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The adoption of digital business by Brazilian micro-entrepreneurs

Renan Sant'Anna

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THE ADOPTION OF DIGITAL BUSINESS BY BRAZILIAN MICRO-ENTREPRENEURS

Renan Rocha Derziê Sant'Anna

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Abstract

The purpose of this study was to examine the factors that facilitate or hinder the acceptance of digital business by micro-entrepreneurs in Brazil. Using the UTAUT2 model, the study was conducted by collecting 256 responses through online questionnaires administered by Google Forms, and the data was analyzed using Smart PLS 4.0. The results demonstrate that social influence, hedonic motivation, perceived value and habit are the main factors influencing adoption, as well as variables such as gender, age, income and educational level. The study also highlights the significance of education and institutional assistance in simplifying this transition. The methodology used included interviews and quantitative analysis, providing more information on the motivations and barriers faced by these entrepreneurs. The study's originality lies in the application of a laborious theoretical model to a specific scenario that has not yet been fully investigated in the literature, offering valuable insights into public policies and business strategies aimed at digitizing micro-enterprise.

Keywords: digital business, UTAUT 2, Brazil, adoption, microentrepreneurs

Resumo

O intuito deste estudo foi avaliar os fatores que facilitam ou dificultam a adoção de negócios digitais por microempresários no Brasil. Usando o modelo UTAUT2, a pesquisa foi conduzida com a coleta de 256 respostas por meio de questionários on-line via Google Forms e analisada com o Smart PLS 4.0. Os resultados mostram que os principais fatores que exercem influência na adoção incluem influência social, motivação hedônica, valor percebido e hábito, alinhados com variáveis como sexo, idade, renda e nível educacional. O estudo também destaca a importância da educação e do apoio institucional para facilitar essa transição. A metodologia utilizada incluiu entrevistas e análise quantitativa, fornecendo mais informações sobre as motivações e barreiras enfrentadas por esses empreendedores. A originalidade do estudo está na aplicação de um modelo teórico denso a um contexto específico que não foi amplamente explorado na literatura, fornecendo contribuições valiosas para políticas públicas e estratégias de negócios voltadas para a digitalização de microempresários.

Palavras-chaves: negócios digitais, UTAUT 2, Brasil, adoção, microempresários

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1. Introduction

1.1. Contextualization

This work focuses on micro-enterprises. In Brazil, a micro-enterprise is as a company that has a gross annual turnover of up to 360,000 reais (approximately 66,000 euros - March 2024 exchange rate), where between 9 and 19 employees can be hired (Portal da Indústria, 2019). Different values comparing to others countries but the meaning of these companies remains de same, since according to recent research by SEBRAE, 99% of all existing businesses in the country are micro-enterprises, accounting for more than 50% of all formal government jobs, and responsible for 27% of Brazil's Gross Domestic Product (GDP) (Agência Sebrae de Notícias, 2023b). In terms of fighting poverty, the Brazilian government estimates that by formalizing themselves as micro-entrepreneurs, these individuals increase their income by between 7% and 25% (Agência Sebrae de Notícias, 2023a). In addition, micro-entrepreneurship helps the social inclusion of women in the labor market, since, currently, Brazil has a total of 30 million micro and small entrepreneurs, of which 10.3 million are led by women, representing 34.4% of the total (Agência Sebrae de Notícias, 2023a).

As the years passed, the significance of small and medium-sized enterprises (SMEs) is thriving, and nowadays, it is estimated that there are currently more than 400 million SMEs worldwide (National Action Plans, 2024). This category includes micro-enterprises, which the EU defines as having no more than 9 employees and a revenue of up to 2 million euros a year (European Commission, 2021). And, as can be seen, these micro, small, and medium-sized enterprises (MSMEs) act as a kind of backbone for economies around the world, as they represent 90% of the world's business ecosystem and 50% of employment worldwide, making them the world's largest group of employers, responsible for 40% of domestic income (GDP) in emerging economies (World Bank Group, 2019).

Due to the COVID-19 lockdown, micro-entrepreneurs faced major problems from the supply chain to their consumers, suffering major losses due to lack of production and waste of short-lived raw materials (Boro, 2022). In such a context, digital connectivity brought significant benefits not only to MSMEs, fostering market access and resilience and promoting new business ventures. The benefits also include the economy, as a research carried out recently by the ITU showed that for every 1% increase in mobile

broadband use, there is a 0.20% increase in GDP in developing countries (World Economic Forum, 2023).

1.2. Research Gap and Research Problem

Rachinger (2019) defines digitalization as the framework for digitization, relating it to the sense of exploiting digital opportunities. Conversely, the process of digital transformation is increasingly often employed to reorganize economies, institutions, and society. (Rachinger et al., 2019). It is well known that digitization improves a company's efficiency, profit, market price, and market share. For this reason, small and medium-sized enterprises (SMEs) view digitalization as an essential part of their operations that will provide them a competitive edge in the global marketplace (Zhen et al., 2022). Therefore, modern literature shows that, as SMEs adopt more information and communication technologies (ICT) to renovate their businesses, they will play an important role in closing the gap between companies in developed and emerging economies (Nazir & Khan, 2022). However, it is not easy for these small companies to take benefit of the opportunities presented by digital distribution platforms, as there is a need to modify their operations and adapt their activities to digital environments, even more so if the company is still using traditional distribution channels, as this could mean significant changes to their current business model (Baber et al., 2019). In a study supported out in Indonesia, it was proven that the use of technology by MSMEs is still very weak, both in production and in distribution and marketing activities, even though the use of technology creates efficiency and effectiveness (Suhaili & Sugiharsono, 2019). Consequently, the adoption of communication technologies is not easy for MSMEs, especially given the fast advances in digital technology, causing a gap between these companies and large enterprises (Widyastuti et al., 2023). Based on Mukhoryanova's (2021) findings, to provide a clearer understanding of the sustainable growth of microenterprises in a globalized and digitalized society, further research is required, given the significant importance of this sector for many economies in developing countries.

Despite the significant contribution of micro-enterprises to global economic vitality, the literature on digital market entry focuses predominantly on large corporations, leaving the unique challenges and facilitators faced by micro-entrepreneurs unexplored (Mukhoryanova et al., 2021). Therefore, it is not possible to determine the specific reasons that contribute to the digitalization of these micro-entrepreneurs' businesses, even though there is a vast literature on entrepreneurship and digital markets. This leads us to ask:

what are the main facilitators driving the entry of Brazilian micro-entrepreneurs into the digital market?

1.3. Research Objectives

Guided by the research problem, the following objectives were defined:

- to identify the facilitators of adoption of digital business by Brazilian micro-entrepreneurs.
- to analyze and compare the reasons that lead men and women micro-entrepreneurs to enter the digital market.
- to explore the profile characteristics associated with the adoption of digital businesses by these micro-entrepreneurs, especially in relation to age, gender, income, education and digital competence.
- to provide relevant contributions to financial institutions, governments and other stakeholders interested in promoting the digitization of business, especially among micro-entrepreneurs.

1.4. Adopted Methodology

This survey will be carried out using a quantitative approach, using the questionnaire survey method, in which Brazilian micro-entrepreneurs, men and women, will be interviewed, including those who have or have not joined digital businesses for their products and services, whether they are located physically in Brazil or not. As for the questionnaire, the UTAUT2 research model will be adopted.

It is essential to comment that the use of this type of research is due to the success of (Crittenden et al., 2019), who carried out a study capable of investigating the relationships between the use of ICT, self-efficacy, social capital and the empowerment of women micro-entrepreneurs in emerging nations.

1.5. Structure of the Document

This study has a structure that aims to follow a logical sequence to address the topics that were investigated in a cohesive and organized manner. The following segment is the literature review, which aims to describe the growth of the digital market and the internal and external influences on micro-entrepreneurs, as well as analyzing theories pertinent to the UTAUT2 model. Subsequently, the section on methodology explains the conceptual

model used and adapts the theories to the study. Finally, the results are presented and elucidated, with conclusions and practical and theoretical implications latterly.

2. Literature Review

2.1. The importance of micro-entrepreneurs and their digitalization

Clearly, in relation to the economy, micro-entrepreneurs play a very significant role, as they contribute to employment creation, innovation, and economic development, especially in emerging countries (Malaquias et al., 2023). However, the importance of MSMEs in job creation is not limited to developing countries, as in advanced economies, such as the US, where these companies are also crucial to job creation and economic growth, as MSMEs are known for their agility in decision-making, their closer relationship with customers and their greater flexibility and adaptability, characteristics that increase their ability to generate job opportunities (Pedraza, 2021). Generally, the main motivations for micro-entrepreneurs going digital are linked to their necessity of remain competitive in a rapidly evolving market, to take benefit of the advantages offered by digital technologies, to develop productivity and efficiency in their business operations and, above all, to survive in the face of adversity and economic crises (Gregurec et al., 2021).

According to Rachinger (2019), digitization is the framework for digitalization, which is the exploitation of digital prospects. The process of reorganizing economies, institutions, and people at a systemic level is known as digital transformation. Thus, it may be significant to understand the reasons why these micro-entrepreneurs see the technological world as one of the main alternatives for their business, given the importance of this channel in our society and, for example, the fact that there is enormous potential for microbusinesses in the industry since demand will rise globally as a result of global financial crises and population growth, (Jayachandran, 2020). Besides, thanks to their small size, MSMEs find it easier to adapt to market changes, adjusting their structures and processes as needs arise (Pedraza, 2021).

According to Crittenden et al. (2019), micro-enterprises provide substantial employment and income opportunities in emerging economies. However, it was noted that little is known about micro-entrepreneurs, which may be partially explained by the informal nature of these businesses, which are typically run by the micro-entrepreneur alone and have few or no assets. When creating and implementing a digital marketing plan, small businesses would certainly benefit, as the lack of such a strategy increases the

performance gap among them and large companies, since it reduces the chances of reaching their target markets and driving sales growth, which shows that small businesses have different digital presences and technological adoption rates, again showing the need for a detailed study of how they use digital marketing to their advantage (Ritz et al., 2019). As specified by Zhen (2022), the importance of digitalization is not diminished by the use of online business marketing, even though there is disagreement about which aspects of SMEs' strategic performance have the biggest influence on business success, a fact that can also be extended to micro-enterprises.

Besides that, The literature on digital marketing primarily focuses on the behavior of large organizations, leaving a gap regarding the true reasons for small companies' limited adoption and expectations of results from digital marketing and it is noteworthy that micro-enterprises are less likely to participate in digital marketing in the same way as large companies (Ritz et al., 2019). Several researchers have investigated the analysis of some of the effects of digitalization on SMEs, such as digital performance, the concept of internal market orientation (IMO), the economic growth of innovation, the advantages of developed countries, large companies, among others, but there is not much focus on MSMEs (Mosavi & Triansyah, 2023).

According to Eben and Robertson (2022), the main differences in digital market definitions between the United States, Brazil and the European Union stem from varying approaches to market delimitation and the application of competition law in the context of digital environments since the Latin country is still in the process of developing its understanding and definition of what the market really means in the digital context. In Brazil, most of SMEs consider the digital transformation to be important for their segment and size, but although 96% of these companies are aware of the importance of digitization, 53% have not yet incorporated it into their scope of service or do not know how to begin this work (IT Forum, 2023).

Also in relation to access to technology, it is believed that information and communication technologies (ICT) have contributed to the access of the population of emerging markets to new job opportunities, participation in more autonomous work and the improvement of their personal social development, leading to greater social capital and greater inclusion of women in this market (Crittenden et al., 2019).

