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An Empirical Research of Students' Perceptions Regarding M-Commerce Acquisitions during the COVID-19 Pandemic

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Abstract: The emergence and spread of the COVID-19 pandemic have significantly changed the way commerce processes have been carried out over the last two years. Considering the development of the Internet and the increasing use of digitalization in recent years, electronic commerce has become an important part of the global retail framework. Accordingly, mobile commerce has emerged and developed through various applications as a modern alternative for buying and selling products and/or services using only mobile devices. This paper aims to identify and analyze several key factors that influence students' perceptions regarding m-commerce acquisitions. It also attempts to illustrate some of the main advantages and disadvantages of m-commerce acquisition and to investigate its influence on students' perceptions regarding m-commerce purchases. In order to achieve these objectives, the authors gathered data through a quantitative research method by using a questionnaire. The data were analyzed and interpreted through a factorial analysis that uses the presentation of the main components as an extraction method, with the varimax rotation method adopting Kaiser normalization, and processed with SPSS statistical software. The results of this research show that mobile-commerce acquisitions are influenced by five factors (social, political-legislative, technological, financial, and economic). In this respect, social and political-legislative factors influence, at a moderate level, the general frequency of m-commerce acquisition, while the economic factor does not influence the general frequency of m-commerce purchases. The study provides a theoretical model that takes into account the factors that influence m-commerce acquisition, including the influence of the perceived advantages and disadvantages on m-commerce purchase. The paper also displays the way in which these items influence students' perception on m-commerce acquisitions.

Keywords: m-commerce; acquisitions; students; COVID-19 pandemic

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1. Introduction

The end of the second decade of the 21st century has witnessed the emergence and spread of a virus that had shown the vulnerabilities of our world and the need to impose new adapting mechanisms for facing this challenge. The COVID-19 pandemic has triggered many changes in societies and economies [1], and businesses have had to deal with more changes in the last two years than in the previous two decades [2]. The COVID-19 outbreak created the ideal conditions for the expansion of electronic commerce (e-commerce), increasing the importance of online shopping [3]. The spread of COVID-19 has changed people's attitudes [4], and the spending levels related to consumer behavior [5]. Since the start of the outbreak, a sharp increase in online trade has been registered worldwide [6], as transaction and consumption habits have moved from cash or in-store services to online-to-offline methods [7], and from luxury products and services to common, everyday necessities [8], and both businesses and consumers have had to adapt. In order not to dramatically decrease sales of even file for bankruptcy, businesses started to apply more sophisticated differentiation strategies [9], develop online stores, and thus, take advantage of the internet

channel, and this proved to be a profitable entrepreneurial strategy [10]. The pandemic context had a clear impact on consumers, as it made them reconsider their customary shopping habits and, in other situations, to start learning new ones [11]. Even though online purchases do not represent a new habit for consumers [12], a strong shift occurred in the consumers' purchase routines based on the benefits provided by other purchase options, such as cashless payment and the safety of home deliveries or in-store pickup, and that is key in explaining their orientation towards proximity or online shopping [13]. A slight nuance is required from a consumers' standpoint, as Akram et al. [14] pointed out that millennials are generally used to shop and pay using m-commerce, while older generations have had to adopt these habits during the pandemic period. Generation Z is also an online generation used to this type of consumer purchase behavior [15]. Moreover, since consumers opted more for online purchases to limit the risk of exposure, many of them relied on mobile applications due to their multimedia characteristics [16]. The restrictions set in place were actually drivers that pushed consumers towards m-commerce, as they were able to purchase various types of goods and services without being dependent on location [17]. Other authors [18] indicated that the pandemic influenced shopping behavior, as populations started to more intensely use m-commerce, a fact that also became a great opportunity for business to seize and approach this new channel, as it greatly restricts contagion exposure. Moreover, they also concluded that there is still work to be done to bring about an easier adoption of m-commerce by consumers by having companies invest in decreasing the perceived risk of using this channel by improving the security of computing processes and, as a result, resulting in a boost in consumer confidence. Furthermore, Gull et al. [19] showed that even though mobile commerce specific applications have gained more popularity since the COVID-19 outbreak, businesses still need to invest in improving privacy issues, as they have a negative impact on the way consumers perceive the security of mobile applications, and this would maintain customer loyalty. Pre-purchase trust and perceived health risk continue to be key factors for enhancing customer experience and satisfaction, even during the current situation [20]. The pandemic context was a generator of opportunities for companies, as they took advantage of it to boost sales by increasing the number of online transactions (for both e-commerce and m-commerce) by offering free shipping promotions, pushing discount policies (especially for basic needs and health-related products), and also providing information about the outbreak [21]. It seems that the pandemic after-effects continue to boost the transition to online (digital) channels, not only for big businesses, but for small-to-medium ones as well, since they have become more appealing and affordable [22]. Considering the development of the Internet and the increasing use of digitalization over the last years, e-commerce has become an important part of the global retail framework, reaching a level of nearly 20% of world trade [23]. As Internet access and adoption have been rapidly increasing worldwide along with the usability of mobile applications [24,25], the number of digital buyers has grown as well [26]. Thus, a wide variety of mobile applications have been introduced by marketers to provide a seamless service experience to customers [27].

E-commerce has rapidly expanded globally over the past five years [28]. Global e-commerce sales reached USD 4.921 trillion in 2021, 46% more than in 2019 (USD 3.351 trillion), and it is expected to maintain this tendency in the following period [29]. This phenomenon is facilitated by the growth rate of Internet use, as it attained a level of around 92% of the European Union population over the last year [30]. Moreover, the proportion of individuals in the European Union, aged 16 to 74, who ordered or bought goods or services over the Internet for private use stood at 66% in 2021, 15% higher than in 2016 [30]. In Romania, a country with a population of 19 million people [31], the number of e-commerce users has exponentially grown to 9.2 million in 2021, 77% higher than in 2017 [32], whereas the online sales revenues have increased from EUR 3.6 billion in 2018 to EUR 4.3 billion in 2019 [33]. Some of the factors that stimulated the adoption and growth of e-commerce were represented by increased digital skills, including Internet use, along with purchasing power [1].

One of the most visible trends in the world of e-commerce is the unprecedented usage of mobile devices [34]. In 2021, smartphones accounted for almost 70% of all retail website visits worldwide, although desktop and tablet visits generated higher conversion rates in 2020 [26]. The mix between technology and consumers' lives is expected to grow as consumers feel increasingly more comfortable with the ease of shopping on mobile devices [29].

