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(Article begins on next page)

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Drivers of Consumer Adoption of e-Commerce: a Meta-Analysis

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Drivers of online shopping: A meta-analysis

Abstract

E-commerce has significantly reshaped consumers' shopping processes and habits. The need to understand the key drivers of online shopping has received keen attention and fueled a rich strand of studies. To help managers and researchers synthesize this growing body of evidence, we conducted a comprehensive meta-analysis to unearth the factors that influence consumers' online shopping. Our main takeaways reveal that the most important drivers of online shopping (a) conform to the TAM and TPB theories, in addition to (b) website characteristics and past experience. In particular, the multiple predictors are strongly related to online purchase intentions and purchase behavior, where attitude and convenience show the strongest impact. Furthermore, moderator analyses indicate that cultural traits have specific moderating effects on the links between purchase intention and some of its drivers. For instance, power distance and uncertainty avoidance have a positive effect, while individualism, indulgence and masculinity have a negative one. Finally, we apply meta-analytic structural equation modeling to test a conceptual framework including four groups of drivers (consumer–channel interactions, website characteristics, social influence, and consumer characteristics) and different aspects of online shopping. The findings provide valuable insights for online shopping research and practice.

Keywords: E-commerce, meta-analysis, online shopping, choice drivers

1. Introduction

During the past two decades, e-commerce has emerged as one of the most important marketplaces for transactions of goods and services, reshaping the whole retail experience. Global online sales represented 18% (USD 4.28 trillion) of total retail sales in 2020 and are expected to reach 21.8% by 2024 (eMarketer.com). Therefore, understanding online shopping behavior is a critical issue for managers of e-commerce sites to target, attract, and retain consumers. Responding to this growing managerial need, extensive empirical research investigating and identifying the drivers of consumers' online shopping has been conducted across a variety of disciplines and contexts. However, studies on the impact of drivers on online shopping, such as attitude, purchase intention, or actual purchase, report mixed or heterogeneous results, complicating the effort to translate academic findings into valuable guidance for managers.

Although the first exploratory studies referred to literature on retail patronage decisions in traditional channels (e.g., Jarvenpaa & Todd, 1996; Jones & Vijayasarathy, 1998), subsequent studies relied often on well-established theoretical frameworks, such as the technology acceptance model (TAM), theory of reasoned action (TRA), theory of planned behavior (TPB), and innovation diffusion theory to structure new investigations (Chang et al., 2005; Wareham et al., 2005). Chang et al. (2005) summarized qualitative findings into a reference model of drivers of online shopping. However, despite the importance of the topic and the widespread attention devoted to the drivers of e-shopping behavior, several unresolved issues remain. The findings of individual studies fail to come together into a comprehensive understanding, and empirical findings are sometimes contradictory. For example, the empirical findings on drivers like perceived risk and subjective norm show discrepancies in the direction and significance (e.g., Chang et al., 2016; Faqih, 2016; Gupta & Kim, 2010; Kim & Gupta, 2009; Pavlou & Fygenson, 2006). Chang et al. (2016) found a significant impact of risk on intention to buy, whereas Gupta and Kim (2010) reported it as uninfluential.

These contradictory results could derive from various reasons, such as the different models tested and, in turn, from the different drivers considered. There are many frameworks aimed at explaining online shopping behavior and each considers only some of the variables that could affect intentional and actual behavior. Second, studies on online shopping refer to different countries and products/services. Finally, the literature is fragmented because empirical research has been conducted

2

in a wide range of disciplines, including marketing, psychology, economics, business and management, and information systems, highlighting the interdisciplinary nature of the topic and its technical, logistical, commercial, strategic, and social implications. Therefore, it would be insightful to establish the generalizability of the empirical results considering different drivers, products/services, countries, and disciplines.

The aim of this meta-analytic review is to contribute to the online shopping literature in three ways. First, we synthesize and consolidate previous fragmented findings across different research streams and disciplines to provide generalizable insights structured in a comprehensive framework for the wide range of drivers of online shopping. Second, we evaluate the robustness of the effects across study contexts and research designs, considering potential methodological and contextual characteristics that could moderate the relations of interest. Third, we test the conceptual framework, grounded in the results of previous studies on online shopping, using meta-analytic structural equation modeling (MASEM).