2.1.1. The importance and characteristics of micro-entrepreneurs in Brazil

In Brazil there is another category that is smaller than micro-entrepreneurs, the individual microentrepreneur (MEI), who are self-employed workers with a maximum of one employee and annual revenues that do not exceed 81,000 reais (approximately 15,000 euros - March 2024 exchange rate) in the previous year (Pacheco, 2023). A category that originated from a 2008 government project, the creation of this classification of entrepreneurs aims to encourage the formalization of small businesses and the inclusion of low-income self-employed workers in the social security system. In Brazil, recent years have also been marked by the growth of this category, as the number of self-employed professionals choosing to formalize their activity and open a micro-enterprise has increased exponentially in the country (Portal Sebrae, 2022). By formalizing as a MEI, the micro-entrepreneur acquires some government benefits, such as paying taxes in a simplified way and with significantly reduced rates, so it is not surprising that the MEI has grown rapidly since its creation, having accelerated throughout the pandemic, obtaining approximately 5.4 million new MEIs since 2020, reaching the expressive number of almost 15 million micro-entrepreneurs in December 2022, representing 73.4% of the entire of formal companies in the country at the time (Portal Sebrae, 2023). For further clarification, informal micro-entrepreneurs are self-employed entrepreneurs who carry out their economic activities outside the established legal norms, without registering or following the regulations imposed by Brazilian legislation and government authorities. So, as they are not formalized, they do not have access to legal protection, which often leads them to accept jobs of lower quality and security – a reflection of their exclusion from the cultural benefits associated with formalization (Nunes, 2013).

And there are even more advantages to formalizing as a MEI, from access to social security to the possibility of taking out loans from banks, which has meant that the emergence of the MEI has led to an accelerated increase in the market and, due to the legalization of the activities carried out by these once informal workers, the chance to be in the market correctly and legally, to grow and prosper, making them capable of expanding their micro-activities into a medium-sized or even large company (Souza & Souza, 2021).

In addition, the importance of the MEI in the Brazilian political scene stands out, where it acts as an agent of transformation and, in the recent elections, was an important issue for the population in choosing politicians who are committed to entrepreneurship (Portal

Sebrae, 2022). It is understood that the entrepreneurial contribution to the economy occurs through innovation and market competition generated by competition, including from micro-enterprises themselves, and one of the MEI's greatest contributions is generating a very significant percentage of employment and growth in Brazil's GDP (Oliveira & Bernardelli, 2022). This meant that by 2023, small businesses would account for more than a quarter of Brazil's GDP, in a movement of constant growth, with successive records of formalization, where seven out of every ten new businesses formalized in Brazil are MEIs (Portal Sebrae, 2022). But apparently, unlike the big entrepreneur who is always looking for new things and innovation in the market, the entrepreneur by necessity, as in the case of the MEI, ends up not contributing much to the dynamism of the economy, but it's clear that even if they don't have high productivity and income, it's still a great alternative to help reduce national unemployment (Oliveira & Bernardelli, 2022). However, even though the MEI is growing in volume every year and represents strong economic dynamism in Brazil, researchers have noted that the vast majority are small businesses with a low probability of becoming larger companies (Schymura, 2024).

Therefore, it is clear that public policies aimed at entrepreneurship are crucial to a country's development, since with the creation of the MEI program, it has been possible to foster new businesses and formalize many Brazilians who previously worked informally, not only simplifying and reducing bureaucracy, but also promoting socio-economic development in the country (Souza & Souza, 2021).

So, Governments have a crucial role to play in establishing a regulatory environment that favors the operations of MSMEs, which means simplifying rules, reducing bureaucratic barriers, and ensuring that companies comply with legal requirements (Pedraza, 2021). Despite this, in the case of Brazil, the country is beginning to understand the importance of interactivity and the integration of products/services and consumer demand, which can significantly influence market definitions for digital ecosystems these days (Eben & Robertson, 2022).

2.1.2. Women microentrepreneurs and the obstacles to accessing credit in Brazil

In recent studies, an important difference between entrepreneurship in developing and developed countries is that in the former, the managers and owners of micro-enterprises are mostly women, who in many cases, as in Latin America, tend to have lower sales,

assets and profits and are more likely to be home-based compared to businesses run by men (Jayachandran, 2020). Also according to Jayachandran (2020), this female majority in micro-entrepreneurs and the divergent performance between the genders serve as one of the bases that help explain why various interventions aimed at helping micro-enterprises, especially micro-credit and business training, focus mainly on female entrepreneurs, as it reinforces the point that women are more limited in their access to credit and education.

In Brazil, the situation is a little different, since even though women make up 46% of this market, the MEI has a predominantly white male profile, is more concentrated in the southeast of the country (approximately 50%), and the majority have formal employment ties in their professional history. This does not correspond to the objective behind the creation of the program, which is aimed at low-income self-employed workers in the informal sector (Schymura, 2024). Another government tool in the country that aims to help is microcredit, which has even facilitated access to capital, allowing many women to start and expand their businesses, but still needs improvements in its structuring and implementation, since there is no support and financial education after these micro-entrepreneurs receive the resource, which does not guarantee the sustainability of the business, and may even aggravate the indebtedness of these entrepreneurs (Marques et al., 2024).

Additionally, it is noteworthy that the literature often points out that female entrepreneurs tend to use the services of the financial sector less to obtain resources, opting to finance their investments with their own capital rather than resorting to bank loans, although they are willing to accept the digitization of processes and customer relationships in their services and products (Porto et al., 2022).

Also, latest studies have revealed that companies led by women have a growing tendency to adopt modern and digitalized practices, where the incorporation of digital technologies into their activities is easily accepted by them, but there is still a significant need for training programs and the development of managerial skills for these businesswomen so that this channel can be used correctly and sustainably (Marques et al., 2024).

2.2. An overview of the Digital Business on MSMEs

According to Ritz et al. (2019), digital marketing is often categorized as "the practice of promoting products and services using digital distribution channels like computers, cell

phones, smartphones or other digital devices". Simply put, it is the promotion of products and services through digital technologies, predominantly on the Internet, but also involving cell phones, print advertising and any other digital media. Therefore, in a world where technology and the Internet are changing every day, digital transformation is considered a necessity to gain an economical advantage and ensure the continuity of a company's business in today's market (Vuţă et al., 2022) . In this way, a company can acquire the aptitude to collect data, analyze it and turn it into valuable information to increase business procedures, products, services and operations controlling. It is therefore understandable that there is constant research aimed at exploring this issue of digital transformation in business entities in greater depth, where there is a practically unanimous understanding that the penetration and clear omnipresence of smartphones in people's lives are the most important factors in digital adoption on both the supply and demand side (Affandi, 2024).

The acceptance of digital technologies increases the efficiency of micro and small enterprises (MSEs), introducing a new way of doing business, according to a study carried out in South Africa, where it was found that the use of social media and commercial cell phones to surf the Internet has a positive impact on innovation, and innovation conditioned on the use of these technologies has a positive impact on work force productivity (Affandi, 2024).

Furthermore, although some researchers claim that a digitally transformed workplace promotes higher-order thinking skills and can lead to more unemployment, the same study cited by Affandi et al. (2024) shows that the positive correlation between technological advancement and joblessness is only present in the short term, i.e. the unemployment rate decreases as technological advancement passes a certain threshold.

Consequently, the growth in the number of MSMEs that are online and can fully benefit from connectivity will be a benefit that will not be exclusive to these companies but will also end up providing wider social and economic benefits, as stated by the World Economic Forum (2023) .

2.2.1. The determining factors that influence the adoption of digital business

in agreement with Hänninen (2018), these platforms provide several benefits to micro-entrepreneurs, such as: access to global markets, allowing them to reach a customer base beyond their local geographical restrictions; lower transaction costs, without the need for

traditional intermediaries; increased visibility and reach; and opportunities to explore new markets, leading to growth potential and scalability. In addition, education is considered crucial for the successful digitization of entrepreneurial activity, as the capability of corporations to take advantage of market chances in the right way depends on their entrepreneurs' knowledge of how to identify the right opportunities in relation to marketing, resources, the supply of raw materials at scale, among others. Jiménez-Zarco et al (2021) in a study of micro-entrepreneurs in Spain showed that in 2019 there were 9 start-ups led by women for every 10 companies led by men.

Corresponding to this, it is appropriate to mention the growth of social media, because with the evolution of their interactivity, they have become a free tool for the transaction of messages and information, becoming a significant element in relation to the consumer decision-making process and, presently, the design and implementation of marketing activities on social media are the main focus of companies, often even the only one (Jiménez-Zarco et al., 2021). And this is called social media marketing, which is defined as "the use that companies make of social media platforms to connect with their audience in order to achieve different strategic objectives, for instance as developing brand consciousness, increasing sales or driving website traffic", involving activities published on their profiles, aimed at greater interactivity with their followers, who can become potential customers, since most of these platforms offer data where it is possible to analyze the results of the campaigns and the return metrics regarding the interactivity of the posts (Jiménez-Zarco et al., 2021).

Another facilitator contributing to the digitization of micro-entrepreneurs are digital transaction platforms, which facilitate interactions and sales between customers and third-party suppliers, creating online structures for various activities and services offered by these companies, such as Amazon and Facebook, for example (Hänninen et al., 2018). The growth of e-commerce and digital platforms has led to a greater link between the marketing of products and digital marketing, making it practically necessary for a company to align its purposes with an empathetic of consumer needs and satisfaction. Studies show that organizations that neglect to use specific digital marketing techniques and tools fail to exploit the variety of ways to communicate their messages to the desired audiences and may face significant difficulties in the long run (Vuţă et al., 2022).

An additional tool currently highlighted in the media is Artificial Intelligence (AI), which is starting to become a major facilitator of digitalization for SMEs, and also MSMEs,

allowing managers of these companies to analyze customer data more easily and without much knowledge, just by using prompts in the tools, and thus determine more effective marketing strategies for their businesses, further reducing the barriers of unfamiliarity with technology on the part of these entrepreneurs (Mosavi & Triansyah, 2023).

Thus, in more established MSMEs, digital transformation demands more time and financial resources, which leads to the conclusion that the level of digitalization has a positive impact on a company's entrepreneurial direction, i.e. its ability to use new behaviors to predict and act on upcoming relationships in the external environment and its ability to invest even with undefined consequences (Hervé et al., 2020). Indicating that the greater the link between digital investments and the internal capabilities and organizational procedures of SMEs, and consequently MSMEs, the better the result to be obtained (Zhen et al., 2022).

And in Brazil, this issue offers a great business opportunity for financial institutions, given the large number of potential customers who are currently not very well-integrated into the market, and it is up to them to approach them in the right way, with communication strategies in line with their demands and offering services and products that meet their needs, as well as their payment capacities (Anbima, 2022). Also according to the aforementioned ANBIMA's survey (2022), it was found that there is a major challenge for the Brazilian government in terms of digital banking, as well as financial literacy, for micro and small companies in terms of knowledge and use of financial products and services aimed at the corporate world, where some micro and small entrepreneurs don't even have a bank account, demonstrating that knowledge gradually decreases as products and services become more sophisticated and increasingly digital. It is also worth mentioning the volatile nature of the digital environment, where it is much harder for MEIs and MSMEs to stay current and competitive due to the quick speed of innovation and change (Barros, 2023).

2.3. The UTAT2 model

Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) is a comprehensive model developed to better understand the factors that impact people's acceptance and use of technology. Through its predecessor model, the original UTAUT, UTAUT2 has been expanded with additional constructs to offer a more detailed understanding of technology acceptance, with the model now having the following main constructs: Performance expectancy (PE), Effort expectancy (EE), Social influence (SI), Facilitating

conditions (FC), Hedonic motivation (HM), Price value (PV) and Habit (HT). In addition, the UTAUT2 model considers moderating factors, including gender, age, experience and voluntariness of use, which can influence the relationships between the main constructs and technology adoption behavior, as well as considering individuals' perceptions and attitudes towards technology adoption, such as their beliefs about its usefulness, ease of use, social influences and previous experiences (Venkatesh et al., 2012).

