*, 2020).

PT, as an identifier in the adoption of technological innovations, has a well-established place in the research addressing the acceptance and use of FinTech financial services (Balcázar & Rivas, 2021; Caviggioli *et al.*, 2020; Setiawan *et al.*, 2021).

For example, Roh *et al.* (2022), analyzing the impact of the perceived system quality, information and service quality on trust expressed towards FinTechs operating in China, confirms positive impact of these constructs, at the same time indicating that this factor has a positive influence on the attitude presented customers to these institutions.

Stewart and Jürjens (2018), who identify and analyze the key factors of FinTech adoption in Germany, indicate, i.a.: confidentiality, organizational reliability, as well as data security and privacy. At the same time, these authors state that these attributes influence trust in this type of institution which determine the use of their services.

Hu *et al.* (2019) formulates the conclusion that in the FinTech adoption scenario, the role of PT increases due to the amount and multidimensionality of data involved in this service. Hu *et al.* (2019) formulates the conclusion that in the FinTech adoption scenario, the role of PT gains significance along with the amount and multidimensionality of data involved in this service. He also observes, on this basis, that PT becomes an important element determining attitude towards this type of services. The author strongly emphasizes the need for research covering both the way of PT influencing such decisions and identifying factors which determine its level. In turn, Chuang *et al.* (2016), when analyzing factors having impact on trust in FinTech, indicates that regarding the sector in question, brand credibility and reputation turn out to be the crucial elements which contribute to

overcoming users' distrust towards the application of innovative financial technologies, thus positively influencing the process of their adoption and use. Hence, the activities aimed at the brand image strengthening become the element increasing PT and improving users' attitude to using FinTech services. The conclusions formulated above remain the foundation of the following research hypothesis:

H5: *perceived trust (PT) in digital lending services offered by FinTech lenders has a significant and positive impact on the attitude towards their usage (ATT).*

#### *Perceived innovation — PI*

In the discussed context the concept of user innovation can be associated with: the level of acceptance for new technologies, products and services (Hu *et al.*, 2019), the tendency to experiment with new products (Lu *et al.*, 2005) or the individual's willingness to use new technologies in carrying out the assigned tasks (Tun-Pin *et al.*, 2019). The expressed readiness and willingness to accept new technologies becomes an important factor creating changes in human behavior, reducing doubts and fears related to implementing innovative products and services (Solarz & Adamek, 2020). In the opinion of Liébana-Cabanillas *et al.* (2018), highly innovative people, through their behavior and actions, fulfil the role of change leaders and contribute to the popularization and implementation of new information technologies. Oliveira *et al.* (2016) indicates that personal innovation becomes an important element in the implementation of information technologies, as the creativity and uniqueness associated with this trait affect attitudes for the acceptance of new technologies. A similar conclusion is made by Zhang *et al.* (2018), who state that the innovation represented by an individual ensures a positive approach to technological achievements and an attitude towards their acceptance.

The impact of this construct on the expressed adoption intentions of FinTech financial services may be either direct or indirect. In the first case, PI shapes directly the attitudes towards their use (Contreras Pinochet *et al.*, 2019; Hu *et al.*, 2019; Tun-Pin *et al.*, 2019), whereas in the second case the impact on these attitudes takes place through the influence of the discussed factor on the perceived usefulness and/or ease of use of digital financial innovations, thus determining individualized intentions of their acceptance and usage (Shankar & Datta, 2018).

Bearing in mind that many previous studies have confirmed the positive relationship between personal innovation and the adoption of new technologies used in the provision of services by FinTech the following research hypothesis was formulated:

*H6: perceived innovation (PI) shows a significant, positive impact on the attitude (ATT) towards using digital lending services offered by FinTech lenders.*

#### Perceived financial health – PFH

The Financial Health Institute defines financial health as a dynamic relationship of financial and economic resources influencing physical, mental and social welfare of an individual. Joo (2008) states that it is a comprehensive category, unidentifiable using a single measure, which combines financial situation and satisfaction with specific attitudes and behaviors presented by an individual. In the conducted study, this construct was operationalized through the assessments of the surveyed respondents, assigned to selected attitudes related to the process of obtaining and spending funds in the current conditions influenced by, e.g., the socio-economic consequences of the Covid-19 pandemic or the effects of war in Ukraine. Considering the importance of this factor for the adopted attitudes towards the acceptance of new financial technologies, the conducted research highlights its positive correlation with the adoption of such technological innovations (Morgan & Trinh, 2020; Setiawan *et al.*, 2021; Yoshino *et al.*, 2020). On this basis, the following research hypothesis was formulated:

*H7: perceived financial health (PFH) has a significant and positive impact on the attitude towards using digital lending services (ATT) offered by FinTech lenders.*

