


FACTORS DETERMINING THE BEHAVIOR OF E-COMMERCE USERS ACCORDING TO THE DEMOGRAPHIC ASPECTS OF COLLEGE STUDENTS

Brenda Corrêa da Silva ^A, Daniel Nascimento-e-Silva ^B



ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 01 September 2023</p> <p>Accepted 01 December 2023</p>	<p>Purpose: E-commerce is a supply of needs typical of the information age. Based on contemporary technologies, it has represented an up-and-coming channel for multiplying the possibilities of supplying demands practically everywhere on the planet. So that it can be constantly improved, scientists and managers have been concerned with better understanding the behavior of online buyers. In this sense, this study aimed to identify the determining factors of e-commerce according to demographic aspects (purchase frequency, income, paid activity, age, and gender) of university students at an institution in the North of Brazil.</p>
<p>Keywords:</p> <p>Determining Factors; E-commerce; Shopping Behavior; Demographic Variables; University Students.</p>	<p>Theoretical framework: The study was theoretically based on the factors and variables determining consumer purchasing behavior. Factors as analytical dimensions formed a theoretical architecture, each composed of their respective variables and analysis categories.</p>
	<p>Design/Methodology/Approach: The method used was a survey, whose population consisted of 51 students enrolled in the second semester of 2022, from which a sample of 47 respondents was extracted, given that the others dropped out of class. Data were collected with a questionnaire with closed questions, the validity of which was checked with a Cronbach's alpha test at 0.82, considered very compliant. The results were generated using the Mann-Whitney U test, given that the behavior of the variables was not regarded as normal by the Kolmogorov-Smirnov and Shapiro-Wilks tests. The conclusion points to a kind of virtual democracy in which little differentiation can be seen in the factors determining purchases when taken from the point of view of the demographic variables studied.</p>
	<p>Findings: The results showed no differences in the determining factors of e-commerce regarding paid activity, frequency of purchases, and age. A difference in behavior was detected between men and women regarding price and between those with higher incomes and those with lower incomes regarding practicality.</p>
	<p>Research, Practical, and Social Implications: The practical implication of the study is that marketing strategies and new product launches offered in the virtual world can be mainly standardized because the demographic differences that impact the behavior of virtual consumers are statistically similar. From a theoretical point of view, the results indicate the need to study other demographic variables to confirm or refute these behavioral uniformities.</p>
	<p>Originality/Value: The contribution of this study to the science and practice of electronic commerce is the finding that consumers present similar behaviors when considering the demographic aspects of university students, who represent a large portion of virtual buyers.</p>
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^A Graduated in Logistics Technology. Instituto Federal de Educação, Ciência e Tecnologia do Amazonas. Manaus, Amazonas, Brazil. E-mail: brendacr06@gmail.com Orcid: <https://orcid.org/0009-0003-3066-852X>

^B PhD in Production Engineering. Instituto Federal de Educação, Ciência e Tecnologia do Amazonas. Manaus, Amazonas, Brazil. E-mail: danielnss@gmail.com Orcid: <https://orcid.org/0000-0001-9770-575X>

FATORES QUE DETERMINAM O COMPORTAMENTO DOS USUÁRIOS DO E-COMMERCE SEGUNDO OS ASPECTOS DEMOGRÁFICOS DOS ESTUDANTES UNIVERSITÁRIOS

RESUMO

Objetivo: O comércio eletrônico é um suprimento de necessidades típicas da era da informação. Baseado em tecnologias contemporâneas, tem representado um canal emergente para multiplicar as possibilidades de atendimento de demandas em praticamente todos os lugares do planeta. Para que possa ser constantemente melhorado, cientistas e gestores têm se preocupado em compreender melhor o comportamento dos compradores online. Nesse sentido, este estudo teve como objetivo identificar os fatores determinantes do comércio eletrônico segundo aspectos demográficos (frequência de compra, renda, atividade remunerada, idade e sexo) de estudantes universitários de uma instituição da região Norte do Brasil.

Referencial teórico: O estudo baseou-se teoricamente nos fatores e variáveis determinantes do comportamento de compra do consumidor. Os fatores como dimensões analíticas formaram uma arquitetura teórica, cada um composto por suas respectivas variáveis e categorias de análise.

Desenho/Metodologia/Abordagem: O método utilizado foi um levantamento, cuja população foi composta por 51 alunos matriculados no segundo semestre de 2022, da qual foi extraída uma amostra de 47 respondentes, visto que os demais abandonaram as aulas. Os dados foram coletados por meio de questionário com questões fechadas, cuja validade foi verificada por meio do teste alfa de Cronbach de 0,82, considerado muito conforme. Os resultados foram gerados por meio do teste U de Mann-Whitney, visto que o comportamento das variáveis não foi considerado normal pelos testes de Kolmogorov-Smirnov e Shapiro-Wilkens. A conclusão aponta para uma espécie de democracia virtual em que se percebe pouca diferenciação nos fatores determinantes das compras quando tomados do ponto de vista das variáveis demográficas estudadas.

Resultados: Os resultados não mostraram diferenças nos fatores determinantes do comércio eletrônico em relação ao exercício de atividade remuneradas, frequência de compras e idade. Foi detectada diferença de comportamento entre homens e mulheres em relação ao preço e entre aqueles com renda mais alta e aqueles com renda mais baixa em relação à praticidade.

Implicações práticas e sociais da pesquisa: A implicação prática do estudo é que as estratégias de marketing e lançamentos de novos produtos oferecidos no mundo virtual podem ser padronizadas, principalmente porque as diferenças demográficas que impactam o comportamento dos consumidores virtuais são estatisticamente semelhantes. Do ponto de vista teórico, os resultados indicam a necessidade de estudar outras variáveis demográficas para confirmar ou refutar essas uniformidades comportamentais.

Originalidade/Valor: A contribuição deste estudo para a ciência e prática do comércio eletrônico é a constatação de que os consumidores apresentam comportamentos semelhantes quando considerados os aspectos demográficos dos estudantes universitários, que representam grande parcela dos compradores virtuais.