Accordingly, based on the UTAUT2 model, the conceptual model proposed by this research is presented in Figure 1:

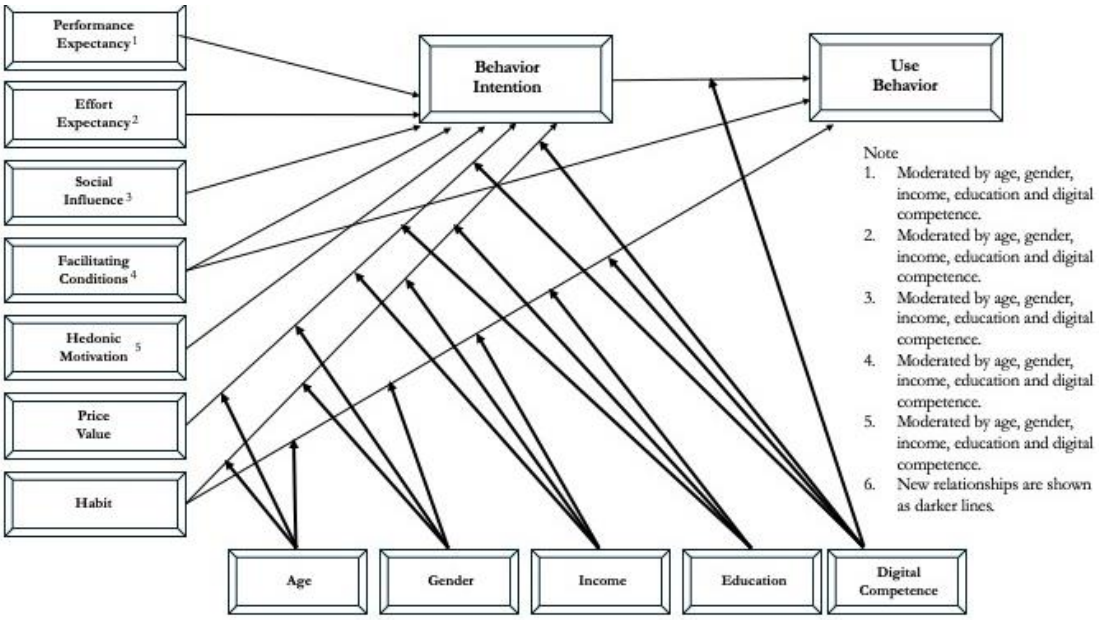


Figure 1 - The hypothesized conceptual model

Therefore, UTAUT2 uses gender, experience and age as moderators and tests their influence on the relationships between predictors and behavioral intentions, i.e., the method tests use as the final dependent variable, maintaining its respective easiness and toughness to address the adoption behavior of new technologies (Shoheib & Abu-Shanab, 2022). So, in this study, performance expectancy, effort expectancy, social influence, facilitating conditions, hedonic motivation, price value and habit influence behavioral intention, while behavioral intention, facilitating conditions and habit influence use behavior. Age, gender, income, education, and digital competence play as moderators. Thus, because this study focuses on gaining perceptions into the complex interaction of factors that drive individuals' decisions to adopt and use digital technologies in their businesses, the use of the UTAUT2 model becomes crucial to the structure of the research, since constructs used in the model are explored and hypotheses stemming from

it are tested to recognize the main factors that influence the integration and behavior of Brazilian microentrepreneurs in digitizing their businesses.

2.3.1. The variables Behavioral Intention (BI) and Use Behavior (UB)

When an individual has a high intention to use a technology, this goal translates into more frequent and consistent patterns of use. This is because a strong intention reflects a favorable attitude towards the technology, along with a belief in its practicality and ease of use (Venkatesh et al., 2012). Consequently, according to Venkatesh (2012), individuals with higher behavioral intentions are more likely to incorporate technology into their routine activities, which leads to greater frequency and diversity of use. Furthermore, in compliance with the Theory of Planned Behavior, behavioral intention is one of the main determinants of actual behavior, it carries with it the understanding that as the intention to perform a behavior increases, the chance of an individual engaging in that behavior will be greater (Ajzen, 1991).

That said, in this study the intention-to-use variable will be used to understand how Brazilian micro-entrepreneurs decided to adopt digital technologies in their businesses, their facilitators and influences. The usage behavior variable is linked to the adoption and actual use of digital technologies by micro-entrepreneurs, with the aim of understanding their application and integration of digital technologies in their business operations, as well as assessing the change in their business routine with the habitual use of these digital tools. It should be borne in mind that, despite the common understanding that the adoption of information systems by younger people occurs more easily in developed countries, since they are exposed to computers and the computing environment from childhood, this statement cannot be made too strongly (Gupta et al., 2008).

2.4. Hypotheses development

2.4.1. Performance Expectancy (PE) and Behavioral Intention (BI)

Performance expectancy (PE) is described as the "degree to which the use of a technology will bring benefits to consumers in carrying out certain activities" (Venkatesh et al., 2012), to clarify, it is stated as the level to which the micro-entrepreneur considers that adopting a digital system will bring some improvement in the performance of their work. Therefore, since this sector has low margins, it is a fundamental parameter for these

companies (Venkatesh et al., 2003). In addition, there is an understanding that a large part of the motivations for micro-entrepreneurs to go digital are due to the obligation to be active in the competition of their market, to take advantage of the advantages proposed by digital technologies, to improve productivity and efficiency in their business operations, as well as to improve adaptation to the challenges faced in the COVID-19 pandemic, gaining greater chances of surviving and thriving in uncertain times (Bo et al., 2020).

In addition, the literature understands EP as an indicator of the intention to adopt technology, as MSME owners are more inclined to implement a technology when they predict that this innovation will have positive effects on productivity (Soong et al., 2020). Furthermore, if carried out correctly, online business marketing can contribute to MSMEs improving their overall and financial performance, making it an essential component in these microentrepreneurs' decision to digitize their business (Gupta et al., 2008; Zhen et al., 2022). Consequently, it can be hypothesized that:

H1: Performance Expectancy (PE) positively affects micro-entrepreneurs' Behavioral Intention (BI) of to digitalize their businesses.

2.4.2. Effort Expectancy (EE) and Behavioral Intention (BI)

Effort expectancy (EE) can be understood as "the level of ease related to the use of a system that can facilitate the completion of an individual's work" (Venkatesh et al., 2003), i.e. is directly linked to the degree to which a digital system is perceived as simple or easy to use (Gupta et al., 2008; Mohammadyari & Singh, 2015) According to Soong (2020), EE is a construct of great relevance, since the literature states that SME managers have greater purposes to adopt digitalization in their companies if they see that the innovation will not face major problems to be used and will also represent an easy change for employees to learn.

Consequently, a manager who understands that a new technology is simpler to introduce to his or her company is more likely to make a positive decision to adopt it and to intend to use it. The Google Analytics tool, for example, can be used to help these micro-entrepreneurs assess the efficacy of digital marketing for themselves, using measures such as the proportion of positive and negative advices and evaluations from online customers, their quality and other forms of customer participation (Ritz et al., 2019), making MSME owners view the ease of using digital tools for their business activities positively. This leads us to hypothesize that:

H2: Effort Expectancy (EE) positively affects micro-entrepreneurs' Behavioral Intention (BI) to digitalize their businesses.

2.4.3. Social Influence (SI) and Behavioral Intention (BI)

According to Venkatesh (2012), Social Influence (SI) is "the degree to which consumers perceive that other important people (e.g. family and friends) believe that they should use a particular technology". Therefore, it is understood that people end up being influenced to use their technologies while they are part of one or more social networks, and in these networks, they end up being even more influenced by the attitudes of their close friends and other people they consider important, who exert great influence on their understanding of the value of consuming a specific technology (Gupta et al., 2008; Lu et al., 2005). This has an impact on micro-entrepreneurs' willingness to adopt technology, as many of them rely on the help of their social circle when it comes to using these latest technologies, meaning that the level of personal effort needed to become skilled users is lower, i.e. if they have any doubts about a topic of professional interest, they will ask their friends for help. In addition, the similar use of IT by people connected to them professionally or socially should also be noted. This is in addition to the impact of their success in using these technologies on their performance at work (Eckhardt et al., 2009).

It is worth mentioning that people will be more willing to accept the relevance of tools that can help them in their professional development and learn new technologies, such as YouTube videos or podcasts, for example, if they see that their friends and colleagues are doing better in their jobs and careers after deciding to use these technologies (Mohammadyari & Singh, 2015). Consequently, it is understood that the concept of SI is relevant and acts as an indicator that significantly affects the use of technology by micro-entrepreneurs, because if they notice an increase in the use of technology by their friends, family and colleagues, this will directly affect how they view the use of the system (Soong et al., 2020). So, we can hypothesize that:

H3: Social Influence (SI) has a positive effect micro-entrepreneurs' Behavior Intention (BI) to digitalize their businesses.

2.4.4. Facilitating conditions (FC), Behavioral intention (BI) and Use behavior (UB)

According to Venkatesh et al. (2003), Facilitating Conditions (FC) is defined as "the degree to which an individual believes that there is an organizational and technical infrastructure to support the use of the system", i.e. it is understood that it is up to

organizations to offer support so that users who have difficulties can be helped to adopt a technology, which in turn would cause a large increase in use (Gupta et al., 2008; Slinger et al., 2024). In relation to micro-entrepreneurs, we can understand that organizations would be like their respective governments, where initiatives and programs that promote support for the development of skills for the owner-managers and employees of MSMEs, especially the older ones, would be very relevant in providing greater adherence to digital business, given the more favorable structures that would help in this digital transformation (Arendt, 2008).

In addition, ICT infrastructure can also be included in CF, as well as affordable broadband internet connectivity, the accessibility of technical support services, the cost of mobile data services, as well as strategies that enable micro-entrepreneurs to insert digital platforms into their businesses as a matter of priority (Slinger et al., 2024). Recent literature also states that FC plays an important role in the intention to adopt digitalization among these micro-entrepreneurs, acting as a kind of significant motivating factor in the use of technology for the innovation of their services and products (Kwarteng et al., 2023). This leads us to hypothesize that:

H4a: Facilitating conditions (FC) positively affects micro-entrepreneurs' behavior intention (BI) to digitalize their businesses.

H4b: Facilitating conditions (FC) positively affects micro-entrepreneurs' use behavior (UB) to digitalize their businesses.

2.4.5. Hedonic motivation (HM) and behavioral intention (BI)

This is an indicator that directly influences the acceptance and use of technology, since hedonic motivation (HM) has its concept linked to perceived pleasure or "the pleasure of using a technology" (Venkatesh et al., 2012), which inevitably makes it play an important role in micro-entrepreneurs joining digital businesses. Therefore, when the use of technology brings pleasure and entertainment to the individual, this results in a rewarding experience that affects their willingness to continue using it. It should also be noted that, with this behavioral return obtained through the acceptance of technology, the micro-entrepreneur has incentives for a self-learning process, and can develop a sense of control in business, ensuring more effort in their digital activities and improvement in their relationships with customers (Ritz et al., 2019). This leads us to hypothesize:

H5: Hedonic motivation (HM) positively affects the intention of micro-entrepreneurs to digitalize their businesses.

2.4.6. Price value (PV) and behavioral intention (BI)

Venkatesh et al. (2012) describes Price value (PV) as the "value of price as consumers' cognitive trade-off between the perceived benefits of applications and the cost of using them", and when we bring this to micro-entrepreneurs, it would be as if the benefits are perceived more intensely when the cost of investing in joining digital businesses is lower than the return this brings. This reinforces what Crittenden et al. (2019) says about ICT, in which greater technology training, especially in poor communities, offers more sales opportunities, a skilled staff, merchantable innovations, reduced costs and higher worth. Even so, it is understood that, through social media, the use of technology has a positive effect on the interaction between customers and suppliers through the use of applications, given their variety and low cost, in various areas, which contributes to micro-entrepreneurs joining digital businesses (Msweli & Mawela, 2021), especially after the spread of applications such as WhatsApp, which works as a marketing, ordering and customer engagement platform (Slinger et al., 2024).

Therefore, it can be concluded that the cost and price structure can greatly affect the adoption of technology by micro-entrepreneurs, which demonstrates that PV is a very significant indicator in the behavioral intention to use a technology, so we have the hypothesis:

H6: Price Value (PV) positively affects micro-entrepreneurs' Behavior Intention (BI) to digitalize their businesses.

2.4.7. Habit Behavior (HT), Behavioral Intention (BI) and Use Behavior (UB)

As for this construct, Venkatesh et al. (2012), states that the literature defines habit as the level at which individuals tend to perform behaviors automatically, due to familiarity and knowledge with it. Consequently, it can be defined as a very important indicator in relation to the tolerance of technology for micro-entrepreneurs, because the more micro-entrepreneurs become habitual with the use of mobile applications, the easier they become to use, significantly influencing micro-entrepreneurs' intention to adopt technology in their businesses, accelerating the process of digital transformation of their products and services (Slinger et al., 2024).