#### Attitude –ATT

Attitude (ATT) is defined as the disposition of an individual to present an individualized, positive or negative reaction to a given object (Ajzen, 1993). According to Fishbein and Ajzen (1977), this construct consists of cognitive, affective and conative factors which altogether shape appropriate behavior. In its assumption, the TAM model (Davis, 1989) shows a strong correlation between the attitudes adopted towards modern information technologies and the intentions of their adoption and usage. The



authors' own corrections introduced in this model, apart from PU and PEOU, indicate additional factors influencing this construct (e.g. the aforementioned risk or trust). The approach and assessment of the impact exerted by these elements provide the basis for taking a broader perspective regarding factors determining the attitudes towards new technologies, and thus the intentions of their usage. Empirical research on the identification and assessment of factors in the adoption of FinTech services confirms the positive correlation and influence of the presented attitude on the intentions of their application and use (Balcázar & Rivas, 2021; Chuang *et al.*, 2016; Hu *et al.*, 2019; Putranto & Sobari, 2021; Setiawan *et al.*, 2021). Having considered the importance of this variable in the process of identifying factors responsible for the adoption of FinTech services, the following hypothesis was proposed:

*H8: attitude towards usage (ATT) of digital lending services offered by FinTech lenders demonstrates a significant and positive influence on the intention to use them (ITU).*

## **Research methods**

The survey (CAWI method) used to prepare the content of this article was carried out in May 2022 through the SW Research Market and Opinion Research Agency. 4,905 invitations to participate in the study were sent. Ultimately, the research sample, the selection of which was random in strata, consisted of 1,000 Poles. The swpanel.pl research panel, with over 200 000 active users aged 18+ was the sampling operator. The maximum statistical error for the entire sample was at the level of 3.1%. The established layers (40) were determined based on the total distribution of the selected population characteristics in the form of: gender, age and size class of the place of residence. On this basis, the adopted research sample corresponded to the structure of Poles in terms of the indicated socio-demographic variables.

In order to test the proposed research model (see Figure 1), a questionnaire was prepared consisting of 34 questions divided into two parts including demographic information and individual assessments of adoption factors for FinTech loan services. All questions were closed-ended and single-choice ones. This set consisted of 28 questions assessed on a 5-point

Likert scale, where 1 – means a definite rejection of a given statement and 5 – means its definite acceptance, 1 question with four variants of answers and 5 socio-demographic questions.

When measuring the isolated constructs in the form of PU, PEOU, PR, PT, PFH and ATT as well as the explanatory variable ITU, 24 and 4 research instruments, respectively, were used taking the form of modified statements adopted from the source literature (see Table 1).

The model was tested through a principal component analysis (PCA) and structural equation model (SEM) analysis. The conducted analyses were supported by IBM SPSS Statistics and R Package (lavaan package).

Structural Equation Modeling (SEM) is considered one of the most popular statistical methods used to analyze quantitative data on, i.a. consumer behavior (cf. Hair *et al.*, 2022, p. 20). It replaces the traditional statistical empirical testing techniques of hypothetical correlations between the analyzed variables (e.g. correlation analysis, regression analysis or equality of means tests) characterized by three significant limitations/disadvantages regarding: a/postulating a simple structure of the model, b/the requirement for variables to be considered observable, and c/the assumption that all measured variables are free of a measurement error (Haenlein & Kaplan, 2004).

In its essence, SEM allows for developing models taking into account latent (unobservable) variables, formative variables, indirect effects and intergroup comparisons (Lowry & Gaskin, 2014). The advantage of SEM compared to traditional statistical techniques is: a/the possibility of including latent variables in the model, e.g., constructs resulting from the sum of several observable variables, and b/the ability to test indirect (mediation analysis) and direct correlations between a large group of variables at the same time. SEM also helps to: a/verify complex hypotheses regarding the equality of effects between groups b/estimate the goodness of fit of the tested theoretical model to the correlations observed in the collected data and provide guidance on how to best fit the model to them (Lowry & Gaskin, 2014). A significant fact supporting the usefulness of SEM is that this method allows for the simultaneous assessment of the used research tool (measurement model) as well as the tested theory (structural model).

In SEM practice, two popular statistical techniques dominate, i.e. structural modeling based on: a/analysis of covariance (CB-SEM) and b/partial least squares (PLS-SEM, also referred to as PLS path modeling). CB-SEM is mainly used to confirm (or reject) the existing theories and underlying hy-

potheses, while PLS, having no such limitations, can be used for both confirmation and exploratory purposes – i.e. for developing and testing new theoretical models. In addition, PLS-SEM: a/owing to the built-in non-parametric techniques, better copes with the distribution of variables deviating from normal (Hair *et al.*, 2014), b/offers the possibility to use both reflective and formative constructs in the model c /should be used when we use higher-order constructs (Marcoulides *et al.*, 2009), d/requires smaller samples for a larger number of indicators. It is worth noting that the use of SEM in statistical research also encounters certain limitations. They are the consequence of, i.a. the need to recognize all the properties of this tool, its requirements and interpretation of the effects resulting from its application by a researcher (Shook *et al.*, 2004), the difficulty of identifying the research model (especially when CB SEM is used) or using a research sample of a limited size (Hair *et al.*, 2014).

## **Results**

### *Characteristics of the studied population*

The selected information about the surveyed persons is included in Table 2. Women (53.3%) constituted the majority of the respondents. The average age of the analyzed group representative was 46, with more than 45% being over 50. Almost 50% of the respondents had secondary education and 37% of them were university graduates. 90% of the respondents earned net income lower than PLN 5,000, and 21% had income lower than the minimum wage (amounting to PLN 2,363 in 2022). More than 40% of the respondents indicated a village as their place of residence, and 32% a city with up to 100,000 inhabitants.