Palavras-chave: Fatores Determinantes, Comércio Eletrônico, Comportamento de Compra, Variáveis Demográficas, Estudantes Universitários.

FATORES QUE DETERMINAM O COMPORTAMENTO DOS USUÁRIOS DO E-COMMERCE SEGUNDO OS ASPECTOS DEMOGRÁFICOS DOS ESTUDANTES UNIVERSITÁRIOS

RESUMEN

Propósito: El comercio electrónico es una satisfacción de necesidades propias de la era de la información. Basado en tecnologías contemporáneas, ha representado un canal emergente para multiplicar las posibilidades de satisfacer demandas en prácticamente todo el planeta. Para poder mejorarlo constantemente, los científicos y directivos se han preocupado por comprender mejor el comportamiento de los compradores online. En este sentido, este estudio tuvo como objetivo identificar los factores determinantes del comercio electrónico según aspectos demográficos (frecuencia de compra, ingresos, actividad remunerada, edad y género) de estudiantes universitarios de una institución del Norte de Brasil.

Marco teórico: El estudio se basó teóricamente en los factores y variables que determinan el comportamiento de compra del consumidor. Los factores como dimensiones analíticas formaron una arquitectura teórica, cada uno compuesto por sus respectivas variables y categorías de análisis.

Diseño/Metodología/Enfoque: El método utilizado fue una encuesta, cuya población estuvo conformada por 51 estudiantes matriculados en el segundo semestre de 2022, de la cual se extrajo una muestra de 47 encuestados, ya que los demás abandonaron las clases. Los datos fueron recogidos mediante un cuestionario con preguntas cerradas, cuya validez fue verificada mediante la prueba alfa de Cronbach de 0,82, considerada muy conforme. Los resultados se generaron mediante la prueba U de Mann-Whitney, ya que el comportamiento de las variables no fue considerado normal por las pruebas de Kolmogorov-Smirnov y Shapiro-Wilkens. La conclusión apunta a un tipo de democracia virtual en la que se percibe poca diferenciación en los factores determinantes de las compras desde el punto de vista de las variables demográficas estudiadas.

Resultados: Los resultados no mostraron diferencias en los condicionantes del comercio electrónico en relación con el ejercicio de actividades remuneradas, frecuencia de compras y edad. Se detectó una diferencia de comportamiento entre hombres y mujeres en relación con el precio y entre quienes tienen mayores ingresos y quienes tienen menores ingresos en relación a la practicidad.

Implicaciones prácticas y Sociales de la Investigación: La implicación práctica del estudio es que las estrategias de marketing y lanzamientos de nuevos productos ofrecidos en el mundo virtual pueden estandarizarse, principalmente porque las diferencias demográficas que impactan el comportamiento de los consumidores virtuales son estadísticamente similares. Desde un punto de vista teórico, los resultados indican la necesidad de estudiar otras variables demográficas para confirmar o refutar estas uniformidades de comportamiento.

Originalidad/Valor: El aporte de este estudio a la ciencia y práctica del comercio electrónico es el hallazgo de que los consumidores presentan comportamientos similares al considerar los aspectos demográficos de los estudiantes universitarios, quienes representan una gran porción de los compradores virtuales.

Palabras clave: Factores Determinantes, Comercio Electrónico, Comportamiento de Compra, Variables Demográficas, Estudiantes Universitarios.

INTRODUCTION

The information age has brought about changes in all spheres of life. Information and communication technologies are the primary mechanisms for this new stage of the civilization process (Ivan, 2023; Odutola & Ogbonyomi, 2023; Ilesanmi et al., 2023). These changes cover practically the entire planet, so finding a community they have yet to touch is challenging, no matter how isolated. Information and communication technologies are in health (Silva et al., 2023; Türkmen & Sardoğan, 2023), education (Galvão et al., 2023; Ribeiro et al., 2023; Ait Ali et al., 2023), management public policy and its various aspects (Rattan & Rattan, 2023; Shava & Vyas-Doorgapersad, 2023; Qizi, 2023) and many others. It can even be said that these technologies are part of the daily lives of the planet's entire population.

Commerce is another area profoundly transformed by modern information and communication technologies, so the supply challenge now has countless new ways of being accomplished, as can be seen from the studies by Gonzalez et al. (2022), Şarlıoğlu et al. (2023) and Mapiye et al. (2023), among others. Now, physical and telephone transactions are no longer predominant. We live in the era of e-commerce in which the products and services demanded are no longer geographically limited. The entire planet is a prominent supplier market; in the same way, consumers and clients are no longer concentrated and restricted to a specific location or country.

Even though it has become the primary means of supply and purchase, it turns out that electronic commerce was established and built at a speed never seen in human history. The way it is done today and its multiplicities of possibilities last up to twenty years, an extremely short period for such broad and profound impacts on the lives of people and organizations. In the 2000s, electronic commerce was still, in fact, a great and promising promise. In the 2020s,

however, this phenomenon spread to every corner of the planet, bringing with it a series of questions that remain unanswered from a scientific point of view and the practice of management and marketing. Moreover, one of these issues is related to the behavior of consumers who make their purchases through e-commerce. What are the determining factors of their behavior? Do your demographic characteristics influence your behaviors? The search for answers to these questions justified this study as a way of contributing to science by filling this gap.

In this sense, this study aimed to study whether the demographic aspects of university students who practice virtual purchasing influence their behaviors. We want to know whether income, gender, age group, paid activity, and frequency of purchases made in e-commerce affect the variables that determine consumer behavior. Some studies, such as that by Michelin et al. (2023), needed to be more conclusive regarding this possible influence. A survey was used with university students from an institution operating in the North of Brazil, consulted via electronic questionnaire, composed of nine variables influencing consumer behavior and five demographic aspects, whose hypotheses were tested with the aid of the Mann-Whitney U test, as normality was not found in the Kolmogorov-Smirnov and Shapiro-Wilk tests.