E-commerce is the term that encompasses the transactions made online using electronic devices, while mobile-commerce (m-commerce) refers to transactions made online using only mobile devices [35,36]. The concept of m-commerce arises from the mobile nature of the wireless environment that supports mobile electronic business transactions [37]. It was first introduced in 1997 by Kevin Duffey at the Global Mobile Commerce Forum, being defined as "the delivery of electronic commerce capabilities directly into the consumer's hand, anywhere, via wireless technology" [38].

Although there is no internationally recognized definition, m-commerce refers to "any transaction with monetary value, performed through a wireless Internet-enabled device" [39]. It is performed using various devices, such as personal digital assistants (PDAs), mobile phones [40]/smartphones [41], handheld computers [42], tablets [43]/tablet computers [44], handheld game systems [15], portable music players [45], and wearable devices—smartwatches etc. [46] M-commerce is conducted through apps or platforms created and designed specifically for this purpose. There are various applications for m-commerce, such as mobile banking, mobile marketing, mobile shopping, mobile ticketing, etc. [47]. Moreover, it typically designates the use of wireless devices (particularly mobile phones) to conduct electronic business transactions, such as product orders, fund transfers, and stock trading [48]. Some authors portray the concept as the "buying and selling of goods and services through wireless handheld devices" [49] (p. 525), whereas others see it as making "payments for products and services through the use of mobile devices" [50] (p. 88) or the use of "networks that interface with wireless devices, such as laptops, handheld computers or mobile phones to initiate or complete online electronic commerce transactions" [51] (p. 2360). Some studies pointed out that the concept of m-commerce entails the "use of mobile (handheld) devices to communicate and conduct transactions using public and private networks" [52] (p. 349). In essence, m-commerce can be broadly defined "as a business model that enables consumers to complete business transactions on a mobile device" [49,53]. Moreover, these definitions essentially illustrate the connection formed between concepts such as electronic businesses, transactions, payments, and the buying and selling goods and/or services through wireless or mobile devices.

There are sufficient reasons for both customers and businesses to adopt m-commerce, as advantages seem worthwhile, and disadvantages are either bypassed or are in the ongoing process of improvement to the extent to which they may become negligible (Table 1).

Table 1. Advantages and disadvantages of m-commerce.

Advantages	Disadvantages
Location centric [54]	Security threats/concerns [55]
Convenience [56]	Additional costs/high content delivery costs [57]
Customization/personalization [39]	Consumer's cognitive costs [58]
Identifiability [59]	Poor ergonomics/information display/usability issues [60]
Ubiquity [61]	
Immediacy [62]	Poor/lack of information content [71]
Flexibility [63]	Payment concerns [72]
Flexible in accessibility [51]	Uncertain data handling/privacy concerns [73]
Instant connectivity [46]	Insufficient decision basis [72]
Broad reach [64]	

Table 1. *Cont.*

Advantages	Disadvantages
Mobility [65]	
Portability [66]	
Spontaneity [67]	
Proactive functionality [47]	
Time efficiency [68]	
Interactivity [69]	
Comfortable experience [70]	

Even if it is considered an extension of the ecosystem specific to e-commerce [74], m-commerce offers plenty of advantages that set it apart and make it appealing to both end-users and businesses. An overview of the specialized literature highlights the acceptance, adoption, and spread of m-commerce, especially based on common attributes that should be decoded as advantages or value propositions, "such as ubiquity, convenience, localization, personalization and identifiability" [75] (p. 3). The disadvantages specific to m-commerce do not seem as threatening as before, since the issues are being dealt with based on technological advancements in the fields of Internet security, mobile payments, mobile applications and the progress shown in the devices themselves (e.g., bigger screen size, the adoption rate of foldable phones, etc.) and on the consumers' familiarity with using them. However, consumers (the target audience) see m-commerce through the lens of use inconvenience, lack of trust, security or data theft risks, or other limitations connected to mobile devices [76], such as the relatively small screen size incapable of incorporating a lot of relevant information or the complexity derived from some transactions. Some links between advantages and disadvantages can be seen, as the location-based features that generate advantages for m-commerce users can also generate enhanced security threats when dealing with some wireless networks. Moreover, the identifiability attribute of m-commerce can help overcome the uncertainty consumers face related to safety and risk issues that, in turn, are associated with risks of data theft. Interactivity and investments towards generating a more comfortable experience could potentially overcome the poor ergonomics of hand-held devices or the lack of enough information displayed on the screen, an issue that can also be addressed by the introduction and scaled adoption of foldable phones.

Over time, researchers have investigated the influencing factors related to the perceived consumer experience through m-commerce, dependent on the context of use [77], from multiple perspectives including social [78], emotional [79,80], cognitive [81], product, service [82], enjoyment [83], image, personnel, promotion, cost, quality, risk, brand, technology, green value, and so on [84,85].

Based on all these findings from the reviewed scientific literature, the authors summarized some of the key elements that influence m-commerce as follows:

- tax legislation [86];
- consumer protection legislation [87];
- environmental legislation [88];
- physical access in stores during the pandemic [8];
- health-related restrictions [89];
- government stability [90];
- Internet connection speed [91];
- access to technology [92];
- site/application browsing experience [93];
- transaction security [94];
- friends' and family members' influence [95].

Recent researchers have investigated the adoption of m-commerce, using various methods. Mishra [96] developed a study regarding the adoption of m-commerce in India using the theory of planned behavior, which was promoted by Ajzen [97]. Another study

highlighted that the theory of reasoned action and the theory of acceptance model can also be used in studying the adoption of m-commerce [98], or even an extension of the unified theory of acceptance and use of technology (UTAUT) [16], by using an adapted UTAUT2 approach. Other research is focused on integrating the constructs specific to the technology acceptance model 3 (TAM 3), the universal theory of acceptance and use of technology 2 (UTAUT2), and the technology–organization–environment (TOE) model to examine factors that drive m-commerce adoption [99].

Many researchers explored the factors that affect m-commerce acquisitions and proposed various models. Alfahl et al. [100] examined a variety of factors for conceptualizing m-commerce adoption and found three main group of factors: technological factors, environmental and organizational factors, and policy and legal environment factors. Ashraf et al. found that social and economic factors are the cause of differences in m-commerce acquisitions across different countries [101]. In their study, Aksoy et al. [102] explored the relationship between satisfaction and loyalty in the m-commerce context across eight different countries. Their results reveal that the impact of satisfaction on loyalty depends on social differences. Similarly, in a study across developed and emerging economies, Morgeson et al. [103] compare customer perceptions regarding m-commerce and found that the quality of service provided has a greater influence on satisfaction in developed markets compared to developing markets, while the effect of perceived value on satisfaction is weaker for developed markets compared to emerging economies. In their study, Al Mashagba et al. [104] highlighted that technological factors influence m-commerce acquisitions. Moreover, in a study developed in Jordan, Alrawabdeh [105] highlighted that social, political-legislative, and environmental factors affect m-commerce adoption. Zeeshan et al. [106] investigated the factors influencing the successful implementation of m-commerce and found various influencing factors, including technological, financial, and social. However, there is still lack of proper understanding about key factors influencing m-commerce acquisitions.