The meta-analysis integrates findings from 224 articles and 266 studies conducted from 1999 to 2020 (a graph of the trend of scientific productivity on e-commerce over time is available in Web Appendix B), with a total number of 2,034 effect sizes. We assess the effects of 16 drivers of behavior, develop a taxonomy grounded in the frameworks available in the literature (Chang et al., 2005; Neslin et al., 2006), and place specific drivers in four categories: consumer–channel interactions, website characteristics, social influence, and consumer characteristics.

The rest of the paper is organized as follows. The next section describes the theoretical background and constructs of the research model, from which we derive a conceptual framework for the drivers of online shopping. Section 3 delineates the methodology of the meta-analysis: literature search and coding method. Section 4 summarizes the procedures and results of the analyses. We examine the bivariate relationships included in the framework, assess the moderators of these relationships, and present the results of the MASEM testing of the model of multiple antecedents on attitude, intention, and behavior. Section 5 concludes after a discussion of the theoretical and practical implications, limitations, and suggestions for future research on online shopping.

2. Conceptual framework

3

Consumers' online shopping can be influenced by a multitude of factors. To organize the drivers of online shopping, we adopted the following taxonomy (Chang et al., 2005, Neslin et al., 2006): (1) consumer–channel interactions, which pertain to features of the Web as a sales channel; (2) website characteristics, which pertain to the attributes specific to a website; (3) social influence, which pertains to the influence of important others during a shopping experience; and (4) consumer characteristics, which pertain to individual differences, such as demographics and psychological variables. These four antecedents may have an impact on different aspects of online shopping. Therefore, we distinguish between the following outcome variables: attitude toward online shopping, purchase intention, and purchase behavior. The conceptual framework combining the four groups of antecedents and the outcome variables is presented in Figure 1. First, we examine the separate relationships and next test the entire model using MASEM. Table 1 provides an overview of the definitions of the drivers of online shopping, the results of previous studies, and our expected effects. In the following subsections, we discuss the outcome variables, the four groups of drivers, and consider the potential moderators of the relations presented in Figure 1.

[Insert Figure 1 about here]

[Insert Table 1 about here]

2.1 Online shopping outcome variables

Attitude toward a behavior is defined as "an individual's positive or negative feelings about performing the target behavior" (Fishbein & Ajzen, 1975, p. 216). Therefore, *attitude toward online shopping* is the extent to which a consumer evaluates online shopping positively or negatively, measured in terms of individual preferences and interests via feelings and evaluations regarding e-shopping outcomes. It is directly related to behavioral intention, because people intend to perform a behavior when they have positive feelings.

Behavioral intentions are motivational factors that capture how hard people are willing to try to perform a behavior (Ajzen, 1991). In the context of online shopping, it should be considered an intention to purchase, which is the likelihood that a consumer will use an online channel to make a

4

purchase. Intention to transact and willingness to buy are used with an analogous meaning. According to TAM (Davis, 1986, 1989) and TPB (Ajzen, 1975), intention is the most important and direct antecedent of actual behavior. Thus, intention to perform a behavior is the proximal cause of such a behavior, which is purchase behavior on the Web.

Purchase behavior refers to the act of buying a product or service (Ajzen, 2008). Li and Zhang (2002) defined online purchase behavior as the process of purchasing products or services via the internet. According to Sismeiro and Bucklin (2003), "predicting and understanding online-buying behavior is of utmost importance for e-commerce website managers".

2.2 Drivers of online shopping

TAM and TPB were used as a starting point for the framework on drivers of online shopping. Moreover, we included additional drivers that have been studied extensively in the literature. Next, we describe the four groups of drivers: consumer–channel interactions, website characteristics, social influence, and consumer characteristics.

2.2.1 Consumer–channel interactions. The consumer–channel interactions include drivers related to perceived system usefulness. Ease of use, perceived risk, trust, and shopping experience in general are included, as they derive from an interconnection between consumers and the Web as a sales channel.

Grounded in Fishbein and Ajzen's (1975) TRA, Davis (1986, 1989) introduced TAM to predict user acceptance of computers. TAM has been successfully applied in many areas, including e-commerce (e.g., Devaraj et al., 2002; Gefen & Straub, 2003; Lin, 2007; Pavlou, 2003), and it has been shown to be a parsimonious yet robust model of technology acceptance behaviors. TAM uses TRA to specify the causal linkage between two distinct and fundamental constructs of system use, which are *perceived usefulness* and *perceived ease of use*, and users' attitude, behavioral intention, and actual behavior.