The analytical activities carried out as part of the conducted study were based on a short analysis of descriptive statistics characterizing the measures of attitudes presented by the respondents and the structural equation model (SEM).

Determining the value of the classical distribution measure, showing a central tendency, is the way to inform the researcher about the attitudes presented by the respondents, i.e., in this case, the average number of points assigned to each research tool (statement) and the construct, as well as the dispersion measure, describing the dispersion of data in the form of

standard deviation. The level of impact assigned to each research tool was determined based on the following formula (Abu-Taieh *et. al.*, 2022):

$$\frac{(\text{highest point in Likert scale} - \text{lowest point in Likert scale})}{\text{number of levels used}} \quad (1)$$

in this case  $\frac{(5-1)}{5} = 0.8$

On this basis, it was concluded that the impact of each of the research tools may take the following level:

a/very low (1.00-1.80); b/low (1.81-2.60); c/moderate (2.61-3.40); d/high (3.41-4.20) and e/very high (4.21-5.00). The ordering of individual tools and constructs was based on the value of the assigned average number of points (see Table 3.).

As shown above, most of the constructs used have moderate impact on the analyzed intentions to use lending services, except for the PEOU factor, whose average rating (3.543) determines assessing this impact as high. On the other hand, within the framework of the analyzed research tools, the highest score was assigned to the PEOU1 instrument (3.90) and the lowest to PFH3 (2.52). Hence, the respondents most strongly agree with the opinion that the mobile application allowing the use of digital lending services offered by FinTech should be understandable, transparent and simple, and also confirm, to the least extent, that they sometimes incur impulsive debt, e.g., by using a card credit.

### *Results of the SEM model analysis*

#### Measurement model – reliability and validity

The construction of the measurement model is based on checking whether the latent variables used in it have been correctly operationalized. In the case of this study, a confirmatory factor analysis was used to assess the adopted measurement model and, as its part, the appropriate tests of reliability and validity (see Table 4).

The reliability measurement of latent variables was based on: the assessment of factor loadings ( $\lambda$ ), the Cronbach's alpha coefficient and the composite reliability coefficient – CR. Factor loadings describe the correlation of observable variables and a latent variable. The value of this parameter should not be lower than 0.7 (Hair *et al.*, 2010). In the case of this study,

the  $\lambda$  value ranges from 0.730 to 0.938, confirming the desired level of correlation between the latent variables identified in the model and the observable variables which identify them. The value of the Cronbach's alpha measure, depending on how restrictive approach is taken, should be higher than 0.6 (Fornell & Larcker, 1981) or 0.7 (Hair *et al.*, 2010) and the CR indicator higher than 0.7 (Hair *et al.*, 2014). Both the Cronbach's alpha parameter, ranging from 0.760 to 0.934, and the CR indicator ranging from 0.868 to 0.955 confirm positive assessment of the internal consistency regarding the adopted measurement scales.

The value of average variance extracted – AVE is the tool to assess the convergent validity. According to the recommendations presented in the source literature (Hair *et al.*, 2010), the minimum acceptable AVE level should be higher than 0.5. In the case of this test, the value of AVE for all constructs meets this requirement, ranging from 0.600 to 0.841.

Meeting the discriminant validity criterion was based on three requirements. And so, this validity is confirmed when (Munoz-Leiva *et al.*, 2017): a/in the 95% trust interval for the correlation between pairs of constructs the value of 1 is not present (Anderson & Gerbing, 1988), b/the level of correlation between pairs of latent variables is lower than 0.9 (Hair *et al.*, 1995) c/the square root value of AVE coefficient specific to each latent variable is higher than the value of this variable correlation with any other latent variable (Fornell & Larcker, 1981). The information presented in Table 5 confirms that the above-mentioned requirements have been met. Ultimately, the results of the performed measurements proved that the conducted study presented an appropriate level of both convergent and discriminant validity.

## Structural model

Meeting the above-mentioned conditions of reliability and validity leads to the activities focused on testing the formulated research hypotheses, where fit assessment of the adopted structural model to the obtained data was performed as first. This action is based on the estimation of fit-index measures, e.g., in the form:  $\chi^2/df$ , Comparative Fit Index (CFI), Root Mean Square Residuals (RMSEA), Standardized Root Mean Square Residual (SMRM) and Tucker-Lewis Index (TLI). The desired values of these parameters along with their levels appropriate for the structural model are pre-

sented in Table 6. The presented values suggest that the structure of the model is appropriate and the data are consistent with it.

R-Squared multiple correlation coefficient is an important measure of the used structural model quality, which indicates the part of the dependent variable variance explained by the explanatory variables. In social sciences, due to high variability of human behavior, R-Squared values above 0.1 are considered acceptable, whereas those exceeding 0.2 as high (Hair *et al.*, 2012). In the case of the used model, the value of this parameter is 0.582, which means that the correlations established in it can explain 58.2% of the ITU variance. This is an above-average level because, as Chan *et al.* (2022) observes, for social studies, the value of this parameter fluctuates in the range of 0.3-0.5. R-Squared for all latent variables of the structural model is presented in Table 7.