The m-commerce frequency is defined as the number of times the respondents have made a purchase via a mobile phone in the last 12 months [107]. In other words, it represents "a measure of the number of repetitions in an event or event at a time" [108] (p. 69).

Starting from the abovementioned discussion, the authors proposed the following two research objectives:

Objective 1 (O1): To identify and analyze some of the key factors that influence students' perceptions regarding m-commerce acquisitions and to present their items.

Objective 2 (O2): To identify some of the main advantages and disadvantages of m-commerce acquisition and to analyze their influence on students' perceptions regarding m-commerce purchases.

The authors reviewed existing models that have been applied in similar research and opted for constructing a model based on factors that influence m-commerce acquisitions identified in specialty literature, as well as integrating m-commerce advantages and disadvantages with the purpose of bringing their own contribution to the field by taking on this approach, thus constructing a new model. Therefore, the authors have designed and empirically tested a theoretical model to:

- Show the influence of five factors on students' perceptions regarding m-commerce acquisition—social, political-legislative, technological, financial, and economic.
- Emphasize the influence of some of the advantages and disadvantages of m-commerce acquisition on students' perceptions regarding this type of purchase.

Each factor, advantage, and disadvantage encompass a specific number of items. The dependent variable is m-commerce acquisition measured through the frequency of acquisitions, and the independent variables are the previous five factors, along with the advantages and disadvantages of this type of acquisition (Figure 1).

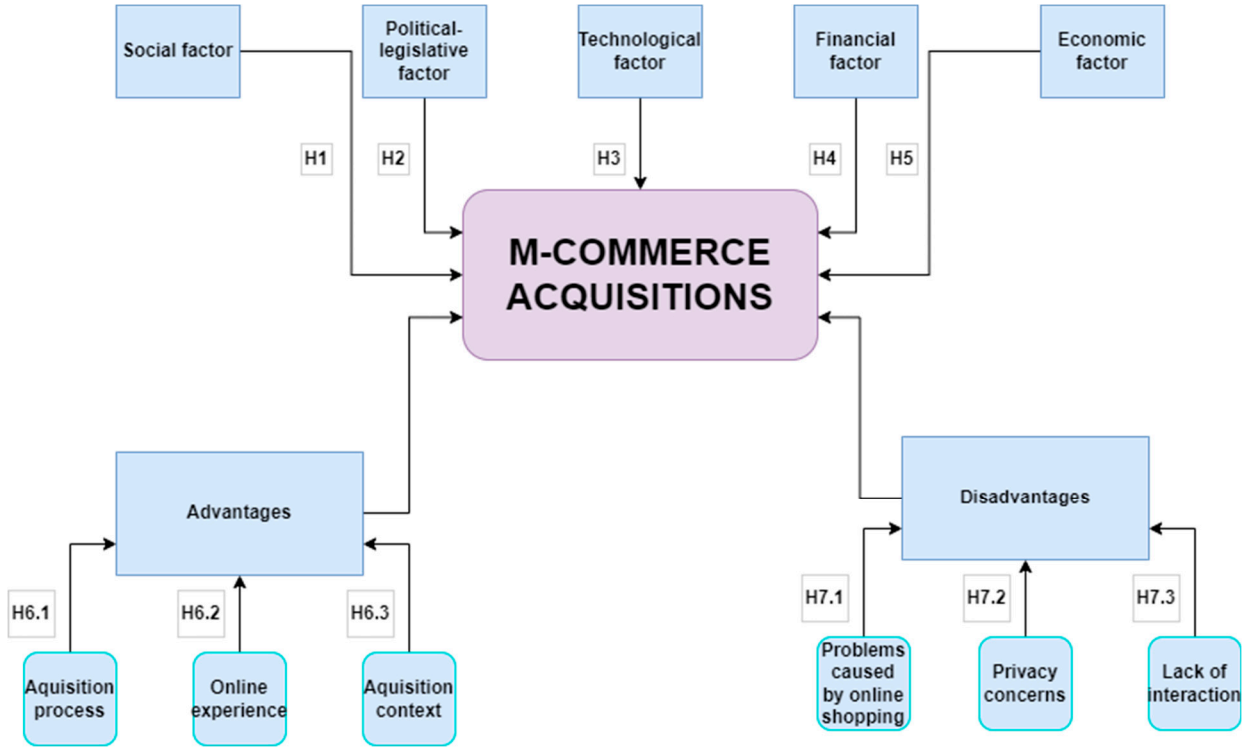

Figure 1. Research model.

Taking into account the research objectives, the authors set up eleven research hypotheses, as follows:

Hypothesis 1 (H1). *The social factor positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 2 (H2). *The political-legislative factor positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 3 (H3). *The technological factor positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 4 (H4). *The financial factor positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 5 (H5). *The economic factor positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 6.1 (H6.1). *The acquisition process positively influences students' perceptions regarding m-commerce purchases.*

Hypothesis 6.2 (H6.2). *The online experience positively influences students' perceptions regarding m-commerce acquisitions.*

Hypothesis 6.3 (H6.3). *The acquisition context positively influences students' perceptions regarding m-commerce purchases.*

Hypothesis 7.1 (H7.1). *Problems caused by online shopping negatively influence students' perceptions regarding m-commerce acquisitions.*

Hypothesis 7.2 (H7.2). *Privacy concerns negatively influence students' perceptions regarding m-commerce acquisitions.*

Hypothesis 7.3 (H7.3). *Lack of interaction negatively influences students' perceptions regarding m-commerce acquisitions.*

Against this background, this paper seeks to identify and analyze the abovementioned five factors, along with the advantages and disadvantages that affect m-commerce acquisitions. To achieve the research objectives, the authors used a quantitative research method through a questionnaire applied to Romanian undergraduate students.

This study is structured as follows. Section 2 identifies materials and methods. Results and a discussion are presented in Sections 3 and 4, respectively. Section 5 illustrates the conclusions, along with their limitations and research perspectives.

2. Materials and Methods

In order to achieve the aims of the paper, the authors carried out a scientific research methodology that encompassed several phases (Figure 2). Firstly, the authors designed the plan for the scientific research. Secondly, they searched for secondary data (e.g., reports, books, articles) from various domains (e.g., business administration, computer science, information technology) through desk research. In this regard, the information was identified and gathered from several electronic databases (e.g., Emerald Insight, Springer) and libraries (e.g., the Central University Library Carol I of Bucharest, the Romanian National Library). Then, the results were carefully systematized, analyzed, categorized, and synthesized.