Consequently, this operationalization of the habit directly reflects on the use of technology by micro-entrepreneurs as they migrate to digital business, which could lead us to the hypothesis that:

H7a: Habit behavior (BT) positively affects micro-entrepreneurs' Behavior Intention (BI) to digitalize their businesses.

H7b: Habit behavior (BT) positively affects micro-entrepreneurs' Use Behavior (UB) to digitalize their businesses.

2.4.8. Behavioral Intention (BI) and Use Behavior (UB)

Furthermore, as mentioned by Ritz (2019), when it comes to micro-entrepreneurs who use digital marketing, the use of technology to handle specific tasks can produce a greater sense of control in their enterprise, generating subjective feelings of more command to manage the environment in which they operate. Thus, the hypothesis below can be made:

H8: Behavior intention (BI) positively affects micro-entrepreneurs' use behavior (UB) to digitalize their businesses.

2.4.9. Moderating Effects of Age, Gender, Income, Education, and Digital Competence within UTAUT2

According to Sultan (2020) and based on recent studies on the possible differences between gender and the organizational performance of small businesses, more related to the themes of success and survival, gender is an vital factor in the performance of small businesses, since businesses led by women are less likely to close and are almost as successful as those headed by men. Furthermore, when comparing female entrepreneurs with male entrepreneurs, the acceptance of technology is considered more advantageous when the goal is greater business success and subjective well-being (Khan et al., 2023). Furthermore, according to research carried out by the University of Arizona, learning to use Facebook can lead men and women over 65 to increase their cognitive function, which can also lead to an increase in their social and economic insertion (Delello & McWhorter, 2017). However, despite this acceptance, and due to ingrained cultural and social issues, women micro-entrepreneurs are less tech-savvy than men, mostly confining themselves to emails and social media, for example, and not using technology in the most fruitful way to leverage their businesses (Ajumobi & Kyobe, 2017).

In relation to the elderly, the literature previously stated that they had greater tendencies to limit themselves in familiar and repetitive mental activities, preventing new skills from being added to their routines. However, a recent study showed that mature adults are more accessible to technological innovations related to the creation and sharing of social media content, primarily seeking to connect with people, using iPad technologies, for

example, reducing the generational isolation previously seen on social networks (Delello & McWhorter, 2017). This is in line with Winstead's (2013) study, which states that technology such as iPads can act as a positive agent in mitigating social isolation and interactivity of older people with online communities, something that can be adapted to possible innovations in small and micro businesses. However, the barriers for young entrepreneurs persist, as they lack the necessary financial support, government policies and the supportive political environment, along with the institutional and social context (Saputra et al., 2021; Sultan & Sultan, 2020). Which would suggest the following hypotheses:

H9: The relationship between performance expectancy (PE) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H10: The relationship between effort expectancy (EE) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H11: The relationship between social influence (SI) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H12a: The relationship between facilitating conditions (FC) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H12b: The relationship between facilitating conditions (FC) and use behavior (UB) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H13: The relationship between hedonic motivation (HM) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H14: The relationship between price value (PV) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H15a: The relationship between habit behavior (BT) and behavioral intention (BI) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

H15b: The relationship between habit behavior (BT) and use behavior (UB) is moderated by gender and age when microentrepreneurs decides to digitalize their businesses.

2.4.9.1. Moderating Effects of Income within UTAUT2

As stated by (Venkatesh et al., 2012), socioeconomic status has an impact on individuals' access to technology, as well as on their notion of its usefulness and ease of use, in addition to their social environment, all of which are key components of the UTAUT2 model. Therefore, it is understood that income has an indirect influence on the tolerance and use of technology through these factors, since individuals with higher incomes have better access to resources that make it easier to use technology, such as high-speed connections or the latest devices. In the same vein, Khan's research (2024) highlights the fact that women entrepreneurs' acceptance of technology, especially mobile payment systems, is directly linked to access to these necessary digital tools and resources, which help them overcome barriers, contributing to higher levels of business success. According to Vasilescu (2020), people who are struggling to make ends meet are more likely than those in a more comfortable situation to consider having some digital tools, such as robots, perform some of their jobs, demonstrating the relevance of income for these micro-entrepreneurs. Therefore, the socio-economic background, which is characterized by gender inequality and digital disparity, has a significant impact on the decision and ease with which micro-entrepreneurs acquire and use these technologies (Gupta et al., 2008; Khan & Shahid, 2024; Saputra et al., 2021). This means that for micro-entrepreneurs who are migrating to the digital market, the financial resources required are often beyond the budget available in their finances, as well as being costly compared to traditional investors such as families, friends and credit institutions (Babah Daouda et al., 2016). In addition, a study carried out in Angola, which evaluated the factors that influence the digital divide in terms of ICT acceptance, showed that, in relation to intention to use and use behavior, income proved to be one of the main predictors of ICT use, linked to access and education of these users (Goncalves et al., 2018).

With this in mind, we can suggest the following hypotheses:

H16: The impact of Performance expectancy (PE) on behavioral intention (BI) is moderated by gender, age, income, education, and digital competence when microentrepreneurs decides to digitalize their businesses.

H17: The impact of effort expectancy (EE) on behavioral intention (BI) is moderated by gender, age, income, education, and digital competence when microentrepreneurs decides to digitalize their businesses.

2.4.9.2. Moderating Effects of Education within UTAUT2.

The economic growth of micro-entrepreneurs, including women, is closely linked to partnerships with government bodies, especially when it comes to creating a more inclusive entrepreneurial ecosystem, both financially and educationally (Khan & Shahid, 2024). Consequently, development and education programs related to the exploitation of advanced technologies for micro-entrepreneurs are directly related to the ability of these entrepreneurs to innovate their businesses through digitalization (Jiménez-Zarco et al., 2021; Khan et al., 2023; Saputra et al., 2021). With regard to Brazil,, according to a study carried out by the Brazilian Federation of Banks – FEBRABAN (Febraban, 2022), the digital means of payment called "pix", just after its first year of implementation, has already reached the 99% approval mark among young people aged 18 to 24 and 96% in the 25 to 44 age group, while among users aged 60 and over, acceptance/adoption of this new digital means has fallen to only around 65% of users. In terms of level of education, according to the same study, people with completed secondary education reached 90% and those with higher education more than 92%. Consequently, it is clear that the level of education is a positive factor in the adoption of technology by micro-entrepreneurs, and the lower the level of education, the more scarce the cognitive structures and the perception of solutions, a fact that ends up negatively influencing the ability to learn in new environments (Rojas-Mendez et al., 2017; Sultan & Sultan, 2020), a statement that also applies to income, since the literature cites the income variable as being very relevant in countries in the early stages of technology diffusion, especially in emerging countries such as Brazil (Rojas-Mendez et al., 2017). Furthermore, through a study with Chinese citizens, it was realized that highly educated individuals shape their attitude towards mobile technology through social influence (Park et al., 2007). In addition, according to Awa et al. (2015) individuals with previous e-commerce experience are more skilled and have an easier time simplifying complexities to improve the perception of the benefits attributed to the use of

technology in their digital business, so this experience with the Internet positively influences the use of specific systems.

Consequently, we can suggest the following hypotheses:

H18: The impact of social influence (SI) on behavioral intention (BI) is moderated by gender, age, and education when microentrepreneurs decides to digitalize their businesses.

H19: The impact of facilitating conditions (FC) on behavioral intention (BI) is moderated by gender, age, education, and digital competence when microentrepreneurs decides to digitalize their businesses.

2.4.9.3. Moderating Effects of Digital Competence within UTAUT2

According to Sultan (2020), if older micro-entrepreneurs are more self-assured in using technology, their levels of self-efficacy will be higher. This corroborates Crittenden's et al. (2019) assertion that educational training programs in relation to the use of technology are also important for increasing the effectiveness of women micro-entrepreneurs in emerging markets. Furthermore, those who are certain that they possess the digital abilities required for daily life or employment tend to have a more optimistic view of the positive effects of technologies on society and the economy (Gupta et al., 2008; Saputra et al., 2021; Vasilescu et al., 2020). When analyzing MSMEs, more precisely those run by women in South Africa, Ajokumbi (2017) states that the lack of competence can be credited to the fact that these micro-entrepreneurs generally go into business without full knowledge of the necessary managerial skills, such as dealing with budgets, managing finances and, ultimately, the digital management of the company. And, according to the same study, there was a gap in these micro-entrepreneurs in terms of their competence to use various forms of technology and in their skills to develop and implement large areas and products for their businesses (Ajumobi & Kyobe, 2017; Oppl & Stary, 2020). Thus, we can suggest the following hypotheses:

H20: The impact of behavioral intention on use behavior is moderated by digital competence when microentrepreneurs decides to digitalize their businesses.

3. Methodology

3.1. Participants

The study has a population that was made up of Brazilian micro-entrepreneurs who sell any product or service over the Internet. The study was carried out online, where the

questionnaires were distributed to the survey participants. A link was created on the Google Forms platform and sent, initially, to the author's close contacts who already sell their services online and have mentorships that teach and encourage people to enter the digital market, where the link was sent to some of their students. Later, with the help of the author's work colleagues, the research link was sent to some WhatsApp groups with some micro-entrepreneurs. Finally, the author made posts on his Instagram stories and sent direct messages to some users whose profile description stated that they owned companies in the digital market, to reach the most heterogeneous group of micro-entrepreneurs possible, aiming for a diverse analysis. The data was collected over 15 days (July 23 to August 7, 2024). A total of 257 responses were achieved, of which 1 was disqualified because it did not fit into the study population (the excluded participant did not sell any products or services on the Internet). The population of this study was made up of Brazilian micro-entrepreneurs who sell a product or service over the Internet. The study was carried out online, where the questionnaires were distributed to the survey participants. A link was created on the Google Forms platform and sent, initially, to the author's close contacts who already sell their services online and have mentorships that teach and encourage people to enter the digital market, where the link was sent to some of their students. Later, with the help of the author's work colleagues, the research link was sent to some WhatsApp groups with some micro-entrepreneurs. Finally, the author made posts on his Instagram stories and sent direct messages to some users whose profile description stated that they owned companies in the digital market, to reach the most heterogeneous group of micro-entrepreneurs possible, aiming for a diverse analysis. The data was collected over 15 days (July 23 to August 7, 2024). Finally, a total of 257 responses were obtained, of which only one was excluded for not fitting into the study population (the excluded participant did not sell any products or services on the Internet), resulting in 256 valid responses.

Table 1 - Descriptive statistics of respondent's characteristics

Variable	Category	Frequency	%
Gender	Female	141	55.1
	Male	115	44.9
	Other	0	0
	Rather not answer	0	0
Age	18 to 25 years	16	6.3
	26 to 35 years	140	54.7
	36 to 45 years	90	35.2
	Over 45 years old	10	3.8

Education Level	Primary School	1	0.4
	Secondary School	21	8.2
	Higher Education (Undergraduate)	128	50
	Postgraduate (Master's/PhD)	106	41.4
Net Monthly Income	Up to R$ 5,000.00	25	9.9
	From R$5,000.01 to R$10,000.00	53	20.9
	De R$ 10,000.01 à R$ 15,000.00	49	19.4
	Over R$ 15.000,01	126	49.8
Digital Competence *Social media (Instagram, Tik Tok, Facebook...)*	I do not use	22	8.6
	Use rarely	1	0.4
	Use occasionally	33	12.9
	I use it frequently	47	18.4
	I use very often	152	59.6
Digital Competence *Infoproduct platforms (Eduzz, Hotmart, Udemy, Monetize, Kiwify...)*	I do not use	136	61.3
	Use rarely	22	9.9
	Use occasionally	21	9.5
	I use it frequently	18	8.1
	I use very often	25	11.3
Digital Competence *Marketplaces (Mercado Livre, Americanas, Magazine Luiza, Amazon...)*	I do not use	172	77.8
	Use rarely	14	6.3
	Use occasionally	19	8.6
	I use it frequently	12	5.4
	I use very often	4	1.8
Digital Competence *My company's e-commerce website*	I do not use		64.4
	Use rarely		6.7
	Use occasionally		7.1
	I use it frequently		5.3
	I use very often		16.4

As shown in Table 1, the percentage of woman respondents (55.1%) is vaguely higher than that of men (44.9%), with a more significant proportion of participants (around 55%) being between 26 and 35 years old. Approximately 91% of those interviewed had higher education or more, which shows a high level of education among those interviewed. In addition, more than 70% of the participants have a regular income of more than R$10,000 reais, and around 9% do not use social networks in their businesses.