### Hypothesis Testing

Table 8 lists path coefficients and their significance. Except for H3 and H6 the other hypotheses are statistically significant. The findings suggest that Perceived usefulness has a positive and significant correlation with Attitude, which means that H1 has been confirmed. Additionally, the results show that Perceived ease of use has a positive influence on Perceived usefulness, therefore H2 has been confirmed. The fourth hypothesis (H4) assumed that Perceived risk would have a negative impact on Attitude, which has been confirmed by the obtained results. Perceived trust was found to have a strong positive and statistically significant influence on Attitude, therefore H5 has also been confirmed. Finally, both the seventh and eighth hypotheses have been accepted, because Perceived financial health has a significant positive influence on Attitude and Attitude on Intention to use. A summary of the authors' research results and analysis are presented in Figure 2.

### Discussion

The research findings show that the attitude adopted by Poles had a significant impact on the intentions of using digital lending services offered by FinTech lenders and, in turn, this variable was influenced by such factors

as usefulness, risk, trust and financial health as perceived by the respondents.

No statistical significance of the perceived ease of use impact on the attitude towards using the services provided by FinTech lenders was recorded, which although surprising from the perspective of the TAM model assumptions, remains in line with the research results identifying factors in the adoption of the services offered by both FinTech lenders and mobile banking (Hu *et al.*, 2019; Putranto & Sobari, 2021; Setiawan *et al.*, 2021). This situation is a consequence of the empirically verified assumption following which at an early stage of using the discussed financial services, supported by the innovative information technologies, the perceived ease of use does not have such a significant impact on their adoption, because their users do not yet know all the functional features and principles of interaction with the operating system and platform through which they are distributed (Balcázar *et al.*, 2021). Therefore, the perception of this factor in its direct impact on the adoption attitudes of Poles may be limited, which, in turn, may lead to the conclusion that FinTech lenders offered on the domestic market present an early stage of their development, and their potential or current users show lack or a limited level of experience resulting from their actual usage, which translates into their assessment of the perceived ease of use factor. At this point, however, it is worth highlighting that, as the results of this study prove, the discussed construct, through its direct impact on the perceived usefulness, becomes an indirect moderator of the adoption intentions formulated with regard to loan services offered by the FinTech lenders in Poland.

Perceived trust is one of the parameters that statistically significantly and positively affect the willingness to use loan services offered by the FinTech lenders. The collected findings confirm the previously conducted research, i.a. by (Caviggioli *et al.*, 2020; Contreras Pinochet *et al.*, 2019; Hu *et al.*, 2019; Polasik & Kotkowski, 2022), which shows that it is considered one of the main determinants related to the adoption of technological innovations. Moreover, it is worth emphasizing that, according to the definition adopted in this article, the FinTech sector remains special in the sense that it includes small entities operating on the market for a short time, not being banks or financial institutions subject to state supervision, with poorly recognizable brands. Meanwhile, many respondents declaring the use of digital loans believe that FinTech lenders conduct their business responsibly (69.58%), and thus they perceive them as trustworthy. Another dimension

of trust included in the authors' own research is the subjective sense of security level and the reliability of mobile applications enabling the use of digital loans. Only 39.6% of all the respondents trust the technological solutions used by the FinTech lenders, whereas in the group of borrowers – clients of these institutions, this percentage is much higher and amounts to 65.40%. In the light of the observed correlations, a conclusion can be drawn that the opinions of existing customers both regarding the entities themselves, but also related to the process of providing services, its efficiency, convenience, simplified formalities and speed of service are very important for the development of the market offering digital loans provided by the FinTech lenders.

In turn, the above-mentioned features determine the perceived usefulness of the FinTech lenders' offer, which, according to the authors' own research, has a positive impact on users' attitudes towards the adoption of digital lending services. The obtained research results are consistent with the conclusions of other researchers (Contreras Pinochet *et al.*, 2019; Hu *et al.*, 2019; Khatri *et al.*, 2020; Luna *et al.*, 2018 and Zhang *et al.*, 2018), slight differences appear only in the catalog of benefits and advantages related to using digital loans, or the power of impact on the dependent variable. According to the surveyed Poles using the offer of FinTech lenders, the most useful feature was the simplification of the necessary formalities and the shorter time needed to obtain money – 76.43% of responses. Beyond any doubt, as long as the process of providing loan services by FinTech lenders is perceived as more useful than the traditional distribution channels offered by banks, the entities offering innovative technological solutions will attract customers.