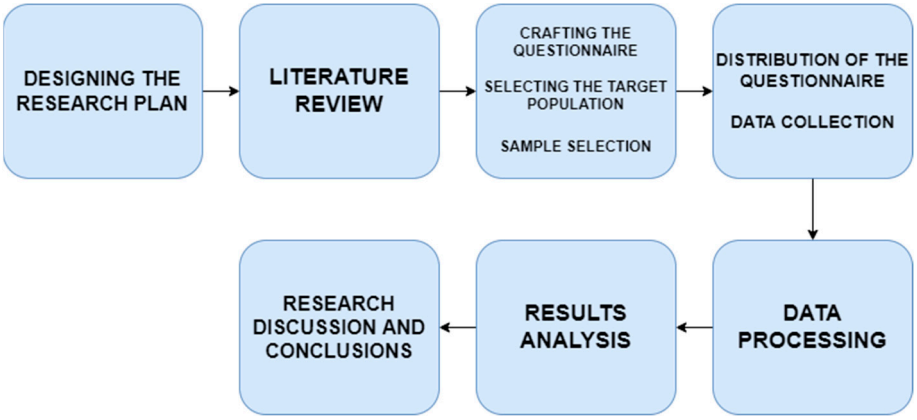

Figure 2. Research process.

Thirdly, the authors designed the questionnaire. In its final form, it included 20 items, measuring 5 factors, 3 types of advantages, and 3 types of disadvantages. The questionnaire also comprised socio-demographic data (gender, age, type of the graduated high school, year of study residence, professional status, income, family size, marital status, and parent's professional status). A five-point Likert scale (where 1 = strongly disagree and 5 = strongly agree) was used in order to measure the multi-item factors. Moreover, the authors selected the target population from the field of higher education. They chose the economic undergraduate program of business administration specialization within the Faculty of Business and Administration, University of Bucharest, due to the following reasons:

- As the faculty has decided to deploy the educational process mostly online, since March 2020, a significant increase has occurred in the use of electronic devices on the part of students, not only in education, but also in retail.
- The size of the targeted population, including only students, allowed the use of comprehensive exploratory and descriptive research methods. In this regard, considering its

relatively small size, the authors considered the sample as the whole population. The respondents were males and females, as no one declared being non-binary (Table 2).

- Three out of the four authors are teaching various disciplines to students from all three years of study composing this undergraduate program.

Table 2. Year of study, number of students, and gender within the economic undergraduate programs.

Year of Study	Number of Students	Gender	
		Male	Female
I	193 (36.9%)	89	104
II	170 (32.5%)	79	91
III	160 (30.6%)	61	99
Total	**523 (100%)**	**229 (43.8%)**	**294 (56.2%)**

Fourthly, in order to test the research hypotheses of the paper, the authors used a quantitative method. The fieldwork research was conducted between 3 and 25 January 2022. The 11 research hypotheses were tested through an online questionnaire applied to the whole population of the undergraduate program of business administration specialization, and the survey participation was voluntary. The data gathered online were centralized and systematized. A total of 444 questionnaires were validated from students (79 out of 523 sent incomplete responses or did not respond). Thus, the response rate was 84.9%. Most respondents were female (61.3%), which is in accordance with the gender structure of the program (Table 2).

Fifthly, the authors used the Cronbach's alpha coefficient values to measure the internal validity of the questionnaire. Additionally, a factorial analysis allowed for the interpretation of the collected data. It aimed to identify the existing factors within this study in three directions: factors influencing m-commerce acquisitions, advantages of m-commerce acquisitions, and disadvantages of m-commerce acquisitions. This type of analysis uses as an extraction method the presentation of the main components, along with the varimax rotation method using Kaiser normalization [109,110], and it is processed with SPSS statistical software (Version 23, IBM, New York, NY, USA). Sixthly, the results of the research were analyzed, followed by the conclusions of the study. To test the hypotheses formulated in this paper, the authors analyzed the correlation coefficients between the proposed variables. They used Pearson coefficients for variables measured on a continuous scale and Spearman coefficients for variables measured on an ordinal scale. The value of these correlation indicators varies between -1 and 1, where 0 indicates that there is no linear or monotonic association, while an approximation of the 2 extremities mentioned indicates that the correlations are becoming stronger [111].

3. Results

In the case of the factors influencing m-commerce acquisitions, the results of the research revealed the existence of five main factors (Table 3). The analyzed Cronbach's alpha values exceeded the threshold of 0.7 for the following factors: social, political-legislative, technological, and financial, which shows a good internal consistency of the tested items [112], whereas the economic factor had a value between 0.6 and 0.7, which still reflects an acceptable consistency for the items considered [113,114].

The next factorial analysis targeted the advantages of m-commerce acquisitions. The outcomes indicated the existence of three categories of advantages related to the acquisition process, the online experience, and the acquisition context (Table 4). For all these advantages, the Cronbach's alpha values exceeded the threshold of 0.7, showing good internal consistency.

Table 3. Testing the factors influencing m-commerce acquisitions.

Items	Factor Loadings	Factor	EV	% Variance	Cronbach's Alpha
Influence of friends	0.873	Social	1.862	8.337	0.857
Influence of colleagues	0.854				
Influence of family members	0.708				
Tax legislation	0.858	Political-legislative	6.273	26.339	0.841
Consumer protection legislation (e.g., return of products)	0.808				
Environmental legislation	0.788				
Health-related restrictions	0.577				
Government stability	0.489				
Internet connection speed	0.713	Technological	2.15	26.786	0.818
Access to technology	0.671				
Site/application browsing experience	0.665				
Transaction security	0.624				
Type of device used	0.612				
Innovative electronic device	0.609				
Personal income level	0.847	Financial	1.252	2.662	0.714
Personal savings level	0.799				
Credit policy	0.618	Economic	1.167	6.204	0.625
The economic situation of the country (e.g., inflation, economic growth)	0.589				
Exchange rate level	0.395				

Note: EV—Eigenvalue.

Table 4. Testing the advantages of m-commerce acquisitions.

Items	Factor Loadings	Factors	EV	% Variance	Cronbach's Alpha
Possibility to make comparisons between products and/or services	0.795	Advantages of the acquisition process	1.786	4.465	0.822
Easy access to relevant product and/or service information	0.736				
Ease of purchase process	0.700				
Speed of placing the order	0.659				
Interactivity with merchant representatives (e.g., chatbot)	0.733	Advantages of the online experience	4.32	14.78	0.788
Campaigns conducted exclusively online	0.708				
Customization of the order	0.677				
Continuous product and/or service promotion	0.612				
Personalized discounts	0.503				
The convenience of use of the payment system	0.479				
24/7 service	0.668	Advantages of the acquisition context	1.451	8.015	0.763
Products'/services' delivery to the place desired by consumers	0.616				
Order tracking	0.527				
Possibility to order products exclusively online	0.492				
Possibility to purchase products for other family members/friends/acquaintances	0.479				

Note: EV—Eigenvalue.