With around 94% adoption, WhatsApp proved to be widely used by micro-entrepreneurs in Brazil, possibly serving both as a communication channel with customers and as an internal business communication tool. Another highlight is e-commerce platforms which, with less than half of micro-entrepreneurs adopting them, around 40%, indicates that although these entrepreneurs have joined the digital market, a large part of them still opt

for the easier and more traditional sales methods, for example social media and WhatsApp, as already mentioned. Finally, another relevant piece of information is that many of those interviewed don't see the need to have their own company website, as only 35% said they did, demonstrating their preference for managing social media pages for their companies.

3.2. Materials and measurements

Based on the survey questionnaire formerly developed by Venkatesh et al. (2012) a questionnaire was developed with phrases adjusted and adapted agreeing to the focus of this study. Measurement scales previously developed and validated by existing studies were adapted for this study – Appendix A1. The questionnaire was separated into three divisions: demographic explanation of the study participants, UTAUT2 and additional questions for further theoretical background to the research – Appendix A2. The UTAUT2 section contained 32 questions and consisted of nine constructs: performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habitual behavior, behavioral intention and usage behavior. The moderators chosen were age, gender, income, education and digital competence. The 32 items were measured using a five-point Likert scale, ranging from "strongly disagree = 1" to "strongly agree = 5". As for digital competence, specifically, the 4 items related to the moderator were measured by a five-point Likert scale, reaching from "I do not use = 1" to "I use very often = 5". As the aim of the questionnaire is to improve comprehension of the reasons why micro-entrepreneurs in Brazil adopt the digital marketplace in their businesses, it was created in English, but converted into Brazilian Portuguese, as it was related to the Brazilian context.

As mentioned above, all the answers were obtained using a 5-point Likert scale, reaching from totally disagree to totally agree, except for the one related to usage behavior, which was adapted for the study according to the original measure developed by (Venkatesh et al., 2012). In addition, there were adaptations in relation to the moderators, in which the study considered gender (male and female) and age (continuous variable) and adapted Oppl & Stary's (2020) understanding of digital competence to the types and variations of levels of the digital platforms that are the focus of this study. Finally, a pilot test was guided with two professionals from the digital market who validated the suitability of the structure and the clarity of the questionnaire's directions and questions.

3.3. Data Analysis Techniques

Partial least squares structural equation modeling (PLS-SEM) was the basis for the hypothesis testing analysis in this study, which was carried out using Smart PLS 4.0 developed by Ringle (Ringle, 2024). The evaluation of the measurement model in this study was carried out according to the guidelines of Hair (Hair et al., 2019), who suggests evaluating several key indicators to ensure the validity and reliability of the model. For example, it is recommended to examine the average variance extracted (AVE), Cronbach's alpha (CA) and composite variability (CR) to ensure the validity and reliability of the constructs. Thus, loadings above 0.7 were considered acceptable, ensuring that the indicators were reliable measures of their respective constructs. It was expected that the composite reliability and Cronbach's alpha values would be superior to 0.7, indicating adequate internal consistency between the items. Regarding AVE, which measures the amount of variation captured by a construction in relation to variation caused by measurement error, it must be more than 0.5 to ensure convergent validity (Hair et al., 2019). About confirming discriminant validity, the study used the heterotrait-monotrait ratio (HTMT), with values below 0.9 being considered acceptable according to the limits established by Henseler et al. (2015). It should be noted that this approach ensures that the constructs in the model are distinct and not excessively correlated, which is crucial for the validity of the model (Hair et al., 2019).

As in other research in similar fields, the PLS-SEM methodology was employed in this study to explore complex relationships and maximize the explained variation of endogenous constructs (Hair et al., 2019). For example, in the studies by Venkatesh et al. (2012) and Gupta et al. (2008), PLS-SEM was essential for validating theoretical models in situations where a conventional covariance-based SEM might not be appropriate due to sample size restrictions or the exploratory nature of the study.

4. Results

4.1. Measurement Model Analysis

As mentioned earlier, a PLS algorithm was calculated based on a reflective model using the Golden Rule to assess internal consistency reliability, convergent validity and discriminant validity, as shown in Figure 2 below:

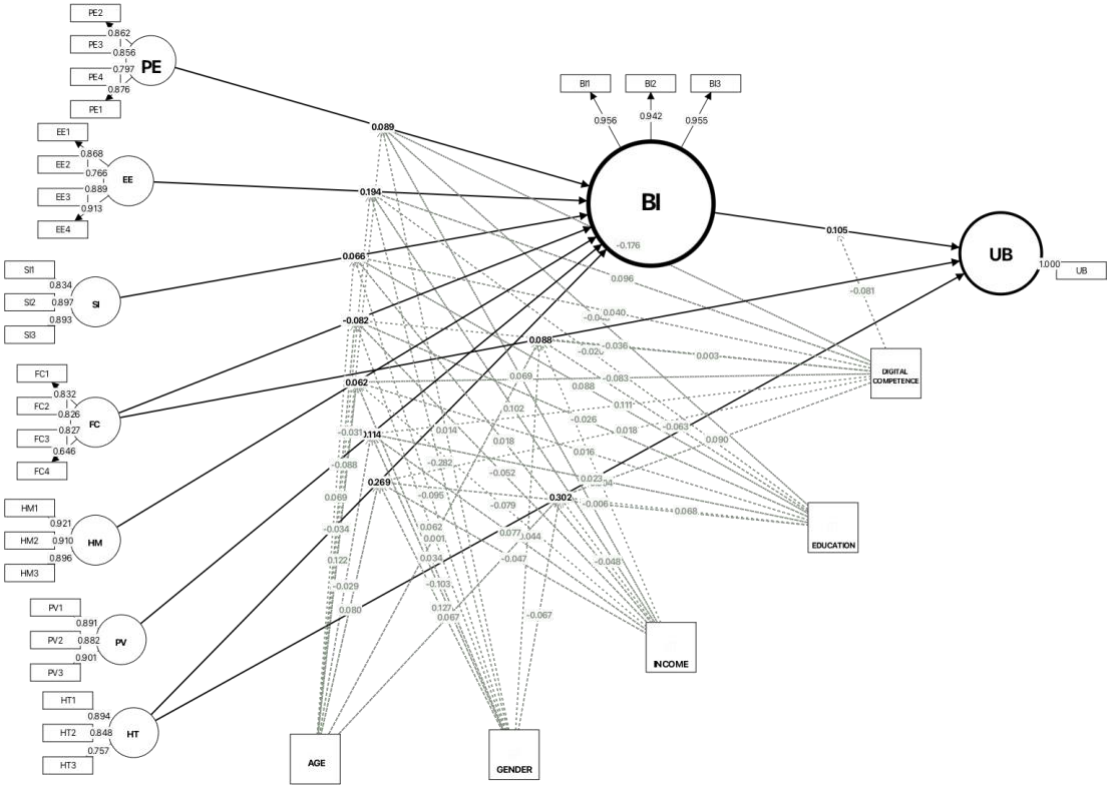


Figure 2 - Research Model Path Loading

According to Henseler, Ringle and Sarstedt (2015), Heterotrait-Monotrait (HTMT) values below 0.85 designate that the constructs are sufficiently distinct and that there is adequate discriminant validity. Table 2 below shows the HTMT values found in the research, which range from 0.117 to 0.684, all below the critical limit of 0.85, indicating that Brazilian micro-entrepreneurs perceive these factors differently when considering technology adoption. For example, when the lowest values are observed, such as between the SI and UB constructs (0.117), it is understood that there is little overlap between these dimensions, indicating that microentrepreneurs clearly differentiate between social influence and actual technology use behavior, a relevant fact in technology acceptance studies, in which it is stated that the clear distinction between these dimensions allows for a more accurate prediction of the elements that actually impact technological adoption Venkatesh et al. (2012).

However, when analyzing CF and EE (0.684), the higher values found, although still below the critical limit, suggest a greater correlation between these constructs, and this link can be explained by the complementary nature of these dimensions, since facilitating conditions, for example the availability of technical support and resources, which directly influence the perception of the effort required concerning the use of the new technology, suggesting that there is an interdependence between these factors in the perspective of technology acceptance, in accordance what is explained by Venkatesh et al (2003).

Table 2 - Heterotrait-Monotrait (HTMT)

Construct	PE	EE	SI	FC	HM	PV	HT	BI
PE								
EE	0,189							
SI	0,339	0,236						
FC	0,330	0,684	0,253					
HM	0,397	0,517	0,367	0,397				
PV	0,292	0,297	0,217	0,457	0,359			
HT	0,536	0,361	0,464	0,515	0,514	0,382		
BI	0,469	0,198	0,268	0,267	0,350	0,253	0,581	
UB	0,389	0,313	0,117	0,277	0,321	0,176	0,453	0,3109

Finally, the results of Table 2, composed with the Table 3 below, reinforce the discriminant validity of the constructs of the UTAUT2 model in the survey of Brazilian micro-entrepreneurs, ensuring that the variables used are perceived as distinct and contribute significantly to greater learning about the acceptance of technology.

Table 3 - Heterotrait-Monotrait (HTMT) – Moderating effects

Indicators	Age	Gender	Income	Education
Age				
Gender	0,196			
Income	0,183	0,279		
Education	0,091	0,002	0,272	
Digital competence	0,040	0,032	0,120	0,027

More than once, Table 3 shows that all presented HTMT values are significantly below the 0.85 threshold, indicating that the constructs are sufficiently distinct, which ensures that the relationships found between the various constructs in the UTAUT2 model are not influenced by a discriminant validity deficiency, Henseler et al. (2015). With regard to Age, it shows low values in relation to all the other constructs (0.183) in relation to Income, for example), this assumes that age is perceived as a distinct and independent construct from the other factors analyzed, influencing the acceptance of technology in ways different from the influences of income or level of education, in line with the literature on the subject (Venkatesh et al., 2012). The Gender construct, instead, shows that there is a clear separation between how participants perceive the impact of gender compared to other variables, simply by looking at the HTMT values for Income (0.279) compared to the values

for Education (0.002), indicating that gender has a unique impact on technology acceptance, regardless of other sociodemographic factors.

The same applies to Income which, through the difference in HTMT values for Education (0.272) and Digital competence (0.120), also shows adequate discriminant validity, implying that perceptions about the influence of income on technology acceptance are distinct from those related to education and digital competence, corroborating Venkatesh's (2003) studies, in which he suggests that income can influence access to technology and the perception of its value, but this effect is clearly separate from other factors, such as education. The Education construct is also clearly distinct, given the HTMT value of 0.027 for Digital competence, suggesting that microentrepreneurs see educational level as a separate factor from digital competence, consistent with studies suggesting that formal education does not always translate directly into practical technological skills (Jiménez-Zarco et al., 2021).

Digital competence, on the other hand, is well below the critical limits, which indicates that this construct is viewed uniquely and separately from other sociodemographic factors, for example, the HTMT values for Age (0.040) and Gender (0.032). Therefore, it is possible to understand the relevance of digital skills in the current environment, since digital competency is becoming a determining factor for the adoption of new technologies, independent of traditional factors like gender or age (Oppl & Stary, 2020).

As shown in Table 4, the CR values are more significant than 0.83 in all variables, and the Cronbach's alpha values for all factors are above 0.76, demonstrating intensely high levels of internal consistency reliability, leading us to understand that the results confirm the validity and reliability of the measures used in this study, showing that the constructs used are suitable for assessing the adoption of digital business by Brazilian microentrepreneurs, as well as being in line with the recommendations of Hair et al. (2019) to ensure the reliability of the scales used.