Perceived risk is the only factor in the adoption of digital lending services offered by FinTech lenders showing a statistically significant but negative correlation to Attitude. This means that the stronger the customers feel the uncertainty and concerns regarding, e.g., the loss of privacy, the possibility of suffering financial losses, coming across technical problems, the obtained product functioning in a way that does not meet the expectations of the so-called risk of outcome (Nakashima, 2018; Ryu, 2018), the less open attitude they take towards using this type of financial innovation. The research findings are consistent with the conclusions of other researchers, e.g., Li *et al.* (2020), Xie *et al.* (2021), Hu *et al.* (2019), Putranto and Sobari (2021), Marakarkandy *et al.* (2017). Moreover, Balcázar and Rivas (2021) prove that the perceived risk negatively affects trust which, in turn, means



a less favorable attitude towards using the services offered by the FinTech lenders. The conducted own research shows that the percentage of respondents noticing the risk related to borrowing funds from the FinTech sector entities ranges from 31.5% to 46.4%, depending on the risk factor. Most people fear that the improper operation of the mobile application enabling the use of the FinTech lending offer will result in problems connected with its usage and operation. Interestingly, the respondents who, so far, have not used digital lending services offered by the FinTech lenders, however, are considering to do so in the future (28.8% of the total population) predominantly represent the 35–49 age bracket, for whom the lowest level of perceived risk was recorded (36.5% of responses, while, for comparison, it was 56.4% in the 25–34 age group). This allows concluding that the concern to increase the sense of security of both current and future customers should become an important task for the FinTech lenders sector entities if they want to compete with traditional financial institutions for borrowers, but it may turn out more important to focus on the activities aimed at increasing the perception of usefulness and trust.

The assessment of relations occurring between the perceived financial health and the attitudes presented by the respondents regarding the adoption of loan services offered by FinTech lenders is meaningful for the analyses carried out in the article. As in the case of the previous constructs, the findings collected here confirm the conclusions of other authors, indicating a positive influence of this factor on the above-mentioned adoption attitudes (Nathan *et al.*, 2022; Setiawan *et al.*, 2021). In the case of the analyzed population, such an interpretation of this correlation may be supported by: a/comparing the expressed tendency towards impulsive indebtedness by the respondents, broken down into the individuals either already using or declaring their willingness to use FinTech lenders services and the respondents refraining from using this type of financial products, or b/assessing the percentage of the respondents reacting to rapid increase in prices by hoarding the purchase.

And so, in the group of users/declaring future use of loans, 47% of the respondents do not express any tendency towards impulsive indebtedness. In the group of those who do not use FinTech lending services, this percentage drops to 20%. In turn, almost 58% of users/declaring the use of financial products discussed here and only 35% of those who refrain from taking out such loans do not react with increased purchase of goods to the observed rapid increase in prices. These situations can be explained by the

fact that the belief expressed by the respondents about the desired level of their financial health translates into and results in the rationalization of behaviors both in the area of incurring financial liabilities and the response to market impulses caused by, e.g., rising inflation. Such prudence is also manifested in the assessment of the standing and security of the functioning financial institutions, including those based on modern information and communication technologies (approx. 54% of FinTech lenders users vs. 40% of non-users do not feel inclined to increase cash withdrawals from their bank accounts caused by the current geopolitical situation). According to the authors, it should be adopted that in the case of the studied population, the use of FinTech lenders services also becomes a function of the perceived level of financial health, resulting in a situation where these lenders are not approached as a source of financing impulsive, current purchasing needs created by current events. The loans obtained from these entities are more often spent on financing rational purchases, related to goods and services whose unit value is growing over time (see in: ZPF, 2021, p. 15).

Similarly to numerous previous studies on the adoption of technological innovations (e.g. Putranto & Sobari, 2021; Balcázar & Rivas, 2021; Hu *et al.*, 2019; Setiawan *et al.*, 2021), also this article confirms the correlation that users' attitude directly influences their intentions to use digital lending services offered by FinTech lenders. People who think that borrowing money from the FinTech lenders is convenient, beneficial, reasonable or interesting are open to these solutions and are more willing to use them than others.

Based on the conducted source literature review and the comparisons of the authors' research findings with the results obtained by other researchers, it should be stated that this article is the first study of this type which opens a discussion on the identification and assessment of the adoption factors of digital lending services provided by FinTech lenders in the countries of Central and Eastern Europe. The described case of Poland — the leader on this dynamically developing market, firstly, allows better identification and understanding of the behavior presented by potential customers interested in using financial services offered by FinTech lenders who implement the strategy of their activity internalization, secondly, creates the background for conducting international comparative studies in the future.

## **Conclusions**

The purpose of the research being the subject matter of this article was to identify factors driving consumers' adoption of digital lending services offered by FinTech lenders in Poland. The implementation of the defined research task was based on quantitative research which used a modified technology acceptance model covering seven constructs. The research results confirmed that the adopted model and the factors included in it show a significant explanatory power regarding the intentions to use the above-mentioned loan services. Its components, as well as the relationships adopted between them, allowed confirming six out of eight research hypotheses. Ultimately, it was indicated that the attitudes towards using loans offered by the FinTech lenders, being a function of: perceived trust, usefulness, financial health and the assigned risk determine the intentions in adopting these services by Poles. The conducted analyses also proved that both the perceived ease of use and innovation are not the statistically significant constructs affecting the attitudes towards using FinTech lending services.