Perceived usefulness is defined as "the degree to which a person believes that using a particular system would enhance his or her job performance" (Davis, 1989, p. 320), which is a measure of an individual's subjective assessment of the utility offered by new IT in a specific task-related setting (Davis, 1989). In the context of e-shopping, consumers evaluate their online shopping performance in terms of the benefits of purchasing a product through internet retailing minus the tradeoff of physical retailing (Ramayah & Ignatius, 2005). Therefore, perceived usefulness translates to the extent to which

5

a consumer believes that using an online channel will enhance the effectiveness of purchasing products or services. Based on TAM (Davis, 1989), we hypothesize that perceived usefulness acts positively on attitude and intention.

Perceived ease of use refers to "the degree to which a person believes that using a particular system would be free of effort" (Davis, 1989, p. 320), which is an indicator of the cognitive effort needed to learn and to utilize the new IT. Applied to online consumer behavior, it represents the degree to which a Web interface is perceived to be easy to understand, learn, and operate. Based on TAM, we propose that perceived ease of use influences attitude and behavioral intention directly and indirectly through perceived usefulness (Devaraj et al., 2002; Gefen & Straub, 2003; Pavlou, 2003).

Perceived behavioral control refers to "people's perception of the degree to which they are capable of, or have control over, performing a given behavior" (Fishbein & Ajzen, 2010, p. 64). Constructs with similar meaning are Bandura's concept of perceived self-efficacy (Bandura, 1977, 1982), controllability, and facilitating conditions or factors (e.g., Lin, 2007; Pavlou & Fygenson, 2006). Perceived behavioral control predicts behavioral intentions, together with attitude and subjective norm, as well as actual behavior (Ajzen, 1975). Therefore, we propose that it acts positively on online purchase intention and behavior.

Convenience in the buying process is one of the most important determinants in retail store patronage and other direct shopping methods, and its importance has been emphasized in virtual environments (Choudhury & Karahanna, 2008; Jarvenpaa & Todd, 1996). Shopping on the Web provides convenience in various ways, such as reduction of physical effort, expanded store hours, ease of conducting searches and ordering, flexible delivery options and payment methods, and quick and efficient checkouts. Convenience in the electronic marketplace is defined as a customer's perception of the time saved and physical, cognitive and emotional expenditure conserved by shopping at an online store. Thus, a positive influence on purchase intention is expected.

The open and global nature of the Web exposes online transactional activities to a high degree of vulnerability, uncertainty, and insecurity; thus *system security* has been extensively addressed as a key driver of online shopping (Jones & Vijayasarathy, 1998; Salisbury et al., 2001). Security represents the extent to which consumers believe that the Web is secure for transmitting sensitive information (i.e., personal and credit card information). Perceptions of security are subject both to the actions of e-

6

vendors and to the ability of the internet infrastructure to facilitate secure transmissions (Pavlou, 2001). Since consumers overcome psychological barriers to online purchasing when they feel comfortable that their personal information is protected, we expect a positive influence of system security on purchase intention.

Trust may represent a vital driver in the online environment, because the online environment involves more uncertainties and risks than traditional shopping. Here, following Mayer et al.'s (1995) and Pavlou's (2003) definitions, trust is the belief that allows consumers to willingly become vulnerable to Web retailers, after they have taken the latter's' characteristics into consideration. This definition is consistent with the construct of trust as a salient belief, and encompasses the traditional view of trust in a specific party (the Web retailer) and, implicitly, trust in the integrity of the transaction medium (the internet infrastructure). Trust typically reduces the perception of risk of online shopping and we expect it to promote purchase intention.

Factors related to the shopping experience incorporate the hedonic element of online shopping, reflecting the worth found in the shopping experience itself aside from any task-related motives, such as the set of emotional responses elicited. Here, perceived *enjoyment* is used to measure the affective aspect of online shopping. Following Davis et al. (1992), perceived enjoyment is defined as the extent to which online shopping is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated. Through the enhancement of the shopping experience, we expect perceived enjoyment to influence purchase intentions positively.