Consequently, the authors identified the disadvantages of m-commerce acquisitions. The results showed the existence of three types of disadvantages: problems caused by online shopping, privacy concerns, and lack of interaction (Table 5). All the Cronbach's alpha values were above 0.6, showing a good internal consistency [113].

The next step performed by the authors was to display the correlations between the frequency of purchasing goods through m-commerce and the factors that could influence it (Table 6). In this regard, the results followed the values of the Pearson coefficients between the dependent variables related to the frequency of acquisition through m-commerce and the independent variables related to the factors proposed in the research model (social, political-legislative, technological, financial, and economic) by taking into account the electronic devices used by the respondents.

Table 5. Testing the disadvantages of m-commerce acquisitions.

Items	Factor Loadings	Factors	EV	% Variance	Cronbach's Alpha
Delay in order delivery	0.798	Problems caused by online shopping	8.687	28.331	0.835
Differences between the products/services presented and those delivered	0.737				
Lack of courier services in certain areas	0.732				
Delivery charges	0.686				
Hidden information (terms and conditions that users do not easily find)	0.621				
Stimulates impulsive, irrational consumption	0.497				
Lack of protection of personal data	0.716	Privacy concerns	1.188	4.226	0.808
Fraud risks	0.680				
Lack of interaction with the product/service	0.607	Lack of interaction	1.109	3.652	0.658
Lack of interaction with the merchant/other consumers	0.476				

Note: EV—Eigenvalue.

Table 6. Correlations between the frequency of purchasing goods through m-commerce and the factors that could influence this frequency.

Variables	Aspects	Gf	Sf	Lf	OEf
The political-legislative factor	Pearson correlation	0.513 **	0.427	0.458 **	0.584 **
	Sig. (2-tailed)	0	0.053	0.009	0
	N	444	444	444	444
The technological factor	Pearson correlation	0.455 *	0.501 **	0.454 *	0.379
	Sig. (2-tailed)	0.011	0	0.012	0.543
	N	444	444	444	444
The social factor	Pearson correlation	0.420	0.501 *	0.497 **	0.694 **
	Sig. (2-tailed)	0.073	0.014	0.001	0
	N	444	444	444	444
The economic factor	Pearson correlation	0.363	0.497 **	0.499 **	0.633 **
	Sig. (2-tailed)	0.562	0.001	0.001	0
	N	444	444	444	444
The financial factor	Pearson correlation	−0.353	0.467 **	0.437 *	−0.375
	Sig. (2-tailed)	0.712	0.005	0.018	0.606
	N	444	444	444	444

Note: **—correlation is significant at the 0.01 level (2-tailed); *—correlation is significant at the 0.05 level (2-tailed); Gf—general frequency of m-commerce acquisition; Sf—smartphone acquisition frequency; Lf—laptop acquisition frequency; OEf—other electronic devices acquisition frequency.

After identifying the factors that could influence the frequency of m-commerce acquisitions, the authors tested whether there are correlations in respondents' perceptions of the advantages of m-commerce acquisitions and the frequency of these acquisitions, by taking into account the electronic devices used (Table 7).

Table 7. Correlations between the frequency of purchasing goods through m-commerce and the advantages of the m-commerce acquisition process.

Variables	Aspects	Gf	Sf	Lf	OEf
Easy access to relevant product information	rho	0.067	0.180 **	0.091	−0.059
	Sig. (2-tailed)	0.157	0	0.055	0.218
	N	444	444	444	444
Possibility to make comparisons between products	rho	0.094 *	0.170 **	0.121 *	−0.113 *
	Sig. (2-tailed)	0.049	0	0.01	0.017
	N	444	444	444	444

Table 7. *Cont.*

Variables	Aspects	Gf	Sf	Lf	OEf
Speed of placing the order	rho	0.069	0.136 **	0.048	−0.143 **
	Sig. (2-tailed)	0.144	0.004	0.314	0.002
	N	444	444	444	444
Ease of purchase process	rho	0.100 *	0.083	0.069	−0.083
	Sig. (2-tailed)	0.035	0.08	0.149	0.081
	N	444	444	444	444
Possibility to purchase products for other family members/friends/acquaintances	rho	0.08	0.174 **	−0.016	−0.041
	Sig. (2-tailed)	0.092	0	0.74	0.383
	N	444	444	444	444
Order tracking	rho	0.091	0.152 **	0.007	−0.095 *
	Sig. (2-tailed)	0.055	0.001	0.889	0.046
	N	444	444	444	444
Delivery to the place desired by the consumer	rho	0.03	0.093	−0.077	−0.260 **
	Sig. (2-tailed)	0.523	0.051	0.105	0
	N	444	444	444	444
Online stores are open 24/7	rho	0.024	0.119 *	−0.074	−0.199 **
	Sig. (2-tailed)	0.619	0.012	0.121	0
	N	444	444	444	444
Possibility to order products exclusively online	rho	0.055	0.236 **	−0.038	−0.081
	Sig. (2-tailed)	0.249	0	0.418	0.087
	N	444	444	444	444
Interactivity with merchant representatives (e.g., chatbot)	rho	0.06	0.029	0.03	0.140 **
	Sig. (2-tailed)	0.206	0.547	0.524	0.003
	N	444	444	444	444
Customization of the order	rho	0.062	0.170 **	0.086	−0.021
	Sig. (2-tailed)	0.191	0	0.07	0.652
	N	444	444	444	444
Discounts	rho	−0.017	0.135 **	0.013	−0.06
	Sig. (2-tailed)	0.728	0.004	0.777	0.211
	N	444	444	444	444
Campaigns conducted exclusively online	rho	0.117 *	0.190 **	−0.016	−0.055
	Sig. (2-tailed)	0.014	0	0.729	0.251
	N	444	444	444	444
Continuous product promotion	rho	0.062	0.109 *	−0.035	0.002
	Sig. (2-tailed)	0.196	0.021	0.457	0.972
	N	444	444	444	444
More payment options	rho	0.046	0.089	−0.041	−0.085
	Sig. (2-tailed)	0.331	0.06	0.384	0.075
	N	444	444	444	444

Note: **—correlation is significant at the 0.01 level (2-tailed); *—correlation is significant at the 0.05 level (2-tailed); rho—Spearman coefficient; Gf—general frequency of m-commerce acquisition; Sf—smartphone acquisition frequency; Lf-laptop acquisition frequency; Oef—other electronic devices acquisition frequency.