LITERATURE REVIEW

The literature survey showed that the most common approach to e-commerce is a transaction (Silva et al., 2017; Carvalho & Carvalho, 2015; Matta, 2014; Garzaro et al., 2018; Matos et al., 2022; Naunthong, 2022; Wan et al., 2023; Zhang et al., 2023). Transaction means the transfer of values or something between parties. When we purchase or sell a product, a value transaction is made relating to the product purchased or sold. On the other hand, another approach to e-commerce is that it happens online (Silva et al., 2017; Carvalho & Carvalho, 2015; Matta, 2014; Garzaro et al., 2018; Matos et al., 2022). An attribute is a characteristic linked to something. In this case, e-commerce can only exist if there is an internet connection, meaning it is part of the cyber world. An example is purchases made on Amazon, where it is only possible to check the catalog if there is an internet connection.

Another term equivalent to online purchasing is goods and services (Silva et al., 2017; Carvalho & Carvalho, 2015; Matta, 2014; Zhang et al., 2023; Faujdar & Agrawal, 2023; Ruzinarov et al., 2023; Alryalat et al., 2023), who are the targets of this new commercial modality. Goods are material, concrete things, tangible, everything that can be touched and seen, such as clothes, cars, and toys. Services are anything you cannot feel; they are intangible,

like a lawyer's service. Goods and services appear as those made available to consumers through e-commerce.

Electronic commerce, consequently, is the transaction carried out through electronic data, occurring via the Internet (Asbari et al., 2023; Li, 2023; Achmad, 2023). The company creates a virtual showcase to sell its products where the buyer can view the product's image, specifications, descriptions, prices, and payment methods. It also provides evaluations of purchases made of that same product or service. Electronic commerce is an extension of conventional commerce, being a digital environment in which exchange, purchase sale, and service provision operations occur with the support of computer equipment and programs, through which it is possible to carry out negotiation, the conclusion, and even execution of the contract when this is the case with intangible assets.

Electronic commerce has some variances that determine how it occurs based on determining who will be the acquirer and the transmitter (Rafic et al., 2023; Sun, 2022; Tryphena, 2022). The literature review showed that the types of E-commerce that have a more significant predominance are business to business (B2B), which are transactions carried out from company to company, one being the consumer and the other the customer, such as, for example, a marketing agency hired to provide advertising services for a brand; business to consumer (B2C) are transactions carried out from a company to the end consumer, that is, an individual, such as the sale/purchase of clothes, accessories, household appliances in shopping malls, supermarkets, etc.; and consumer to consumer (C2C), which are transactions carried out from an individual to an individual, that is, from consumer to consumer, such as, for example, the resale of a product through advertisements on online platforms such as OLX and Mercado Livre (Pereira & Pinto, 2021; Gonçalves, 2022; Cosso et al., 2021; Machado, 2022; Cruz, 2021; Lopes et al., 2021). This study explicitly addresses the business-to-consumer (B2C) model, as the focus is identifying the factors and behaviors influencing consumers when making online purchases.

Variables that Influence Online Purchasing

The literature survey showed that the primary variable that influences online purchasing is price (Andrade & Silva, 2017; Ferreira et al., 2018; Teixeira Filho et al., 2020; Lessa et al., 2021; Comin et al., 2014; Ramayah et al., 2018; Vieira, 2019; Chawla & Kumar, 2022; Quarto et al., 2021; Vieira et al., 2020; Costa, 2021; Silva & Napiri, 2020; Mendonça, 2022; Lara-Jiménez et al., 2021; Brandão, 2018.). One of the differences and main attractions of online

stores compared to conventional stores is the prices offered, which are cheaper to buy online than in physical stores. This is due to companies' costs in each of these segments, where there are variables about their fixed costs, such as space rental, salesperson salaries, etc. Furthermore, there is yet another factor for reducing the price of a product, which is the more excellent offer of discounts to consumers. Table 1 summarizes these findings.

Table 1. Main factors determining e-commerce.

References	Determinant factors
Andrade & Silva, 2017; Ferreira et al., 2018; Teixeira Filho et al., 2020; Lessa et al., 2021; Comin et al., 2014; Ramayah et al., 2018; Vieira, 2019; Chawla & Kumar, 2022; Quarto et al., 2021; Vieira et al., 2020; Costa, 2021; Silva & Napiri, 2020; Mendonça, 2022; Lara-Jiménez et al., 2021; Brandão, 2018.	Price
Andrade & Silva, 2017; Ferreira et al., 2018; Comin et al., 2014; Abreu et al., 2022; Costa, 2021; Silva & Napiri, 2020; Mendonça, 2022; Brandão, 2018.	Practicality
Andrade & Silva, 2017; Teixeira Filho et al., 2020; Chawla & Kumar, 2022; Modesto et al., 2020; Vieira, 2020; Costa, 2021; Mendonça, 2022; Brandão, 2018; Comin et al., 2014; Vieira, 2019.	Convenience/Convenience
Botelho et al., 2011; Lessa et al., 2021; Ramayah et al., 2018; Vieira, 2019; Modesto et al., 2020; Lara-Jiménez et al., 2021; Brandão, 2018.	Logistics
Oliveira, 2019; Vieira, 2019; Ramayah et al., 2018; Quarto et al., 2021; Modesto et al., 2020; Costa, 2021; Silva & Napiri, 2020; Mendonça, 2022.	Product Quality
Oliveira, 2019; Vieira, 2019; Andrade & Silva, 2017; Costa, 2021; Mendonça, 2022; Lara-Jiménez et al., 2021.	Variety of Products
Quarto et al., 2021; Vieira, 2020; Silva & Napiri, 2020; Lara-Jiménez et al., 2021; Brandão, 2018.	Trust
Botelho et al., 2011; Oliveira, 2019; Lessa et al., 2021; Lara-Jiménez et al., 2021.	Website Layout
Ferreira, 2018; Vieira, 2019; Mendonça, 2022; Brandão, 2018.	Information about the product
Botelho et al., 2011; Mendonça, 2022; Brandão, 2018.	Customer Service
Oliveira, 2019; Vieira, 2019; Botelho et al., 2011.	Payment Method
Comin et al., 2014; Chawla & Kumar, 2022; Vieira, 2020.	Quality Reviews
Comin et al., 2014; Brandão, 2018.	Pressure from sellers
Abreu et al., 2022; Quarto et al., 2021.	Information
Quarto et al., 2021; Modesto et al., 2020; Botelho et al., 2011; Oliveira, 2019.	Security

Source: data collected by the authors.