Furthermore, the AVE values of every construct exceed the lowest threshold of 0.5 recommended by Fornell and Lar (1981), the constructs capture more than 50% of the variance of their indicators, which indicates that the measures are satisfactorily accurate in representing the underlying concepts. BI stands out as the highest (0.903879), indicating excellent convergent validity, stating that is a crucial construct in finding the intention of micro-entrepreneurs to employ digital technologies (Venkatesh et al., 2012), while the lowest is PV (0.617923), but still well above the acceptable limit.

Table 4 - Construct reliability and validity

	Composite Reliability (CR)	Average Variance Extracted (AVE)	Cronbach's Alpha
BI	0.96576	0.903879	0.94681
EE	0.919509	0.741062	0.883256
FC	0.865608	0.682148	0.79309
HM	0.934778	0.82693	0.895418
PE	0.920314	0.741225	0.875902
PV	0.836948	0.617923	0.769984
SI	0.870234	0.690431	0.812348
HT	0.912345	0.722345	0.873265
UB	0.898372	0.733281	0.846371

Tabela 5 - Fornell-Larcker Table

	AGE	BI	DC	ED	EE	FC	GE	HM	HT	IN	PE	PV	SI	UB
AGE	1.00													
BI	-0.06	0.95												
DC	-0.04	0.21	1.00											
ED	0.09	0.00	0.03	1.00										
EE	-0.16	0.19	0.19	0.07	0.86									
FC	-0.11	0.23	0.26	-0.02	0.59	0.79								
GE	0.20	-0.10	0.03	-0.00	-0.06	0.06	1.00							
HM	-0.01	0.32	0.23	-0.12	0.46	0.34	-0.16	0.91						
HT	-0.05	0.51	0.34	-0.04	0.31	0.41	-0.08	0.44	0.84					
IN	0.18	0.09	0.12	0.27	0.03	0.06	0.28	-0.09	0.07	1.00				
PE	-0.09	0.43	0.32	-0.10	0.16	0.28	-0.06	0.35	0.46	0.02	0.85			
PV	-0.11	0.24	0.11	-0.01	0.27	0.38	-0.13	0.32	0.33	0.07	0.25	0.89		
SI	-0.03	0.25	0.11	-0.04	0.21	0.21	-0.17	0.32	0.39	0.03	0.31	0.19	0.88	
UB	-0.19	0.30	0.30	-0.03	0.29	0.25	-0.15	0.30	0.41	-0.14	0.37	0.16	0.13	1.00

Subsequently, Table 5 shows the values of the Fornell-Larcker analysis to confirm the discriminant validity between the different constructs in the model. It is possible to highlight the BI construct, which has a high correlation with itself (0.95), significantly higher than the correlations it has with other constructs, such as CD or EE. This validates the hypothesis that behavioral intention is a strong indicator of technology adoption by micro-entrepreneurs, in line with Venkatesh et al. (2012), who state that strong discriminant validity is key to better understanding how the intention to adopt technology translates into actual use, especially in small business contexts. We can also mention the findings for the PE and EE constructs, which likewise demonstrate strong discriminant validity. These findings support the literature's assertion that one of the primary drivers of technology

adoption is perceived ease of use (Soong et al., 2020), in addition to the hypothesis that a significant predictor of technology adoption is PE (Venkatesh et al., 2003). Consequently, it can be said that the robustness of the model and the validity of the conclusions derived were confirmed, since discriminant validity is guaranteed by the high AVE values compared to the correlations between the constructs

Thus, as Table 6 illustrates, the PE construct, which measures the extent to which microentrepreneurs think that utilizing technology will enhance their performance, demonstrates strong discriminant validity, with high loadings on its own and low correlations with other constructs, consistent with Venkatesh's findings et al. (2003). EE is another noteworthy construct that aligns with the notion that technology adoption intentions are mostly determined by how easy a technology is to use (Venkatesh et al., 2012). It is also important to emphasize the differences between HM and PV, demonstrating that both are essential to comprehending the various reasons why individuals accept technology (Thong, 2006; Venkatesh et al., 2012). Furthermore, it is noteworthy that HT shows a high discriminant validity with respect to BI and UB, indicating that while they are associated with usage behavior, they capture distinct facets of the adoption process altogether (Venkatesh et al., 2012).

Table 6 - Discriminant Validity Table

Construct	PE	EE	SI	FC	HM	PV	HT	BI	UB
PE	0.86								
EE	0,47	0,86							
SI	0,27	0,59	0,85						
FC	0,33	0,59	0,06	0,79					
HM	0,35	0,46	0,22	0,34	0,91				
PV	0,25	0,19	0,34	0,29	0,29	0,79			
HT	0,58	0,30	0,42	0,41	0,44	0,35	0,8		
BI	0,58	0,2	0,27	0,27	0,35	0,25	0,37	0,87	
UB	0,31	0,27	0,27	0,30	0,35	0,27	0,37	0,31	0,77

The path coefficients are analyzed in Table 7 below, which supports the theoretical hypothesis by showing that most of the associations suggested by the model are statistically significant. The results of Venkatesh et al. (2012), who emphasize the relevance of this construct and consider it one of the main predictors of technological adoption, are duly in line with the impact of EE on BI, which is highly significant ($p < 0.01$) and suggests that perceived ease of use is a critical factor in determining microentrepreneurs' intention to adopt new technologies.

Table 7 - Path results of structural model

HYPOTESES	Path	Path Coefficient	*p*-Value
H1	PE – BI	0.09	0,08
H2	EE – BI	0.2	0,00
H3	SI – BI	0.07	0,17
H4a	FC – BI	-0.08	0,10
H4b	FC – UB	0.09	0,08
H5	HM – BI	0.06	0,22
H6	PV – BI	0.11	0,02
H7a	HT – BI	0.27	0,00
H7b	HT – UB	0.30	0,00
H8	BI – UB	0.11	0,04
H9	Gender x PE – BI	0.01	0,78
H9	Age x PE – BI	-0.03	0,54
H10	Gender x EE – BI	-0.28	0,00
H10	Age x EE – BI	-0.09	0,08
H11	Gender x SI – BI	-0.10	0,06
H11	Age x SI – BI	0.07	0,17
H12a	Gender x FC – BI	0.06	0,22
H12a	Age x FC – BI	-0.03	0,50
H12b	Gender x FC – UB	-0.04	0,38
H12b	Age x FC – UB	0.00	0,98
H13	Gender x HM – BI	0.03	0,50
H13	Age x HM – BI	0.12	0,02
H14	Gender x PV – BI	-0.10	0,04
H14	Age x PV – BI	-0.03	0,56
H15a	Gender x HT – BI	0.13	0,01
H15a	Age HT – BI	0.08	0,11
H15b	Gender x HT – UB	-0.07	0,18
H15b	Age x HT – UB	0.07	0,18
H16	Gender x PE – BI	0.01	0,78
H16	Age x PE – BI	-0.03	0,54
H16	INC x PE – BI	0.07	0,17
H16	EDU x PE – BI	-0.05	0,34
H16	DC x PE – BI	-0.18	0,00
H17	Gender x EE – BI	-0.28	0,00
H17	Age x EE – BI	-0.09	0,08
H17	INC x EE – BI	0.10	0,04
H17	EDU x EE – B I	-0.02	0,67
H17	DC x EE – BI	0.07	0,06
H18	Gender x SI – BI	-0.10	0,06
H18	Age x SI – BI	0.07	0,17
H18	EDU x SI – BI	0.09	0,08
H19	Gender x FC – BI	0.06	0,22
H19	Age x FC – BI	-0.03	0,50
H19	EDU x FC – BI	-0.07	0,60
H19	DC x FC – BI	-0.04	0,47
H20	DC x BI – UB	-0.08	0,11

Furthermore, concerning moderators, the table illustrates the noteworthy influence of both gender and age on the relationship between EE and BI and HM and BI, implying that men and women might respond differently to perceived ease of use, with women possibly appreciating the simplicity and support provided by technologies more. Additionally, motivation for younger people is more closely associated with the hedonic aspects of technology use, which is reliable with the findings of Khan et al. (2023) regarding demographic differences in technology adoption.

Regarding the relationship between HT and UB, Table 7 shows that familiarity and repetition with technology use are strong indicators of continuous use behavior, supporting findings in the literature regarding the significance of habit as a crucial factor in determining sustained use of technology (Limayem et al., 2007). It is also worth highlighting the influence of the relationship between the moderators digital competence and income on the correlation concerning EE and BI, which suggests that micro-entrepreneurs with greater digital competence and income are more expectedly to accept technologies, as they identify fewer barriers related to effort, reaffirming the effect of social and economic capital on technology adoption (Gupta et al., 2008).

Table 8 presents an analysis of the path coefficients' importance with respect to the study's hypotheses, elucidating their effects and statistical significance. It is important to note that only the outcomes that have a substantial impact on the hypothetical relationships have been included in the spreadsheet (those that are not statistically significant have been excluded).

Table 8 - Hypotheses analysis results

HYPOTESES	Path	EFFECTS
H2	EE -> BI	EE positively influences BI
H6	PV -> BI	PV positively influences BI
H7a	HT -> BI	Habit strongly influences BI
H7b	HT -> UB	Habit strongly influences UB
H8	BI -> UB	BI positively influences UB
H10, H17	Gender x EE -> BI	Gender significantly moderates the relationship between EE and BI
H11, H18	Gender x SI -> BI	Gender may have a moderating effect on the relationship between SI and BI
H13	Age x HM -> BI	Age significantly moderates the relationship between HM and BI
H14	Gender x PV -> BI	Gender significantly moderates the relationship between PV and BI
H15a	Gender x HT -> BI	Gender significantly moderates the relationship between Habit and BI
H16	DC x PE -> BI	Individuals with higher DC might perceive performance expectancy as less critical in forming their BI, possibly because they already possess the skills needed to use the technology efficiently
H17	INC x EE -> BI	Individuals with higher income levels are more positively influenced by EE when forming their intentions to adopt digital technologies
H17	DC x EE -> BI	Higher DC might slightly enhance the positive effect of EE on BI. Individuals with higher digital competence may still value EE but to a lesser extent.

H18	EDU x SI -> BI	Higher education might slightly enhance the influence of social factors on the intention to use digital technologies

In summary, Table 8's findings demonstrate that the UTAUT2 model's hypothesis examinations yield valuable insights into the variables influencing Brazilian micro-entrepreneurs' adoption of digital technologies. According to Venkatesh et al. (2012), perceived value and ease of use are crucial for adoption intention. The findings also indicate that Effort Expectancy (EE) and Price Value (PV) positively affect Behavioral Intention (BI). Habit (HT) is particularly important since it affects both Behavioral Intention (BI) and Use Behavior (UB). This is reliable with research by Limayem et al. (2007) that emphasizes the relevance of habit in the persistence of technological use. In addition, as observed by Khan et al. (2023), moderating effects such as age and gender show that different demographic groups react differently to technological influences. As for the moderation of digital competence (DC), this indicates that people with greater digital competence may consider the expectation of performance to be less important, probably because they already have the necessary skills to use technology effectively, as evidenced by previous studies (Gupta et al., 2008).

4.2. Coefficients of Determination (R^2)

Titled R^2, the coefficient of determination indicates the percentage of change in the dependent variable that is explained by the change in the independent variables. The R^2 value can be categorized as fractal (0.25), moderate (0.50) or substantial (0.75) (Hair et al., 2019).

Table 9 - Coefficients of determination (R^2) and R^2 adj

	R^2	R^2 *adj*
Behavioural Intention	0,438	0,352
Use Behavior	0,294	0,254

As can be seen, the R-squared value of 0.438 for BI shows that the independent variables in the model can explain about 43.8% of the variance in the dependent variable (BI), giving it a moderate amount of explanatory power. The marginally lower result of 0.352 indicates that the explanatory power is lowered to 35.2% after accounting for the number of predictors in the model. This is because the adjustment considers the possible overfitting that can occur with several predictors, providing a more conservative estimate (Hair et al., 2019). As for UB, the R-squared value of 0.294 suggests that 29.4% of the variation in the dependent variable (UB) is enlightened by the independent variables in the model. This is

a lower level of explanatory power compared to the BI model, where, after adjusting for the quantity of predictors, the adjusted R-squared value of 0.254 shows that the model explains around 25.4% of the variation, slightly reducing the perceived explanatory power. Therefore, these results suggest that, although the UTAUT2 model captures a substantial part of the variance in adoption intentions and behaviors, other contextual and individual factors may interfere in relevant ways, as corroborated by related studies (Soong et al., 2020; Venkatesh et al., 2012).