In the same way, the authors tested whether there were correlations between the perceived disadvantages regarding the m-commerce acquisition process and the acquisition frequency by taking into account the electronic devices used (Table 8).

Table 8. Correlations between the frequency of purchasing goods through m-commerce and the disadvantages of the m-commerce acquisition process.

Variables	Aspects	Gf	Sf	Lf	OEf
Fraud risks	rho	0.045	0.042	0.089	0.09
	Sig. (2-tailed)	0.347	0.374	0.061	0.059
	N	444	444	444	444
Lack of protection of personal data (privacy concerns)	rho	0.051	−0.004	0.034	0.053
	Sig. (2-tailed)	0.285	0.937	0.471	0.268
	N	444	444	444	444
Lack of interaction with the product	rho	0.011	0.03	0.03	−0.092
	Sig. (2-tailed)	0.823	0.524	0.533	0.052
	N	444	444	444	444
Lack of interaction with the merchant/lack of buying assistance	rho	0.021	−0.026	0.05	0.072
	Sig. (2-tailed)	0.665	0.585	0.293	0.13
	N	444	444	444	444
Delivery charges	rho	0.058	0.128 **	0.057	−0.044
	Sig. (2-tailed)	0.224	0.007	0.232	0.354
	N	444	444	444	444
Delay in order delivery	rho	0.144 **	0.058	0.067	0.015
	Sig. (2-tailed)	0.002	0.225	0.159	0.752
	N	444	444	444	444
Lack of courier services in certain areas	rho	0.063	0.091	0.06	−0.012
	Sig. (2-tailed)	0.184	0.056	0.209	0.801
	N	444	444	444	444
Products cannot be physically seen/tested	rho	0.026	−0.007	−0.009	−0.095 *
	Sig. (2-tailed)	0.578	0.884	0.842	0.046
	N	444	444	444	444
Differences between the products presented and those delivered	rho	0.069	−0.01	0.045	−0.06
	Sig. (2-tailed)	0.146	0.841	0.341	0.206
	N	444	444	444	444
Stimulates impulsive, irrational consumption	rho	0.063	0.056	0.067	0.075
	Sig. (2-tailed)	0.183	0.241	0.16	0.117
	N	444	444	444	444
Hidden information	rho	0.026	0.02	0.014	0.027
	Sig. (2-tailed)	0.59	0.668	0.764	0.575
	N	444	444	444	444

Note: **—correlation is significant at the 0.01 level (2-tailed); *—correlation is significant at the 0.05 level (2-tailed); rho—Spearman coefficient; Gf—general frequency of m-commerce acquisition; Sf—smartphone acquisition frequency; Lf-laptop acquisition frequency; OEf—other electronic devices acquisition frequency.

4. Discussion

The outcomes of our empirical research highlighted some of the key factors that influence m-commerce acquisitions as follows: social, political-legislative, technological, financial, and economic. Despite the fact that other studies identified and presented a relatively small number of items related to some of these factors [115–117], our research identified new ones and tailored these results to the case of Romanian undergraduate students, in the context of the COVID-19 pandemic.

Of interest is the fact that the social factor (H1) proves to be the most important factor in the case of m-commerce acquisitions. The influence of friends, colleagues, and family members constitutes the major impact on students' opinions, similar to the results of other studies [118]. Moreover, our study highlighted that, although the social factor influences, at a moderate level, the general frequency of m-commerce acquisition (r = 0.420, $p > 0.05$), it positively influences the acquisition frequency through use of the smartphone (r = 0.501, $p < 0.05$), and laptop (r = 0.497, $p < 0.01$). In addition, this factor strongly influences the acquisition frequency through other electronic devices (r = 0.694, $p < 0.01$). This can be explained by the fact that students want to impress family members, colleagues, or friends when making m-commerce purchases, or simply want to feel part of the group they belong to. They want to behave as close social groups who think that it is better, easier,

or more fashionable in terms of acquisitions. These findings are consistent with previous studies which emphasized that an individual's confidence in m-commerce acquisitions is influenced by social factors [119].

The results of our study confirmed the validity of the second hypothesis (H2) and displayed the fact that the general frequency of m-commerce acquisition is positively influenced, at a moderate level, by the political-legislative factor (r = 0.513, $p < 0.01$). Moreover, this factor does not influence, to a high degree, the smartphone acquisition frequency (r = 0.427, $p > 0.05$) or the laptop acquisition frequency (r = 0.458, $p < 0.01$), but positively influences the acquisition frequency through other electronic devices (r = 0.584, $p < 0.01$). In this respect, it can be highlighted that the perception of customers related to the improvement of legislation in the fields of tax, consumer protection, and the environment can bring substantial increases in their frequency of purchasing through m-commerce. These outcomes are in line with those of previous researchers who highlighted that political and legislative stability is important for m-commerce adoption [115,120].

The technological factor confirmed the validity of the third hypothesis (H3). It can be seen that it rather positively influences the general m-commerce acquisitions (r = 0.455, $p < 0.05$), especially if these are made through smartphones (r = 0.501, $p < 0.01$) or laptops (r = 0.454, $p < 0.05$). Consequently, improving the Internet connection speed (which also reduces the acquisition time) and the site/application browsing experience contribute, in a moderate way, to increasing the frequency of m-commerce acquisition. These outcomes are congruent with those of previous researchers [121,122].

The fourth research hypothesis (H4) states that the financial factor positively influences students' perceptions regarding m-commerce acquisitions. This factor was represented in this study through two items: personal income level and personal savings level. Thus, it is noticed that students' income rather positively influences the m-commerce acquisitions frequency through smartphones (r = 0.467, $p < 0.01$) and laptops (r = 0.437, $p < 0.01$). These are the two most used electronic devices in a student's life, both in the educational process and in personal life. Therefore, these devices are more likely to be used for the purchase of goods than other mobile devices. Other studies confirm these statements [123].

The economic factor (H5) also proves to be an important vector of m-commerce acquisitions. As in the case of the social factor, the economic factor does not influence the general frequency of m-commerce acquisition (r = 0.363, $p > 0.05$), but rather positively influences the frequency of the acquisition through smartphones (r = 0.497, $p < 0.01$) and laptops (r = 0.499, $p < 0.01$). Moreover, this factor moderately influences m-commerce acquisitions through other electronic devices (r = 0.633, $p < 0.01$). In this regard, credit policy and the economic situation of the country represent the main items regarding this type of factor. Thus, when students consider that the country's economic situation is improving, exchange rates are in their favor, or it is easier to get a loan, they are more likely to buy all types of mobile electronic devices. Consequently, they intend to use them more often in order to easily buy various products and/or services they need at any time, or whenever they interact with a certain advertisements/offers on that device. These results are in agreement with those of [124].