Another critical variable in the decision-making process is convenience (Soares et al., 2015). The word convenience can be defined as comfort or the absence of complicating factors in carrying out something. The convenience of making your purchase wherever you are, twenty-four hours a day, seven days a week, without the need to travel, is one of the advantages and benefits of online commerce. One of the main objectives of consumers today is saving time.

Convenience is related to practicality (Soares et al., 2015), another variable influencing the moment of purchase. Practicality can be defined as ease in accomplishing something. Practicality is a compliment or a deepening of convenience, where together they enable an even

more satisfactory experience for the consumer, where they can place their order comfortably and practically, completing their order with a few clicks, in an agile and quick way.

One of the fundamental variables for the entire purchasing process, whether physical or virtual, is logistics (Botelho et al., 2011; Lessa et al., 2021; Ramayah et al., 2018; Vieira, 2019). Logistics can be defined as a facilitator that ensures that the right product is delivered to the right place and time. One of consumers' main concerns when making and completing a purchase is the time it will take for their order to arrive at the designated delivery location and the cost this process will have on them. This is one of the factors that have a direct influence on the purchasing decision-making process.

The website layout was another variable that changed consumer behavior (Botelho et al., 2011; Lessa et al., 2021; Ramayah et al., 2018; Vieira, 2019). The layout of a website is how graphic elements are arranged on the store's online platform; it is like the physical arrangement of a conventional store. It is the determining factor for the consumer's visual impact; it is like a visual guide that enables an intuitive search, facilitating navigation and finding the desired product.

The literature survey showed that information about the product implies the consumer's purchasing decision (Vieira, 2019). Information can be defined as a description of a product's or something's characteristics. Information about the product is another attraction for the consumer, as in online stores, they can have detailed access to the product being observed, which facilitates their choice decision, as it becomes possible to compare products based on their characteristics and specifications.

Another variable was the payment method (Botelho et al., 2011; Oliveira, 2019; Vieira, 2019). The payment method can be defined as a means that companies provide for the consumer to choose how payment for a product or service will be made. The payment method becomes another differentiator at the time of purchase, as not all stores accept all the different payment methods available; with the convenience and practicality that the internet makes possible, finding the establishment that agrees with the payment method becomes more manageable desired payment, in addition to the fact that virtual stores have a more excellent range of acceptance and diversification of payment methods than physical stores.

Product quality was another behavioral variable found (Oliveira, 2019; Vieira, 2019; Ramayah et al., 2018). The quality of a product can be defined as the characteristics possessed by a product that makes it capable of satisfying consumer needs. Ultimately, the product's quality is the main factor determining whether the entire purchasing process will be worth it for

the consumer, as its quality can only be genuinely verified after the product reaches the consumer's hands. This, of course, will depend directly on the logistical factors to achieve it.

Factors that Influence Online Purchasing

Knowing the variables influencing purchasing behavior is essential for entrepreneurs to qualify their products and services, effectively considering consumer desires and needs and orienting their offers to the market. Consumer behavior directly involves obtaining, consuming, and disposing of products and services. This includes the decision processes preceding and succeeding these actions. By studying consumer behavior, one can understand the decision to choose between a product and what triggers the use or non-use of one brand and another. Following the literature survey, four behavioral factors were observed that influence consumer purchasing behavior.

The social factor predominated in the literature survey (Silva; Azevedo, 2015; Ferreira, 2018; Silva et al., 2017; Caro, 2010; Ramayah et al., 2018). Social factors are the habits a person practices through their actions related to how an individual acts. The social factor is one of the principles that the market must analyze because it is one factor that guides the approach to be taken for everyone.

The second factor is psychological (Silva; Azevedo, 2015; Ferreira, 2018; Silva et al., 2017; Caro, 2010; Ramayah et al., 2018). Psychological factors are consumers' patterns of thoughts and actions. These factors are the stimuli that generate the effect of need, which is where the decision process is based because for the purchase process to exist, there must be a generation of need to meet it. The generation of these needs becomes increasingly more accessible given the century we live in, where the relationship between brand and consumer is increasingly closer with the advancement of technology. Regular use of social media increases the ease with which brands can generate psychological stimulation in consumers.

The third factor is cultural (Silva; Azevedo, 2015; Ferreira, 2018; Silva et al., 2017; Caro, 2010). This factor relates to how we observe and want to be observed in society; through it, we create perceptions of the things around us. According to Kotler, 1998, culture is the most fundamental determinant of a person's desires and behavior. It is through this factor that the profiles of products consumed are defined.

The fourth and final factor is personnel (Silva & Azevedo, 2015; Ferreira, 2018; Silva et al., 2017; Caro, 2010). The social aspect is related to an individual's behavior and personal characteristics. This factor undergoes the most significant change and modification throughout

an individual's life, based on tastes, beliefs, and similar factors, which are altered and reformulated with each cycle experienced.

All these factors mentioned can be maximized to a particular factor, marketing (Silva et al., 2017). Marketing can motivate a change in consumer behavior, directly influencing them in decision-making and having an amplified effect with social media. An example is the advertisements that appear instantly when you search for a product or information to encourage the consumer to consume what they had previously observed.