In its practical dimension, the identification and assessment of the impact exerted by the selected adopting factors of the above-mentioned financial services allows better recognition and understanding of the way they affect consumer opinions decisive in choosing or resigning from a specific product offer. This knowledge is particularly important for the service providers, in this case FinTech lenders, who strive to fully integrate the expectations of a potential client with the practice of the provided financial activities. Highlighting the role of perceived trust in the process of shaping acceptance attitudes is also an important conclusion for the business practice. The initial stage of the entire FinTech sector development in Poland, including its component created by the FinTech lenders, forces such institutions and their environment to undertake activities focused on creating and maintaining the atmosphere of trust towards them and their products. These activities should be of multidirectional and multifaceted nature covering, i.a.: appropriate marketing strategies (e.g. aimed at creating the desired brand image), active structuring of the risk assigned to products, procedures as well as methods and tools for their distribution and usage, or personalized educational campaigns, raising both the financial knowledge of potential/current users and their awareness of the possibilities for using technological and information revolution achievements in the world of

personal finance. The issue of continuous improvement of the regulatory environment, on the one hand, securing the borrower's interest and, on the other, supporting the development of modern financial technologies, is also important for the addressed subject matter.

Like many studies addressing the acceptance of new technologies, also the ones presented here show their limitations, determining the directions and areas for further analysis.

Firstly, attention should be paid to the relatively small size of the analyzed population, its diversity in terms of socio-demographic characteristics and, at the same time, the uniformity of nationality and shared cultural values. Future research, expanding the cognitive perspective, can be addressed to separate groups of respondents, uniform in terms of selected features, e.g., characterized by belonging to a specific generation, level of financial education, gender, digital skills, etc.

Secondly, the element determining the obtained results was the adopted number and content of the constructs used in the model and their correlations. In this case, apart from the basic factors for the TAM model (and the correlations between them) taking the form of PU, PEOU and ATT influencing ITU, additional latent variables, such as PR, PT, PI and PFH were adopted. The consequence of such action was limiting/narrowing the possibility of recognizing and understanding the impact of a wider spectrum of factors determining the process of accepting loan services offered by FinTech lenders.

The third limitation of the conducted research and its results is the choice and application of the TAM model — one of many methods used in identifying and analyzing constructs influencing the intentions of using LendTech loan services/FinTech lenders. This choice may, to some extent, limit the process of recognizing various mechanisms and premises underlying such decisions.

The obtained results may define directions for future research. For example, as a consequence of: a/assessing the importance of the Financial health construct, which in our research turned out to be an element significantly influencing the decisions related to using FinTech lenders' offer and b/the perceived lack of research addressing this predictor, and c/the deteriorating socio-economic conditions shaping the determinants of Financial health — it would be important to conduct in-depth research on the role and significance of the FinTech lenders loan offer, perceived from the perspective of the financial situation of households, as a complementary or

a substitutive offer against the loans provided by traditional financial intermediaries. From a scientific perspective, this activity opens up new research fields covering, i.a. future, desired directions of the loan services market development.

Bearing in mind the diversity of cultural values assigned to consumers from different parts of the world as well as the limited number of studies in the source literature discussing the adoption factors of FinTech lenders services, we consider it important to extend the conducted analyzes by identifying and assessing the relationships between the shared cultural values and factors underlying the decisions related to using digital loans. Conducting such research would require international comparisons in order to provide the basis for formulating conclusions that allow better understanding and broadening the perception of both determinants and premises for the adoption of FinTech lenders services.

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## Annex

**Table 1.** Variable description

Construct Variable		Measurement Items	Sources
Perceived usefulness (PU)	PU1	I believe that if such a need arises, the use of digital lending services offered by FinTech lenders would facilitate my access to money	(Singh <i>et al.</i> , 2020)
	PU2	I believe that if such a need arises, the use of digital lending services offered by FinTech lenders would shorten the required formalities and the time needed to obtain money	
	PU3	I believe that the digital lending services offered by FinTech lenders meet my needs supporting the day-to-day management of my financial resources	
	PU4	I believe that the digital lending services offered by FinTech lenders would contribute to increased efficiency and speed in covering my required payments	
Perceived ease of use (PEOU)	PEOU1	I believe that a mobile application allowing the use of digital lending services offered by FinTech lenders should be understandable, transparent and simple	(Setiawan <i>et al.</i> , 2021; Hu <i>et al.</i> , 2019)
	PEOU2	I believe that if the need arises, I would easily learn to use a mobile application allowing the usage of digital lending services offered by FinTech lenders	
	PEOU3	I believe that the technical means at my disposal (smartphone, WIFI, computer, etc.) facilitate using the FinTech loan offer	
Perceived risk (PR)	PR1	I believe that using the digital lending services offered by FinTech lenders is conducive to the loss of the borrower's privacy	(Hu <i>et al.</i> , 2019; Marakarkandy <i>et al.</i> , 2017)
	PR2	I believe that using the digital lending services offered by FinTech lenders exposes the borrower to a loss of cash	
	PR3	I believe that the malfunction of the mobile application allowing the use of the FinTech loan offer causes problems in its application and operation	
	PR4	I believe that using the digital lending services offered by FinTech lenders is risky	
Perceived trust (PT)	PT1	I believe that the digital lending services offered by the recognized FinTech lenders are trustworthy	(Hu <i>et al.</i> , 2019; Caviggioli <i>et al.</i> , 2020)
	PT2	I believe that mobile applications allowing the use of FinTech digital lending services are safe	
	PT3	I believe that FinTech lenders providing digital lending services operate responsibly	