The research hypotheses H6.1, H6.2, and H6.3 illustrate the positive/negative influence of the advantages of m-commerce acquisitions on students' perceptions regarding this type of purchase. The possibility to make comparisons between products and/or services, easy access to relevant product and/or service information, and ease of the purchase process constitute the most significant advantages of the acquisition process (H6.1). In this regard, the Spearman coefficient values were analyzed. The results indicated that these items very weakly influence the general frequency of m-commerce purchases: the possibility to make comparisons between products ($\rho = 0.094$, $p < 0.05$), and the ease of the purchasing process ($\rho = 0.100$, $p < 0.05$). The acquisition frequency through the use of a smartphone is positively influenced by most of the perceived advantages, but in a weak manner, while through the use of a laptop, it is positively influenced only by the perception regarding the possibility to make comparisons between products ($\rho = 0.121$, $p < 0.05$). The acquisition frequency

through other electronic devices is negatively influenced by the perception regarding the possibility to make comparisons between products ($\rho = -0.113$, $p < 0.05$) and the speed of placing the order ($\rho = -0.143$, $p < 0.05$). Other authors emphasize that people will no longer be constrained by time or place in purchasing through m-commerce [54]. Regarding the advantages of the online experience (H6.2), interactivity with merchant representatives and campaigns conducted exclusively online constitute the most important items. By analyzing the Spearman coefficient values, the outcomes showed that the campaigns conducted exclusively online very weakly influence the general frequency of m-commerce acquisition ($\rho = 0.117$, $p < 0.05$). Other studies support these findings [51]. The most relevant advantages of the acquisition context (H6.3) are 24/7 service and products'/services delivery to the place desired by consumers. The m-commerce acquisitions through other electronic devices are negatively influenced by the order tracking possibility ($\rho = -0.095$, $p < 0.05$), the delivery to the place desired by the consumer ($\rho = -0.260$, $p < 0.01$), and the fact that online stores are open 24/7 ($\rho = -0.199$, $p < 0.01$). These outcomes are in agreement with those of [39] and [54]. These weak correlations indicate that although students are aware of and appreciate the benefits of m-commerce, they are not necessarily influenced by these aspects when deciding to make certain m-commerce purchases.

The three following research hypotheses, H7.1, H7.2, and H7.3, present the positive/negative influence of disadvantages of m-commerce acquisitions on students' perceptions regarding this type of purchase. The delay in order delivery, differences between the products/services presented and those delivered, and the lack of courier services in certain areas are key items, and delivery charges constitute the key problems caused by online shopping (H7.1). There are positive, but very weak, correlations between smartphone acquisition frequency and delivery charges ($\rho = 0.128$, $p < 0.01$) and general frequency of m-commerce acquisition and the delivery delay ($\rho = 0.144$, $p < 0.01$). These relationships highlight the fact that as customers choose to buy products more often through the smartphone, which has recently become a type of extension of an individual's personal life [125], they come to find that their choices are also accompanied by an increase in the budget allocated to these acquisitions, as each order placed involves separate delivery taxes. Moreover, all those who purchase products through m-commerce are aware that they are exposed to the risk of receiving the ordered products at a different time than they desire, as sometimes the delivery process encounters delays. Problems caused by online shopping negatively influence students' perceptions regarding m-commerce acquisitions. Some authors highlight that a larger screen for mobile devices can improve access to information [126]. Privacy concerns (H7.2) also prove to be an important disadvantage of m-commerce acquisitions. Students consider that lack of protection of personal data and fraud risks are major items. Similarly, other authors illustrated in their study that the security of data moved across some mobile and wireless networks is seen as a privacy concern [51]. The research hypothesis H7.3 claims that lack of interaction negatively influences students' perceptions regarding m-commerce acquisitions. In this respect, the lack of interaction with the product/service represents the most important element. There is a very weak but negative correlation between the other electronic devices' acquisition frequency and the fact that products cannot be physically seen/tested ($\rho = -0.095$, $p < 0.05$). This link highlights the main disadvantage of m-commerce shopping over physical shopping, namely the inability to verify that what appears online is in line with reality. If in the case of devices such as smartphones or laptops, this does not affect the frequency of online purchases, the results of this analysis indicate that the use of other devices with smaller screens, unfriendly interfaces, or which are less known to users for m-commerce purchases is negatively impacted by the fact that products cannot be better analyzed using these devices. These outcomes are congruent with those of other researchers who emphasize the social motives of shopping [127,128]. Regarding this analysis, it can be seen that the respondents' perception of the disadvantages of the m-commerce procurement process does not affect, in general, the frequency of m-commerce acquisitions.

Furthermore, the authors analyzed the main advantages of m-commerce acquisitions based on the respondents' opinions (Table 9). It seems that students largely agree that m-commerce acquisitions are beneficial for them because of the program of the online stores (71.17%), the possibility to choose the delivery location (70.95%), the speed of placing an order (67.57%), and the purchase process being very easy (64.41%). These four types of advantages can be explained by the fact that people are constantly on the move, they always have something to do, and when they find free time and want to get information or when they have a need, they can buy goods from anywhere or at any time via m-commerce. The least appreciated advantages of m-commerce are the fact that they could buy things from campaigns conducted exclusively online (37.84%), that are continuously promoted (36.04%), or the availability of online interaction with merchant representatives (23.42%).

Table 9. The main advantages of the m-commerce acquisitions.

No.	Advantages	Percent (%)
1	24/7 service	71.17
2	Products'/services' delivery to the place desired by consumers	70.95
3	Speed of placing the order	67.57
4	Easy access to relevant product and/or service information	65.99
5	Ease of purchase process	64.41
6	Comparisons between products	59.91
7	Order tracking	58.78
8	More payment options	57.21
9	Discounts	55.63
10	Possibility to order products exclusively online	54.28
11	Possibility to purchase products for other family members/friends/acquaintances	41.67
12	Customization of the order	41.67
13	Campaigns conducted exclusively online	37.84
14	Continuous product promotion	36.04
15	Interactivity with merchant representatives (e.g., chatbot)	23.42

Note: To a large extent.

Moreover, they ranked the most important disadvantages of the process specific to m-commerce acquisitions (Table 10). The results of this analysis highlight the lack of interaction with the product (33.56%), which manifests in the impossibility of seeing or testing the physical product (44.14%) and the differences that may appear between the products seen on the site and those received (43.47%).

Table 10. The main disadvantages of the m-commerce acquisitions.