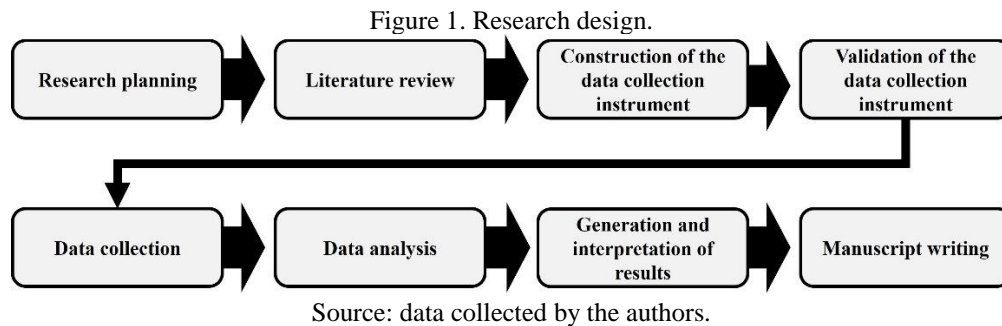
RESEARCH METHODOLOGY

The general objective of this study was to find out whether demographic variables interfere with the online shopping behavior of university students at a Federal Institute operating in the North of Brazil. To this end, five hypotheses were developed (with their respective guiding questions): 1) gender does not interfere with the purchasing behavior of university students (does gender interfere with the purchasing behavior of university students?), 2) age does not interfere with the purchasing behavior of sales of university students (does age interfere with the purchasing behavior of university students?), 3) carrying out paid work does not affect the sales behavior of university students (does carrying out activity interfere with the purchasing behavior of university students?), 4) the income does not interfere with the selling behavior of university students (does income interfere with the purchasing behavior of university students?) and 5) the frequency of purchases does not interfere with the selling behavior of university students (does the frequency of purchases interfere with the purchasing behavior of university students) University students?). Here, the main aspects of the methodological strategy used to generate the results will be described (Nascimento-e-Silva, 2012, 2020a, 2020b, 2021a, 2021b, 2023; Limas et al., 2020).

Research Design

The answers to the guiding questions of this study were generated in eight stages. The first was study planning, which consisted of choosing research questions, response patterns, population and sampling, data collection instruments, and response generation techniques. The second stage was the literature review, which was to build the theoretical architecture, with its respective dimensions and analytical categories, to construct the strategy for field research. The third stage was the construction of the data collection instrument, which referenced the theoretical architecture built in the previous step, with its dimensions and categories of analysis.

The fourth stage was validating the data collection instrument, most notably construct validity, to ensure that the questions, normality, and internal validity were written understandably to know if the instrument could measure online shopping behavior.



The fifth stage was data collection, carried out on a scheduled basis with the participants of each class to prevent data collection from interfering with their academic activities. The sixth stage was data analysis, seeking to identify and record non-answers, such as unanswered questions with more than one marking so that they would not be included in the calculations for generating results. The seventh stage was the generation and interpretation of the results, done almost simultaneously, since the nominal data were organized in tables with simple frequencies and percentages, and the rational data were organized in tables with the p-value and interpretation provided by the U Mann-Whitney test. The eighth and final stage was writing the manuscript, organized into an introduction, literature review, methodology, results and discussion, conclusion, and references.

Demographic Characteristics of the Sample

The sample, from the perspective of age, can be considered young. The data shows that 42.6% of respondents are under 25, and 36.2% said they were between 25 and 34. The first range can be called young people, while the second can be considered young adults. In the first, in general, some characteristics of adolescence remain, while in the second, the fullness of adulthood is already configured. Together, these two ranges represent approximately 79% of the sample consulted.

These results show that the digital market is typically an arena for young audiences, as can be deduced from studies such as those by Ferreira and Vilarinho (2013), Chiusoli et al. (2023), Botelho et al. (2023), Thomas et al. (2023) and Panagiotakos et al. (2023). This does not mean, however, that more adult populations and even older people are not statistically

significant in this market. However, the characteristics and attributes of the predominant populations are considered when analyzing the market, except in cases of precisely delimited and circumscribed niches. For this work, the young people are central because they represent the majority of the age groups of Brazilian university students.

Regarding gender, the sample consists mainly of men, with 65.2% of valid responses and only 34.8% of women. These results confirm the predominance of males in technical, technological courses, and engineering and related areas, which are predominant in courses at Brazilian federal institutes, as seen in Fonseca's study (2017). In any case, the university market has a unique character given the level of demand that characterizes it, mainly because it comprises men and women with the highest levels of education that a society can have. Moreover, this distinctive character distinguishes it from other segments in the virtual and real worlds. Martin et al. (2013) state that men tend to feel familiar with the technological culture and have a greater intention to purchase online than women (Antunes, 2011), having more impulsive behavior at the time of purchase (Ferreira & Tontini, 2020) because they have this familiarity they would become more likely to use this market than people in the women.

Most consumers surveyed were employed. The data shows that 65.2% of students are inserted and active in the job market, while 34.8% of the remaining sample do not currently have an occupation. The fact that most consumers have work can be seen as an influential factor since they have greater purchasing power than the 34.8% who do not have a job. Higher-income makes the consumer more prone to greater consumption as purchasing power increases. An individual's occupation and economic situation influence consumption in the electronic market. The results also showed that 57.4% of respondents have an income greater than R\$ 2,000.00. Another point observed was that 42.5% belong to the group with a family income of less than two minimum wages.

Most electronic commerce students have a family income higher than R\$2,000.00. Vargas (2021) states that individuals with a higher income range are likelier to use electronic services. The studies by Cardoso et al. (2019) show that most of the Brazilian population that purchases through electronic commerce is represented by buyers with a family income of less than R\$3,000.00. 42.5% of the students participating in this research fit into this group. According to studies by Souza (2015) and Wildner and Otobelli (2011), income is one of the variables that most affect the demand for goods and services, conditioning what and how much the consumer can purchase.

Finally, the number of online purchases varies from two to four: 31.9% have made 2 to 4 purchases online, 21.3% have purchased 5 to 7 times, 17% have made 8 to 10 purchases, and the same percentage of respondents who made ten or more purchases. According to the study by Pelissaro (2009), consumers tend to make one to three purchases over twelve months. This finding is similar to the result found in this study, where it can be observed that the number of purchases made varies from two to four, close to the effect found in studies by Pelissaro (2009) and Farias et al. (2012).

Data Collection Instrument

Data were collected with the help of a questionnaire composed of five demographic questions (age, sex, paid employment, family income, and frequency of purchases) and nine explanatory questions. A control question completed the instrument, the purpose of which was to certify that respondents had previous experience with online shopping. The explanatory questions were price, practicality, information about the product, website layout, service, logistics, payment method, reliability, and interaction with other buyers. These explanatory variables were obtained from the literature review.