**Table 1.** Continued

Construct Variable		Measurement Items	Sources
Perceived innovativeness (PI)	PI1	The use of technological innovations, including financial ones, is in line with my lifestyle	(Zhang <i>et al.</i> , 2018)
	PI2	Among my friends, I am considered the first person to use new products and services, including the financial ones	
	PI3	I consider myself open to using innovative digital financial products	
Perceived financial health (PFH)	PFH1	The current geopolitical situation has increased my tendency to withdraw cash from bank accounts	(Anand <i>et al.</i> , 2021; Morgan & Trinh, 2020)
	PFH2	The perceived rapid price increase motivates me to buy and collect the selected products	
	PFH3	Sometimes I get into debt impulsively, e.g., by using a credit card	
Attitude (ATT) (Mediating Variable)	ATT1	I find it convenient to use the digital lending services offered by FinTech lenders	(Hu <i>et al.</i> , 2019; Chuang <i>et al.</i> , 2016)
	ATT2	I believe that using the digital lending services offered by FinTech lenders is beneficial	
	ATT3	I believe that using the digital lending services offered by FinTech lenders is sensible	
	ATT4	I find it interesting to use the digital lending services offered by FinTech lenders	
Intention to use (ITU) (Dependent Variable)	ITU1	In the future, I intend to learn how to use a mobile application that allows using the digital lending services offered by FinTech lenders	(Marakarkandy <i>et al.</i> , 2017; Hu <i>et al.</i> , 2019)
	ITU2	Soon I intend to use the digital lending services offered by FinTech lenders	
	ITU3	I plan to use the digital lending services offered by FinTech lenders on a regular basis	
	ITU4	I will recommend using the digital lending services offered by FinTech lenders to my friends	

**Table 2.** Respondents' characteristics

Gender (N = 1,000 – 100%)			
Women (n – 533)		Men (n – 467)	
53.3%		46.7%	
Age (N = 1,000 – 100%)			
≤ 24 (n – 121)	25-34 (n – 192)	35-49 (n – 244)	≥50 (n – 453)
12.1%	19.2%	24.4%	45.3%
Education (N = 1,000 – 100%)			
Elementary (n – 39)	Vocational (n – 89)	Secondary (n – 497)	Higher (n – 375)
3.9%	8.9%	49.7%	37.5%

**Table 2.** Continued

Net income (PLN) (N = 1,000 – 100%)					
≤ 1,000 (n – 53)	1,001-2,000 (n – 162)	2,001-3,000 (n – 220)	3,001-5,000 (n – 251)	≥5,000 (n – 105)	Refusal (n –209)
5.3%	16.2%	22.0%	25.1%	10.5%	20.9%
Place of residence (N = 1,000 – 100%)					
Village (n – 404)	City <20 thous. (n – 104)	City 20-99 thous. (n – 213)	City 100-199 thous. (n – 87)	City 200-499 thous. (n – 83)	City ≥500 thous. (n – 109)
40.4%	11.4%	21.3%	8.7%	8.3%	10.9%

**Table 3.** Mean, standard deviation, level and order of the study variables

Construct Variable	Code	Mean	Std. Deviation	Level	Order
Perceived usefulness (PU)	PU1	3.28	1.228	moderate	II
	PU2	3.36	1.179	moderate	I
	PU3	3.09	1.185	moderate	IV
	PU4	3.16	1.204	moderate	III
Perceived ease of use (PEOU)	PEOU1	3.90	1.045	high	I
	PEOU2	3.77	0.998	high	III
	PEOU3	3.79	1.038	high	II
Perceived risk (PR)	PR1	3.31	1.025	moderate	II
	PR2	3.07	1.024	moderate	IV
	PR3	3.39	0.998	moderate	I
	PR4	3.20	1.010	moderate	III
Perceived trust (PT)	PT1	3.17	0.955	moderate	III
	PT2	3.19	0.977	moderate	II
	PT3	3.34	0.892	moderate	I
Perceived innovativeness (PI)	PI1	3.35	1.073	moderate	II
	PI2	2.97	1.141	moderate	III
	PI3	3.36	1.100	moderate	I
Perceived financial health (PFH)	PFH1	3.15	1.144	moderate	I
	PFH2	3.15	1.096	moderate	I
	PFH3	2.52	1.268	low	III
Attitude (ATT) (Mediating Variable)	ATT1	3.45	0.966	high	I
	ATT2	3.13	1.010	Moderate	III
	ATT3	3.07	1.015	Moderate	IV
	ATT4	3.29	1.016	Moderate	II
Intention to use (ITU) (Dependent Variable)	ITU1	3.22	1.282	Moderate	I
	ITU2	2.89	1.256	Moderate	II
	ITU3	2.69	1.200	Moderate	IV
	ITU4	2.88	1.204	Moderate	III