Figure 3 below shows the R^2 values for behavioral intention and use behavior, related to the hypotheses presented in this study.

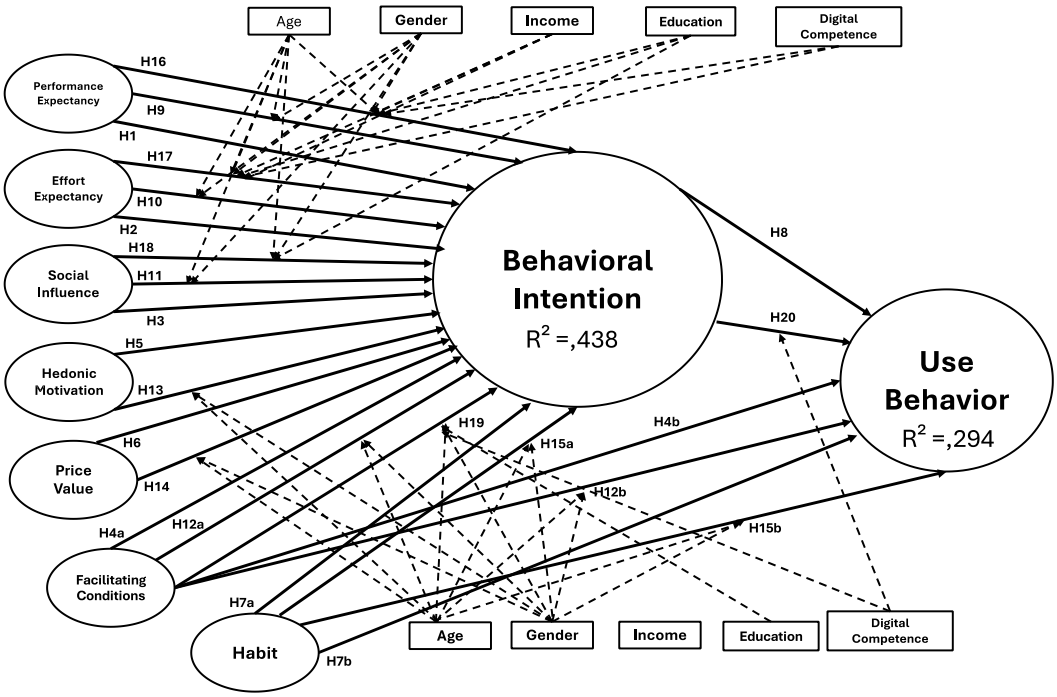


Figure 3 - Coefficients of determination (R^2) and R^2 adj of the structured model

4.3. Moderation Effect Analysis

When looking at moderation effects, the study discovered that demographic factors such as digital competence, age and gender play a crucial role in how Brazilian micro-entrepreneurs perceive and use digital technologies. Gender moderation showed that women have a significantly stronger connection among effort expectancy (EE) and behavioral intention (BI) than men. This result indicates that, when considering the acceptance of new technologies, women value ease of use more. This may be due to perceptions or previous experiences that influence their perception of the complexity of using technology. This discovery is aligned with studies such as Khan et al. (2023), in which gender disparities in the perception and usage of technology are highlighted,

indicating that women tend to prefer technologies that are seeming as more intuitive and simpler to handle.

Age was also discovered to be a significant moderator, especially regarding the correlation between Behavioral Intention (BI) and Hedonic Motivation (HM). Hedonic motivations, i.e. pleasure and satisfaction with the use of technology, have more impact on younger people than on older people, according to the results. This finding suggests that, for younger users, technology is not only a functional tool, but also a source of entertainment and pleasure, which may increase the likelihood of adoption, corroborating the results found by Thong et al. (2006).

As for digital competence, it moderated the link between performance expectancy (PE) and behavioral intention (BI), suggesting that people with greater digital competence consider performance expectancy to be less important in forming their intention to use. This may be because they already have the necessary skills to take full benefit of the benefits of digital technologies. The literature on digital literacy indicates that people with higher technological skills are more self-confident and less dependent on external assessments of expected performance (Gupta et al., 2008). Thus, digital competence can act as an empowering factor, mitigating perceived barriers to the adoption of new technologies.

4.4. Discussion

The analysis of the suggested hypotheses provides a comprehensive perspective on how each of the constructs of the UTAUT2 model impact the adoption of digital technologies by Brazilian microentrepreneurs in relation to the hypotheses presented in this study. The data showed that effort expectancy (EE) and performance expectancy (PE) of a technology are important determinants of behavioral intention (BI). Put another way, the more easily and profitably a technology is perceived, the greater the user's intention to use it, supporting Venkatesh et al.'s theory (2003). The importance of creating technologies that are easy to understand and that clearly demonstrate the productivity and efficiency benefits for micro-entrepreneurs is demonstrated by the intensity of these connections. As for Habit (HT), its role was confirmed, acting as a strong indicator of both behavioral intention (BI) and use behavior (UB), suggesting that familiarity and repeated use have a meaningful effect on the adoption and continued usage of technology by microentrepreneurs, duly aligned with the study by Limayem et al. (2007). In this context,

by reducing the need for conscious deliberation and increasing the likelihood of continuous use, habit acts as a mechanism that automates the use of technology, which leads us to understand that methods that encourage the continuous use of technology, such as tutorials and ongoing technical support, can be effective in consolidating habit among micro-entrepreneurs.

The effect of price value (PV) on behavioral intention (BI) is another valuable hypothesis that was confirmed. In this case, micro-entrepreneurs must perceive an adequate cost-benefit ratio when considering the acceptance of new technologies. This result is consistent with that found in existing literature, such as that by Thong et al. (2006), which suggests that, in contexts where financial resources are scarce, the perception of value is a key aspect in the decision to accept technology. However, not all the hypotheses proposed were properly supported, such as some hypotheses related to moderating effects, such as the moderation of digital competence in the connexion between effort expectancy (EE) and behavioral intention (BI), which showed mixed or non-significant results. This may suggest that although digital competence is an important component, its impact may vary according to other contextual circumstances or individual characteristics, such as the complexity of the technology or users' previous experience.

5. Conclusions

5.1. Theoretical contributions

This study reveals that the adoption of digital businesses by Brazilian microentrepreneurs is induced by a complex combination of elements, highlighting the importance of the UTAUT2 model for a greater understanding of these dynamics. The results of Venkatesh et al. (2012) support the identification of perceived value, hedonic motivation, and social impact as important factors influencing the adoption behavior of new technologies. Furthermore, the study supported Khan's et al. (2023) findings by demonstrating the significance of moderating variables like age and gender, regarding variations in technological acceptance between different demographic groups. Income and digital competence also proved to be crucial moderators, suggesting that micro-entrepreneurs are more inclined to adopt new technology if they have more financial resources and digital expertise. This result is in line with the recommendations of Crittenden et al. (2019) on the need for technological education programs to promote digital inclusion. Finally, it can be concluded that, in addition to enriching the existing literature, these findings provide practical perspectives for the creation of public policies and support strategies,

especially from banks, with the aim of improving the sustainability and competitiveness of micro-entrepreneurs in the digital world.

5.2. Managerial implications

The study's findings underscore the necessity of micro-enterprise assistance initiatives on the side of Brazilian institutions and political actors, highlighting their value in expanding Brazil's economy. This can be seen by confirming that Effort Expectancy (EE) and Price Value (PV) have a strong influence on the intention to adopt digital technologies, which ultimately indicates the need for initiatives aimed at simplifying the use of technologies and clearly demonstrating the economic value of these tools, which will make the promotion of digitalization more effective and sustainable. Another important factor is the strong impact of Habit (HT) on usage behavior, which leads us to understand that it is not enough for policies to encourage the adoption of digital technologies, but also to promote learning from the continuous and repeated use of these tools, whether through ongoing training and technical support, another way of ensuring the sustainable adoption of these technologies. Finally, the managerial implications of this study also point to the need for differentiated strategies for different demographic groups, since it has been recognized that gender, age and digital competence shape the way technologies are perceived and adopted, as discussed by Gupta et al. (2008) and Venkatesh et al. (2012).

5.3. Limitations and future research directions

Although valuable insights can be drawn from this study into the reasons that influence the acceptance of digital technologies by Brazilian micro-entrepreneurs, it is not without its limitations. Given Brazil's geographical immensity, one of the central limitations is the representativeness of the sample, which may not adequately reflect the diversity of micro-entrepreneurs in different regions or sectors. In this way, the data collected may have been somewhat generalized. When we analyzed the surveys that use the UTAUT2, we didn't find any that cited the exact term "Digital Competence" or, even if it has a similar name, none with the same meaning as the moderator in this survey, a fact that made it a little difficult to analyze this moderator concretely, given that it can be something subjective on the part of the interviewees. For future research, the study believes that it would be important to explore technology adoption in different regional and economic contexts in Brazil, to extract a profounder understanding of the motivations and barriers to technology adoption.

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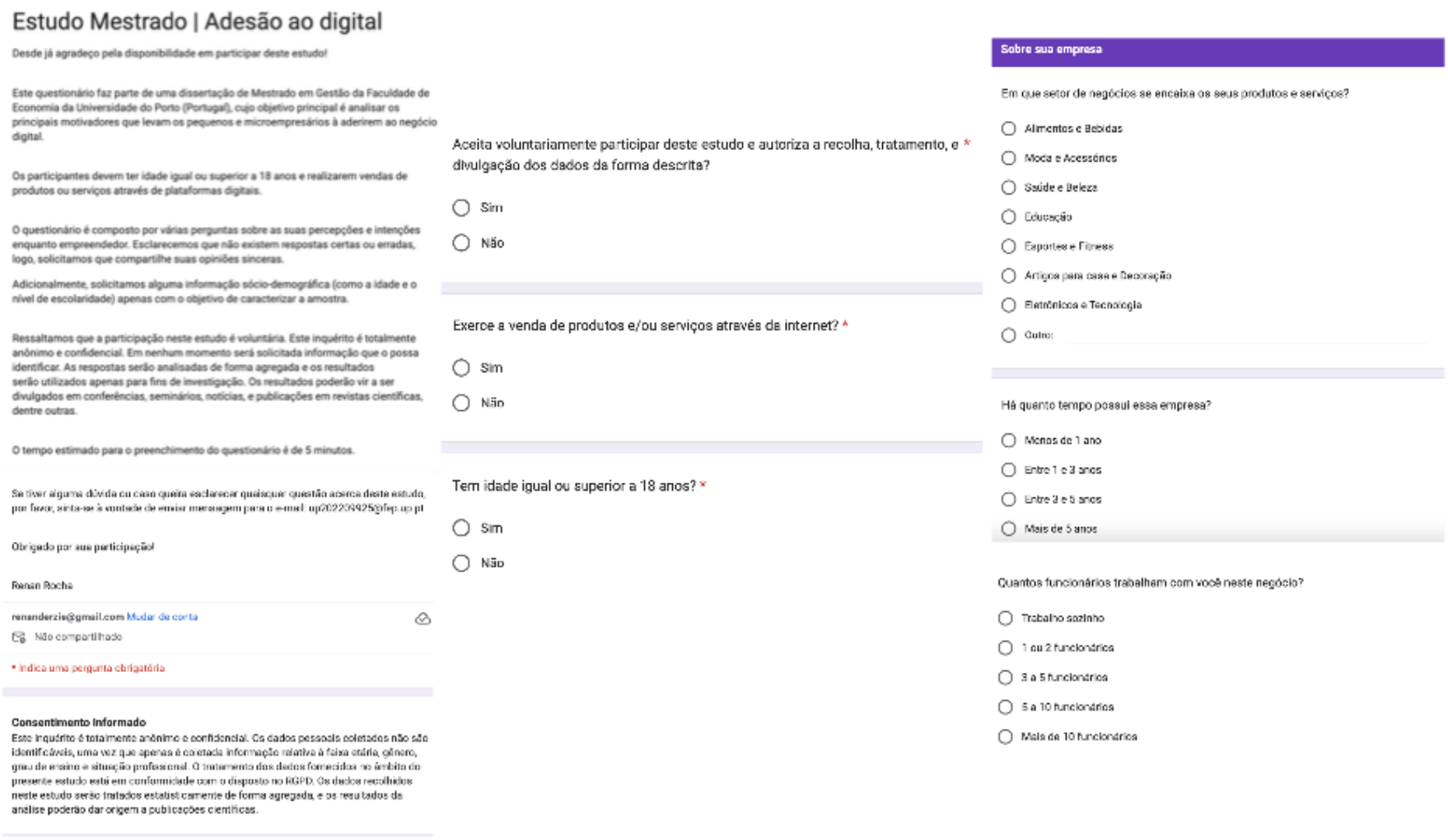
Appendixes