Demographic questions were broken down into analytical categories. For example, the control question “Have you ever shopped online?” presented as answers (response pattern) in the categories “yes” and “no.” In contrast, the demographic question “What is your age, in complete years?” The categories were “under 25”, “From 25 to 34”, “35 to 44”, “45 to 54” and “Over 54”. For the explanatory questions, the respondent was asked to rate from 0 to 10 the degree of influence that each of them had on their purchasing behavior.

After being constructed, the instrument was submitted for assessment by part of the sample to assess whether the questions were worded correctly. The purpose was to detect ambiguities and other aspects that led participants to fill out that question incorrectly. This strategy eliminated three questions because they practically dealt with the same variable. A new stage of construct testing was carried out, in which the instrument was considered approved, and the normality test of the explanatory questions was then carried out using the Kolmogorov-Smirnov and Shapiro-Wilk tests.

Table 2. Result of normality tests of the instrument used.

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistics	df	Sig.	Statistics	df	Sig.
Price	,370	47	<,001	,669	47	<,001
Practicality	,310	47	<,001	,764	47	<,001
Information about the product	,330	47	<,001	,746	47	<,001
Website Layout	,200	47	<,001	,851	47	<,001
Service	,338	47	<,001	,741	47	<,001
Logistics	,301	47	<,001	,774	47	<,001
Form of payment	,387	47	<,001	,663	47	<,001
Reliability	,411	47	<,001	,621	47	<,001
Interaction with other buyers	,204	47	<,001	,823	47	<,001

a. Lilliefors Significance Correlation.

Source: data collected by the authors.

As shown in the data in Table 2, all variables were considered to have non-normal behavior. The results obtained using the Kolmogorov-Smirnov and Shapiro-Wilk tests presented a significance level lower than the maximum allowed to accept the null hypothesis, with 47 degrees of freedom. As the data were not considered normal, it was impossible to work with the average and must necessarily work with the median.

The last test carried out to approve the data collection instrument was reliability. The Cronbach's alpha test was chosen for this purpose. The results obtained were an alpha of 0.819 and 0.829, based on standardized items, with nine items. These results guarantee that there is internal validity of the instrument, which implies the admission that it measures what it wants to measure, which is the online shopping behavior of university students.

Data Collection Strategy

Data were collected on three previously scheduled days. On the first day, data was collected from most students in each class once authorized by the subject teachers. Data from students absent on the first day were collected on the second. To complete the sample, students who did not respond to the questionnaire on both days were consulted individually, by telephone, and in person in other institutional environments when they were asked to complete the questionnaire and promptly completed it. Only one student could not be reached to answer the research questions.

Data Analysis and Organization

After being collected, the data was organized with the help of an electronic spreadsheet. In this spreadsheet, each answer to each question was recorded in its column, following the sequence of control, demographic, and explanatory questions. Each line represented a

respondent so their answers could be displayed in numerical data. The nominal data were transformed into numbers by counting based on the sequence of categories in the questionnaire. For example, for the demographic question “What is your age in completed years?” the order of the categories was (1) “less than 25”, (2) “From 25 to 34”, (3) “35 to 44”, (4) “45 to 54” and (5) “Over 54”. The explanatory data were recorded with the respondent's note on the power of influence of each variable on their purchasing behavior. It is worth remembering that those who marked the “No” category for the control question did not have their answers computed.

The nominal data were analyzed based on simple frequency and percentage, which allowed the identification of the modal classes of each question. This procedure was necessary to provide in-depth knowledge of the characteristics of the sample collected. The explanatory data were analyzed with the aid of the Kolmogorov-Smirnov and Shapiro-Wilk tests to assess their normality, the Cronbach's alpha test to attest to the internal validity of the instrument, and the Mann-Whitney U test to analyze the results of the hypothesis tests that structured this investigation.

Generation and Interpretation of Results

The Mann-Whitney U test generated responses to hypothesis tests and guiding questions. This is a typical non-parametric test, which serves to compare whether there is a difference in a variable from two independent groups (Yalçın; Bayram, 2023; Açikel et al., 2023; Maity; Sahu, 2023). The test results follow the same standards as other hypothesis tests, which are based on the p-value, in which values equal to or greater than a certain significance margin does not allow the null hypothesis to be rejected, while those below this margin require that the alternative hypothesis be considered. In the case of this investigation, the maximum margin of error allowed was 5%, so all p-values equal to or greater than 0.05 were interpreted as non-rejection of the null hypothesis. At the same time, those below this ceiling were considered as measurements. There are differences in respondents' behaviors about online shopping.

Each result obtained was interpreted based on the theoretical architecture of the study. This interpretation occurred by comparing what was achieved empirically with what the theoretical framework of reference predicted. The first result of this interpretation was in terms of consonance or dissonance between theory and reality. The second interpretative result was made by comparing each result achieved with results obtained by other investigations. During

this comparative moment, we took the opportunity to discuss these results, highlighting their importance for science, specifically for online shopping.

Study Limitations

This study has two significant limitations. The first is due to the sample size obtained, corresponding to 47 cases. Ideally, all university students at the institution would have been studied so that a picture of reality could be as accurate as possible. This would encompass, for example, all university courses the institution offers, bringing greater explanatory power to the results. However, between the ideal and the possible, we opted for the possibility of having a plausible explanation for the phenomenon of people's behavior about online shopping. The sample size, therefore, does not invalidate the results presented here. It only delimits its space of inference but does not prevent making valid assumptions, even as hypotheses, beyond the population consulted.

The second limitation arises from using questionnaires for such a small sample. The recommendation, for example, would be that all cases be investigated individually and in-depth. However, the use of the questionnaire in this case made it possible, first, to collect data, which otherwise the respondents said they would not provide. The second argument concerns the small number of questions capable of synthesizing, even partially, a complex phenomenon: online shopping behavior. For example, if an interview were possible, the aspects to be addressed would be so numerous that it would be difficult for the results to be achieved within the time stipulated by the institution for completion.

RESULTS AND DISCUSSION

This section describes and discusses the results achieved for each of this investigation's hypotheses and guiding questions. We chose to follow the following strategy: first, the results are presented, described above the tables with the data obtained; then, below the table, the interpretations of the results are presented, made simultaneously with their respective discussions. This strategy allows the study's findings to be understood more precisely, with the least possible ambiguity.