**Table 4.** Reliability and validity measures

Construct	Item	Outer Loading	Cronbach's Alpha	Composite Reliability (CR)	Average Variance Extracted (AVE)
PU	PU1	0.917	0.937	0.955	0.841
	PU2	0.915			
	PU3	0.916			
	PU4	0.921			
PEOU	PEOU1	0.892	0.883	0.928	0.811
	PEOU2	0.899			
	PEOU3	0.912			
PR	PR1	0.772	0.797	0.868	0.622
	PR2	0.852			
	PR3	0.731			
	PR4	0.796			
PT	PT1	0.911	0.883	0.955	0.811
	PT2	0.913			
	PT3	0.877			
PI	PI1	0.862	0.839	0.941	0.757
	PI2	0.851			
	PI3	0.896			
PFH	PFH1	0.791	0.760	0.881	0.600
	PFH2	0.803			
	PFH3	0.730			
ATT	ATT1	0.836	0.906	0.934	0.780
	ATT2	0.909			
	ATT3	0.888			
	ATT4	0.897			
ITU	ITU1	0.896	0.934	0.953	0.836
	ITU2	0.938			
	ITU3	0.915			
	ITU4	0.908			

**Table 5.** Discriminant validity of construct

	PU	PEOU	PR	PT	PI	PFH	ATT
PU	<b>0.917</b>						
PEOU	0.621	<b>0.900</b>					
PR	0.146	0.235	<b>0.788</b>				
PT	0.375	0.603	-0.024	<b>0.900</b>			
PI	0.389	0.626	0.070	0.772	<b>0.870</b>		
PFH	0.189	0.304	0.182	0.496	0.548	<b>0.774</b>	
ATT	0.653	0.648	0.051	0.788	0.717	0.593	<b>0.883</b>

Note: Diagonal elements represent square roots of AVE for each of the ten constructs. Off diagonal elements stand for the correlations between constructs.

**Table 6.** Goodness-of-fit indicators in the structural model

Indicator	Suggested value	Reference	Model value	Remark
( $\chi^2/df$ )	<3 (but 3-5 are acceptable)		4.583	Marginal fit
CFI	> 0.9	Bentler & Bonett	0.941	Good fit
RMSEA	< 0.08	(1980);	0.074	Good fit
SRMR	< 0.1	Salisbury <i>et al.</i> , (2002)	0.087	Good fit
TLI	> 0.9		0.926	Good fit

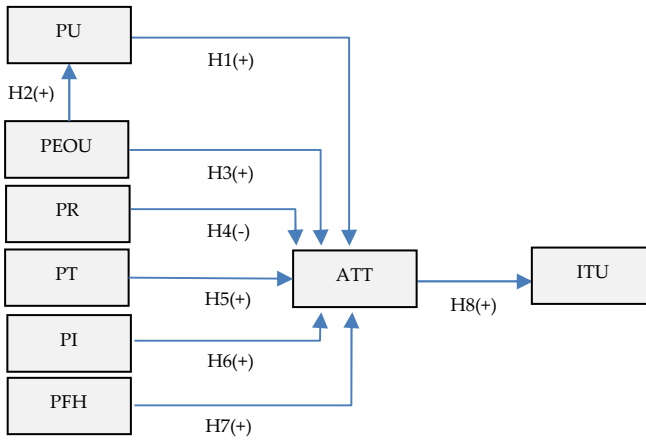
**Table 7.** R-square score

Construct Variable	PU	PEOU	PR	PT	PI	PFH	ATT
R-Squared score	0.578	0.697	0.667	0.678	0.582	0.386	0.828

**Table 8.** Path coefficients and their significance

Hypotheses	Structural Paths	Path coefficients	Z-value	P(> z )	Result
H1	PU → ATT	0.408	11.906	0.000	Confirmed
H2	PEOU → PU	0.621	16.961	0.000	Confirmed
H3	PEOU → ATT	0.022	0.598	0.550	Not confirmed
H4	PR → ATT	-0.056	2.318	0.020	Confirmed
H5	PT → ATT	0.441	9.315	0.000	Confirmed
H6	PI → ATT	0.062	1.429	0.153	Not confirmed
H7	PFH → ATT	0.267	7.211	0.000	Confirmed
H8	ATT → ITU	0.763	15.526	0.000	Confirmed

**Figure 1.** Fintech adoption research model




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**Research hypotheses**

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- H1: perceived usefulness (PU) of digital lending services offered by FinTech lenders has a significant and positive impact on the attitude to-wards their usage (ATT).
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- H2: perceived ease of use (PEOU) of digital lending services offered by FinTech lenders has a significant and positive impact on their perceived usefulness (PU).
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- H3: perceived ease of use (PEOU) of digital lending services offered by FinTech lenders has a significant and positive impact on the attitude towards their usage (ATT).
- 
- H4: perceived risk (PR) of digital lending services offered by FinTech lenders has a significant and negative impact on the attitude towards their usage (ATT).
- 
- H5: perceived trust (PT) in digital lending services offered by FinTech lenders has a significant and positive impact on the attitude towards their usage (ATT).
- 
- H6: perceived innovation (PI) shows a significant, positive impact on the attitude (ATT) towards using digital lending services offered by FinTech lenders.
- 
- H7: perceived financial health (PFH) has a significant and positive impact on the attitude towards using digital lending services (ATT) offered by FinTech lenders.
- 
- H8: attitude towards usage (ATT) of digital lending services offered by FinTech lenders demonstrates a significant and positive influence on the intention to use them (ITU).
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Figure 2. Structural model results