No.	Disadvantages	Percent (%)
1	Products cannot be physically seen/tested	44.14
2	Differences between the products presented and those delivered	43.47
3	Lack of courier services in certain areas	39.41
4	Lack of interaction with the product/service	33.56
5	Delay in order delivery	31.53
6	Hidden information (terms and conditions that users cannot easily find)	28.15
7	Risk of fraud	27.93
8	Lack of protection of personal data (privacy concerns)	26.80
9	Stimulates impulsive, irrational consumption	25.23
10	Delivery charges	23.20
11	Lack of interaction with the merchant/lack of buying assistance	19.14

Note: to a large extent.

In addition, a major disadvantage of m-commerce is, in fact, a general disadvantage of online shopping, which is that although you can order products from anywhere to be delivered where you need them, in rural areas, courier services often do serve all areas;

here, the delivery method used most often will be postal institutions (39.41%). The least disturbing disadvantages of m-commerce are delivery charges (23.20%) and the lack of interaction with the merchant/lack of buying assistance (19.14%). These aspects can be explained by the fact that m-commerce purchases are made by those for whom mobility and lack of time are the main causes of avoiding physical shopping. Thus, they are willing to pay the delivery fees if online shopping would save them the time lost in the physical realization of this process.

However, buying a product can be a big problem for those who work a lot and do not have time to research the market as much as they would like to make the best decisions. Thus, many times, people find themselves forced after their working hours to go to the nearest store or to the one that has extended hours compared to the rest to buy the product they need, even if they know that it is not the best choice for them. In this context, purchases made online can represent a "safety net" for those who need certain products and do not want to compromise on quality. At any moment of the day, they can consult the offers of the stores, and make comparisons between the products or services they want in order to make the best decision for their needs. In addition, there is no longer any need to waste time in stores to check if there are the desired products, and just by searching online for certain keywords, they can quickly access products or services relevant to their desires.

People can easily buy whatever they want through websites, online stores, and e-commerce applications. Thus, the entire purchase process (from placing the items in the shopping basket to paying for them) is carried out very quickly. Therefore, the advantages related to the online purchase process represent a key element that is considered by buyers, especially during the COVID-19 pandemic, as the restrictions imposed by the authorities have limited both access to certain stores and access outside of certain hours of functioning for citizens.

Regarding the experience of the purchase process, regarding the classic system involving the possibility of interacting with a representative of the physical store to offer help or advice to the undecided buyer, online stores have taken care of this aspect as well. For those who have certain concerns or problems, many e-commerce platforms have implemented interactive systems for assisting the customer, either through chatbots or through people who can talk directly with customers online. Whereas in physical stores, it is sometimes quite difficult to find a free representative to help with the questions (either due to the inability to locate a representative or the fact that there are other people waiting in line to be helped), for online stores, the response time is very short—almost instant (in the case of the chatbot)—which can increase the level of customer's satisfaction in terms of the waiting time for a response.

Moreover, the online experience comes with promotional offers for customers, adapted to their shopping profiles, as well as offers that are sometimes accompanied by discounts or gifts for loyal customers. Thus, during the pandemic, online stores not only meet the needs of customers with desired products and services in an epidemiologically safe environment, but also contribute to increased satisfaction by presenting offers and promotions that represent a win-win solution.

Regarding the context of purchases, the online experience can bring important advantages not only to regular customers, but also to vulnerable groups, especially in this period of the COVID-19 pandemic. Thus, the possibility to purchase products on behalf of family, friends, or other vulnerable groups is not only an advantage for all the mentioned groups, but also a method to respond responsibly to the effects that the COVID-19 pandemic has produced. Easy accessibility to viewing or ordering products at any time of the day or night, as well as the possibility to deliver to any address (be it personal or to other vulnerable groups), as well as tracking the status of orders, are important aspects that buyers take into account when they want to make safe purchases. Thus, it can be seen how this factor contributes directly to the achievement of the second objective of this research.

5. Conclusions

The emergence and spread of the COVID-19 pandemic have significantly changed the way commerce processes have been carried out over the last two years. In this line, e-commerce in general, and m-commerce in particular, have witnessed an impressive rise.

From a theoretical point of view, this research brings valuable new inputs to the expansion of the scientific literature on m-commerce acquisitions. In this regard, it contributes a theoretical model that provides new insights regarding the student's perception regarding m-commerce acquisitions. Moreover, the paper illustrates the positive/negative influence of several key factors (social, political-legislative, technological, financial, and economic) on students' perceptions related to m-commerce acquisitions. It also highlights the positive/negative influence of some of the advantages (advantages of the acquisition process, of the online experience, and of the acquisition context) and disadvantages (problems caused by online shopping, privacy concerns, and lack of interaction) on this type of purchase.

From a practical point of view, the m-commerce acquisition process should take into account the needs, perceptions, and expectations of students. This paper identifies and analyzes five key factors and their main elements that influence students' perceptions on m-commerce purchases. Firstly, this study shows that the social factor positively influences students' perceptions regarding m-commerce acquisitions. In this view, the acquisition frequency through smartphone and laptop use is positively influenced by this factor. Secondly, it demonstrates that the political-legislative factor positively influences, at a moderate level, the student's perceptions regarding m-commerce acquisitions. Thirdly, this paper highlights that the technological factor positively influences students' perception on m-commerce acquisitions if they are carried out through a smartphone or laptop. Fourthly, the research emphasizes that the financial factor positively influences students' perceptions regarding m-commerce acquisitions. Fifthly, this study demonstrates that students' perceptions of m-commerce acquisitions are positively influenced by the economic factor. By taking into consideration all these aspects, the companies from the m-commerce sector should design and implement several measures to increase their efficiency and efficacy. One of these measures is to ensure a 24/7 service, whereas the other might be the increase the speed of placing an order. On the other hand, these companies should provide more payment options and higher discounts to their customers. Moreover, they should bear in mind the minimization of fraud and ensure greater protection of customers' personal data.

Last but not least, there is a need for future research related to other factors that influence m-commerce acquisitions. These can be sustained by technological progress, on the one hand, and on the other hand, by the psycho-demographic changes and attitudes and behaviors of different generations. The COVID-19 outbreak has substantially modified the way customers make purchases. Another limitation of this paper is given by the size and representativeness of the sample, as it refers only to Romanian undergraduate students from an economic specialization. Consequently, other researchers might take into account larger and more representative samples.

The originality of this study is two-fold. Firstly, it provides a theoretical model that takes into account the factors that influence m-commerce acquisition, along with the influence of the perceived advantages and disadvantages of m-commerce purchase. Secondly, it analysis the way in which these items influence students' perceptions of m-commerce acquisitions.

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