Determinants of Online Purchases by Gender

The first hypothesis of this study assumed that there is no difference in determinants of online shopping between men and women. This means that the same forces move both sexes.

The results found in Table 3 show that this statement can be considered valid, except for prices, the only differentiating determinant of behavior between men and women. The p-value of 0.014 requires the rejection of the null hypothesis and the adoption of the alternative hypothesis that there is a difference between men and women in prices charged in the digital market.

Table 3. Mann-Whitney U test, by sex.

Null hypothesis	Sig. a,b	Decision
Price (discounts, savings)	,014	Reject the null hypothesis.
Practicality (convenience, convenience)	,072	Retain the null hypothesis.
Product information (variety, quality)	,080	Retain the null hypothesis.
Website layout (content, visual forms)	,850	Retain the null hypothesis.
Service (Customer Service, speed, quality)	,959	Retain the null hypothesis.
Logistics (freight, delivery time, shipping fees)	,261	Retain the null hypothesis.
Payment methods (Alternatives, ease)	,052	Retain the null hypothesis.
Reliability (trust in the seller, purchase security)	,122	Retain the null hypothesis.
Interaction with other buyers (buyers of the same product)	,371	Retain the null hypothesis.

a. Independent samples Mann-Whitney U test. The significance level is .050. b. Asymptotic significance is displayed.

Source: data collected by the authors.

These results indicate a sure democracy in the digital market about the behavior of male and female consumers. According to a study by Sparemerger (2018), women prefer good payment conditions offered by online purchases and only carry out the transaction when they are still looking for the product in the traditional market. Similar results were found in studies by Gomes et al. (2021), in which women feel much more satisfied than men, and those of Coutinho et al. (2017) and Assis and Rodrigues (2023), who discovered that the prices of organizations operating in electronic commerce are much more interesting than those charged by physical stores.

Determinants of Online Shopping by Age Group

The second hypothesis tested in this investigation was based on the principle that there is no difference in online shopping behavior, considering the age of the participants. The results show that this hypothesis can be considered plausible since all p-values are above the maximum allowed margin of error, as shown in the data in Table 4. This means that the discounts and possibilities for obtaining savings are felt similarly by young and adult participants, so their behaviors did not show significant variations in any of the measured variables.

Table 4. Mann-Whitney U test, by age.

Null hypothesis	Sig. ^{b,c}	Decision
Price (discounts, savings)	,636 ^d	Retain the null hypothesis.
Practicality (convenience, convenience)	,692 ^d	Retain the null hypothesis.
Product information (variety, quality)	,711 ^d	Retain the null hypothesis.
Website layout (content, visual forms)	,897 ^e	Retain the null hypothesis.
Service (Customer Service, speed, quality)	,481 ^d	Retain the null hypothesis.
Logistics (freight, delivery time, shipping fees)	,481 ^d	Retain the null hypothesis.
Payment methods (Alternatives, ease)	,547 ^d	Retain the null hypothesis.
Reliability (trust in the seller, purchase security)	,404 ^d	Retain the null hypothesis.
Interaction with other buyers (buyers of the same product)	,982 ^e	Retain the null hypothesis.

a. All test field values are less than or equal to the median. b. The significance level is .050. w. c. Asymptotic significance is displayed. d. The exact significance is displayed for this test. e. Sig. Asymptotic Corrected by Yates Continuity.

Source: data collected by the authors.

These results indicate that purchasing motivational factors similarly influence young people and adults. Participants are driven by variety, discounts, different payment alternatives, etc., mainly because their decision-making is driven by convenience, as shown by studies by (Andrade & Silva, 2017; Teixeira Filho et al., 2020; Chawla & Kumar, 2022) and economics that diverge from traditional commerce. This is an exciting result because it differs from findings from other investigations, such as that by Magalhães et al. (2023), which showed that younger consumers differ from older consumers when shopping online, as did Bassi et al. (2021), who pointed out differences in behavior across age groups both about the products they consumed and about quantity.

Determinants of Online Purchases by Paid Activity

Another hypothesis tested by the investigation sought to determine whether there was a difference in the behavior of respondents who carried out some paid activity from those who did not. The results showed no significant distinction between the sample components, as shown in the data in Table 5. All p-values obtained are above the maximum allowed margin of error, which forces us to retain the null hypothesis of equality of behavior about the variables considered by the literature as determinants of purchasing decisions made via the Internet.

Table 5. Mann-Whitney U test, by paid activity.

Null hypothesis	Sig. ^{b,c}	Decision
Price (discounts, savings)	,539	Retain the null hypothesis.
Practicality (convenience, convenience)	,431	Retain the null hypothesis.
Product information (variety, quality)	,839	Retain the null hypothesis.
Website layout (content, visual forms)	,457 ^d	Retain the null hypothesis.
Service (Customer Service, speed, quality)	,399	Retain the null hypothesis.
Logistics (freight, delivery time, shipping fees)	,566	Retain the null hypothesis.
Payment methods (Alternatives, ease)	,243	Retain the null hypothesis.

Reliability (trust in the seller, purchase security)	,954	Retain the null hypothesis.
Interaction with other buyers (buyers of the same product)	,457 ^d	Retain the null hypothesis.

a. All test field values are less than or equal to the median. b. The significance level is .050. c. Asymptotic significance is displayed. d. Sig. Asymptotic Corrected by Yates Continuity.

Source: data collected by the authors.

The study by Gollo et al. (2019) shows that Generation Z mainly does not carry out paid work but has income and constitutes a large part of e-commerce buyers. The study by Michelin et al. (2023), on the other hand, comprised a sample of young people between 16 and 25 years old who worked and had their income. These studies, as well as the research carried out by Carneiro et al. (2022) with virtual consumers from Sergipe, present in common the finding that these strata consider themselves satisfied with the variables that determine their behavior, especially security with purchases, protection of information and the integrity of payment systems. These studies, therefore, did not find behavioral differences between respondents based on whether they carried out paid activities.