Appendix A 1 – Measurement Items

Constructs	Itens		Source
Performance Expectancy	PE1	I find digital tools useful in my day-to-day work.	(Venkatesh et al., 2012)
	PE2	Using digital tools increases my chances of accomplishing things that are important to my company.	
	PE3	The use of digital tools helps me to accomplish my activities more quickly.	
	PE4	Using digital tools increases my productivity.	
Effort Expectancy	EE1	Learning how to use digital tools is easy for me.	(Venkatesh et al., 2012)
	EE2	My interaction with digital tools is clear and understandable.	
	EE3	I find digital tools easy to use.	
	EE4	It is easy for me to become skillful at using digital tools.	
Social Influence	SI1	People who are important to me think that I should use digital tools in my business.	(Venkatesh et al., 2012)
	SI2	People who influence my behavior think that I should use digital tools in my business.	
	SI3	People whose opinions that I value prefer that I use digital tools in my business.	
Facilitating Conditions	FC1	I have the resources necessary to use digital tools in my business.	(Venkatesh et al., 2012)
	FC2	I have the knowledge necessary to use digital tools in my business.	
	FC3	Digital tools is compatible with other technologies I use in my business.	
	FC4	I can get help from others when I have difficulties using digital tools in my business.	
Hedonic Motivation	HM1	Using digital tools in my business is fun.	(Venkatesh et al., 2012)
	HM2	Using digital tools in my business is enjoyable.	
	HM3	Using digital tools in my business is very entertaining.	
Price Value	PV1	Digital tools in business are reasonably priced.	(Venkatesh et al., 2012)
	PV2	Digital business tools are cost-effective to use in my business.	

	PV3	At the current price, digital tools offer good value for use in my business.	
Habit	HT1	The use of digital tools in my business has become a habit for me.	(Venkatesh et al., 2012)
	HT2	I am addicted to using digital tools in my business.	
	HT3	I must use digital tools in my business.	
Behavior Intention	BI1	I intend to continue using digital tools in my business in the future.	(Venkatesh et al., 2012)
	BI2	I will always try to use digital tools in my business daily life.	
	BI3	I plan to continue to use digital business frequently in my business.	
Use Behavior	UB	What percentage of the sales volume of your products and services are made through digital platforms? a) None b) Up to 20% c) 26 to 50% d) 51 to 75% e) 76 to 100%	(Venkatesh et al., 2012)
Genger	GEN	Female; Male; Other; I prefer not to say	(Khan & Shahid, 2024)
Age	AGE	18 to 25 years old; 26 to 35 years old; 36 to 45 years old; Over 45 years old	(Khan & Shahid, 2024)
Income	INC	Under R$ 5,000.00; From R$ 5,000.01 to R$ 10,000.00; From R$ 10,000.01 to R$ 15,000.00; Over R$ 15,000.01	(Gupta et al., 2008)
Edu	EDU	Primary School, Secondary School, Higher Education (Undergraduate), Postgraduate/Master's/Doctorate	(Jiménez-Zarco et al., 2021)
Digital Competence	DC	Which digital platforms do you use in your business? Social media (Instagram, Tik Tok, Facebook...); E-commerce platform (Eduzz, Hotmart, Udemy, Monetize, Kiwify...); My company's e-commerce website;	(Oppl & Stary, 2020)

Appendix A 2 – Questionnaire



Estudo Mestrado | Adesão ao digital

Desde já agradeço pela disponibilidade em participar deste estudo!

Este questionário faz parte de uma dissertação de Mestrado em Gestão da Faculdade de Economia da Universidade do Porto (Portugal), cujo objetivo principal é analisar os principais motivadores que levam os pequenos e microempresários à aderirem ao negócio digital.

Os participantes devem ter idade igual ou superior a 18 anos e realizarem vendas de produtos ou serviços através de plataformas digitais.

O questionário é composto por várias perguntas sobre as suas percepções e intenções enquanto empreendedor. Esclarecemos que não existem respostas certas ou erradas, logo, solicitamos que compartilhe suas opiniões sinceras.

Adicionalmente, solicitamos alguma informação sócio-demográfica (como a idade e o nível de escolaridade) apenas com o objetivo de caracterizar a amostra.

Ressaltamos que a participação neste estudo é voluntária. Este inquérito é totalmente anônimo e confidencial. Em nenhum momento será solicitada informação que o possa identificar. As respostas serão analisadas de forma agregada e os resultados serão utilizados apenas para fins de investigação. Os resultados poderão vir a ser divulgados em conferências, seminários, notícias, e publicações em revistas científicas, dentre outras.

O tempo estimado para o preenchimento do questionário é de 5 minutos.

Se tiver alguma dúvida ou caso queira esclarecer quaisquer questão acerca deste estudo, por favor, sinta-se à vontade de enviar mensagem para o e-mail: up202209925@fep.up.pt

Obrigado por sua participação!

Renan Rocha

renanderzis@gmail.com Mudar de conta

Não compartilhado

* Indica uma pergunta obrigatória

Consentimento Informado

Este inquérito é totalmente anônimo e confidencial. Os dados pessoais coletados não são identificáveis, uma vez que apenas é coletada informação relativa à faixa etária, gênero, grau de ensino e situação profissional. O tratamento dos dados fornecidos no âmbito do presente estudo está em conformidade com o disposto no RGPD. Os dados recolhidos neste estudo serão tratados estatisticamente de forma agregada, e os resultados da análise poderão dar origem a publicações científicas.

Aceita voluntariamente participar deste estudo e autoriza a recolha, tratamento, e divulgação dos dados da forma descrita? *

- Sim
- Não

Exerce a venda de produtos e/ou serviços através da internet? *

- Sim
- Não

Tem idade igual ou superior a 18 anos? *

- Sim
- Não

Sobre sua empresa

Em que setor de negócios se encaixa os seus produtos e serviços?

- Alimentos e Bebidas
- Moda e Acessórios
- Saúde e Beleza
- Educação
- Esportes e Fitness
- Artigos para casa e Decoração
- Eletrônicos e Tecnologia
- Outro:

Há quanto tempo possui essa empresa?

- Menos de 1 ano
- Entre 1 e 3 anos
- Entre 3 e 5 anos
- Mais de 5 anos

Quantos funcionários trabalham com você neste negócio?

- Trabalho sozinho
- 1 ou 2 funcionários
- 3 a 5 funcionários
- 5 a 10 funcionários
- Mais de 10 funcionários

O uso das plataformas digitais em sua visão:

Quais plataformas digitais você utiliza em seus negócios? Escolha a opção de 1-Não uso a 5-Uso muito frequente

	1 - Não uso	2 - Uso raramente	3 - Uso ocasional	4 - Uso frequente	5 - Uso muit frequente
Redes Sociais (Instagram, Tik Tok, Facebook...)	○	○	○	○	○
Plataformas de Infoprodutos (Eduzz, Hotmart, Udemy, Monetize, Kiwify...)	○	○	○	○	○
Marketplaces (Mercado Livre, Americanas, Magazine Luiza, Amazon...)	○	○	○	○	○
Site de e-commerce da minha empresa	○	○	○	○	○

A seguir, indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
Considero as plataformas digitais úteis em minha rotina de trabalho.	○	○	○	○	○
O uso de plataformas digitais aumenta minhas chances de realizar coisas que são importantes para minha empresa.	○	○	○	○	○
O uso de plataformas digitais me ajuda a realizar minhas atividades mais rapidamente.	○	○	○	○	○
O uso de plataformas digitais aumenta minha produtividade.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
Aprender a usar plataformas digitais é fácil para mim.	○	○	○	○	○
Minha interação através das plataformas digitais é clara e compreensível.	○	○	○	○	○
Acho as plataformas digitais fáceis de usar.	○	○	○	○	○
É fácil para mim ter habilidade com o uso de plataformas digitais.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
As pessoas que são importantes para mim acham que eu deveria usar plataformas digitais em meus negócios.	○	○	○	○	○
As pessoas que influenciam meu comportamento acham que eu deveria usar plataformas digitais em meus negócios.	○	○	○	○	○
As pessoas cujas opiniões eu valorizo preferem que eu use plataformas digitais em meus negócios.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
Tenho os recursos necessários para usar plataformas digitais em meus negócios.	○	○	○	○	○
Tenho o conhecimento necessário para usar plataformas digitais em meus negócios.	○	○	○	○	○
As plataformas digitais são compatíveis com outras tecnologias que uso em minha empresa.	○	○	○	○	○
Posso obter ajuda de outras pessoas quando tiver dificuldades para usar plataformas digitais em meus negócios.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
Usar plataformas digitais em meus negócios é divertido.	○	○	○	○	○
Usar plataformas digitais em meus negócios é agradável.	○	○	○	○	○
Usar plataformas digitais em meus negócios me gera muito entretenimento.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
As plataformas digitais nos negócios têm preços razoáveis.	○	○	○	○	○
As plataformas digitais nos negócios têm uma boa relação custo-benefício para serem usadas nos meus negócios.	○	○	○	○	○
Com o preço atual, as plataformas digitais são um bom investimento para meus negócios.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
O uso de plataformas digitais em meus negócios se tornou um hábito para mim.	○	○	○	○	○
Usar plataformas digitais em meus negócios se tornou uma dependência para mim.	○	○	○	○	○
Preciso usar plataformas digitais em meus negócios.	○	○	○	○	○

Indique o seu grau de concordância com cada uma das afirmações, de 1-Discordo Totalmente a 5-Concordo Totalmente.

	1- Discordo totalmente	2 - Discordo	3 - Não concordo nem discordo	4 - Concordo	5 - Concordo totalmente
Pretendo continuar a usar plataformas digitais em meus negócios no futuro.	○	○	○	○	○
Sempre tentarei usar plataformass digitais no dia a dia dos meus negócios.	○	○	○	○	○
Pretendo continuar a usar plataformas digitais com frequência em minha empresa.	○	○	○	○	○

Agora, indique qual a porcentagem do volume de vendas de seus produtos e serviços que são feitas através das plataformas digitais.

- ○ Nenhum
- ○ Até 20%
- ○ 26 à 50%
- ○ 51 à 75%
- ○ 76 à 100%

Perfil demográfico do participante

Idade:

- ◯ 18 à 25 anos
- ◯ 26 à 35 anos
- ◯ 36 à 45 anos
- ◯ Mais de 45 anos

Gênero:

- ◯ Feminino
- ◯ Masculino
- ◯ Outro
- ◯ Prefiro não dizer

Grau de ensino mais elevado que completou:

- ◯ Ensino Fundamental
- ◯ Ensino Médio
- ◯ Ensino Superior (Graduação)
- ◯ Pós-Graduação (Mestrado, Doutorado)

Rendimento mensal:

- ◯ Até R$ 5.000,00
- ◯ De R$ 5.000,01 à R$ 10.000,00
- ◯ De R$ 10.000,01 à R$ 15.000,00
- ◯ Superior à R$ 15.000,01

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FACULDADE DE **ECONOMIA**