Determinants of Online Purchases by Income

Another hypothesis tested in this research was related to the participant's income. The null hypothesis considered no difference in the online shopping behavior of respondents with higher incomes compared to those with lower incomes. The results in Table 6 demonstrate that among the nine factors researched, only the practicality hypothesis showed a difference in behavior, leading to the rejection of the null hypothesis. This means that the convenience of online shopping is perceived differently among those with higher incomes than those with less income. No significant behavioral difference was detected in all other aspects measured that would lead to rejecting the null hypothesis.

Table 6. Mann-Whitney U test by income.

Null hypothesis	Sig. ^{b,c}	Decision
Price (discounts, savings)	,469	Retain the null hypothesis.
Practicality (convenience, convenience)	,023	Reject the null hypothesis.
Product information (variety, quality)	,716	Retain the null hypothesis.
Website layout (content, visual forms)	,890	Retain the null hypothesis.
Service (Customer Service, speed, quality)	,162	Retain the null hypothesis.
Logistics (freight, delivery time, shipping fees)	,446	Retain the null hypothesis.
Payment methods (Alternatives, ease)	,213	Retain the null hypothesis.
Reliability (trust in the seller, purchase security)	,094	Retain the null hypothesis.
Interaction with other buyers (buyers of the same product)	,926 ^d	Retain the null hypothesis.

a. All test field values are less than or equal to the median. b. The significance level is .050. c. Asymptotic significance is displayed. d. Sig. Asymptotic Corrected by Yates Continuity.

Source: data collected by the authors.

The study by Link and Larentis (2023) confirmed that the ease of purchasing appears to be associated with income, so those with more income may have more technological resources and money to make transactions than those with little or no pay. On the other hand, the study by Souza et al. (2022) also confirmed the association between income and convenience. These results show that different factors drive a person with a higher purchasing capacity than individuals with a lower one. Convenience for a person with a lower income may not be a significant factor, in the same way, that a discount may not be decisive for someone with a high income. Furthermore, for those on a low income, finding a lower price may be more valuable than the amount of time they are willing to “waste” looking at countless pages for a lower purchase price.

Determinants of Online Shopping by Purchase Frequency

The fifth hypothesis sought to determine whether online shopping frequency caused differences in the respondents' behavior. The assumption was that those individuals who had made few purchases would behave differently from habitual buyers. The results obtained are contained in Table 7, which shows no difference between the two groups researched. This means that, in practice, discounts, convenience, variety, content, customer support service, issues related to shipping, payment methods, and trust in the seller of the product have the same level of importance in decision-making power both on the part of who are beginners and are less frequent in online shopping than those who are veterans and who have become accustomed to purchasing through this means.

Table 7. Mann-Whitney U test by purchase frequency.

Null hypothesis	Sig. ^{b,c}	Decision
Price (discounts, savings)	,303	Retain the null hypothesis.
Practicality (convenience, convenience)	,676	Retain the null hypothesis.
Product information (variety, quality)	,106	Retain the null hypothesis.
Website layout (content, visual forms)	,793	Retain the null hypothesis.
Service (Customer Service, speed, quality)	,585	Retain the null hypothesis.
Logistics (freight, delivery time, shipping fees)	,442	Retain the null hypothesis.
Payment methods (Alternatives, ease)	,695	Retain the null hypothesis.
Reliability (trust in the seller, purchase security)	,968	Retain the null hypothesis.
Interaction with other buyers (buyers of the same product)	,326 ^d	Retain the null hypothesis.

a. All test field values are less than or equal to the median. b. The significance level is .050. c. Asymptotic significance is displayed. d. Sig. Asymptotic Corrected by Yates Continuity.

Source: data collected by the authors.

This was a somewhat surprising result. This may be due to the comparative mentality that physical buyers need to enter several stores to decide on a purchase. In contrast, virtual

buyers may do the same thing, just through extra-physical means, as shown by studies by Ibrahim et al. (2023) and Higuera-Castillo et al. (2023). Many of these consumers alternate between physical and virtual shopping (Al Hamli et al., 2023), which forces entrepreneurs to adjust their marketing efforts to the behavior of their contemporary customers. This study may have detected this mixing of physical and virtual shopping behaviors since the assumption is that infrequent buyers virtually tend to be more frequent physically and vice versa.

This study showed no differences in online shopping behavior among university students at the researched institution, which operates in the Northern region of Brazil. The only differences found were price, sex, and practicality concerning income, which seems to confirm an unexpected discovery: that the virtual world is a democratic universe when taken from a marketing point of view. There is no marked, significant difference between rich and poor, young people and adults, whether they carry out paid work, whether the family is rich or poor, and whether they buy often or little. This aspect needs to be the subject of future studies, but not in the traditional sense of democracy centered on voting and the fierce dispute between political parties in search of money and power.

CONCLUSION

This study sought to determine whether university students' demographics influence their online purchasing behavior. The results only show differences in the price of products between men and women and, in practicality, about the highest and lowest incomes. No statistically significant difference was detected in any other behavioral aspect of the other demographic variables. This discovery foreshadows the possibility of the electronic market being a democratic environment among those who can access it. This needs to be precise because only some people are capable of this electronic environment, just as not every individual, even having the capacity (such as money to buy and equipment to make purchases), is willing to participate.

This discovery has a significant impact on the problematic situation of this study, given that traditional, physical commerce is highly differentiating. Consumers, for example, of high-value goods have different behaviors than those who purchase lower-value products. This distinction is made about various demographic aspects. Electronic commerce is likely other, or the differences seen in traditional commerce are so attenuated that they are challenging to detect using research designs such as the one in this investigation. This is a scientific gap that still needs to be filled.

From a theoretical point of view, virtual consumer behavior is also likely different from traditional consumer behavior. This implies constructing a specific explanatory theoretical field for the electronic market. Even though certain determining factors are the same, they may operate differently in the virtual and physical fields. However, it is also likely that other factors not existing in the theoretical field of face-to-face physical behavior are exclusive to the electronic, extra-physical environment. It would be interesting, therefore, to map the determining factors of online shopping with exploratory designs until associative and relational studies can be carried out.

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