Compared to traditional retailing, online shopping involves additional vulnerabilities, uncertainties, and complexities due to the spatial separation between buyers and sellers, the inability to inspect the product before purchase, and security problems. Therefore, the distant and impersonal nature of the online environment has rendered *perceived risk* (Bauer, 1960; Cunningham, 1967) an inevitable element of e-commerce. Perceived risk has been heavily investigated, resulting mostly in a significant negative impact on intention to buy (e.g., Chang et al., 2016; Kim et al., 2008; Lian & Yen, 2014; Pavlou, 2003; Villa & Kuster, 2012) and insignificant in other cases (e.g., Faqih, 2016; Gupta & Kim, 2010; Jarvenpaa et al., 2000; Kim & Gupta, 2009). This variable is usually measured as a multidimensional construct comprising the facets of performance, and financial, social, psychological, and time risk (Forsythe & Shi, 2003; Jacoby & Kaplan, 1972). We adopted an overall definition of risk

7

as a consumer's expectation associated with purchasing goods or services online that could have unwanted outcomes; as such, we expect a negative influence on purchase intention.

The construct of *privacy concerns,* which is highly interrelated with security, trust, and perceived risk, refers to consumers' general concern about how organizations collect, store, use, and protect personal information, which has a negative impact on online shopping attitudes, intentions, and behaviors. Individual privacy comprises four areas: improper acquisition of information (e.g., preference tracking); improper use of information (e.g., third-party distribution); privacy invasion (e.g., direct mailing); and improper storage (e.g., no opting-out) (George, 2002). Companies have increasingly implemented and promoted security and privacy protection mechanisms—privacy policies, safe shopping guarantees, encryption, authentication—while legislative actions have aimed at protecting data rights, although data breaches are still a major issue (Latzer et al., 2003). Therefore, a negative relationship with purchase intention is posited.

2.2.2 Website characteristics. Drivers pertaining to attributes specific to the website are information quality and website design. Since online consumers must rely on limited product representations (as opposed to traditional commerce), a website's *information quality*— providing a real feel for the product and enabling adequate evaluation, thus overcoming the barriers created by the lack of physical inspection—is very important (Choudhury & Karahanna, 2008; Pavlou & Fygenson, 2006). The usual dimensions of information quality, derived from traditional information systems literature, are accuracy, completeness, understandability, currency, timeliness, and reliability. In this study, taking into consideration all dimensions, information quality refers to the degree to which the information provided by a website facilitates a consumer's evaluation of products to complete online purchasing. Thus, a positive relationship with intention is expected.

As websites present information in the form of text, pictures, audio, and video, information quality naturally relates to *website design*. Retailers have long recognized the importance of shopping environment design and have invested considerably to create an environment that induces the desirable emotions in consumers. As the virtual equivalent of traditional store atmospherics, website design is defined as the sum of all visible and audible cues consciously designed to create positive effects and

8

favorable consumer responses (Eroglu et al., 2001; Koo & Ju, 2010). As consumers cannot feel, touch, or try products, website design richness stimulates the creation of virtual modeling technologies that foster telepresence (Fiore et al., 2005), we expect it to be a key factor that positively affects purchase intention.

2.2.3 Social influence. Social influence refers to situations in which individuals change their behaviors under the influence of others. The strength of this influence is affected by the relation among individuals, network distances, timing, and the characteristics of networks and individuals (Chen et al., 2014). *Subjective norm* denotes social influences and, as defined by Fishbein and Ajzen (1975, p. 302), is "the person's perception that most people who are important to him think he should or should not perform the behavior in question" and is a function of normative beliefs. Its impact on online purchase intention has been mixed, however, and not always significant (e.g., Pavlou & Fygenson, 2006; Hsu et al., 2006; Lin, 2007; Lian & Yen, 2014). In accordance with TAM, a positive effect of subjective norm on purchase intention was posited.

2.2.4 Consumer characteristics. Among consumers' characteristics, the drivers considered are psychological variables such as consumer knowledge operationalized as previous experience with online shopping, and consumer innovativeness, and demographic variables such as gender and age. *Consumer innovativeness* is an individual's predisposition to seek novelty or to be receptive to new ideas, and is a personality trait. Early studies reported that innovators were more likely to shop online (e.g., Goldsmith, 2001), based on the argument that highly innovative individuals are able to cope with uncertainty and have a higher acceptance of new technologies (Rogers, 1995). Accordingly, a positive influence of consumer innovativeness on purchase intention is assumed.

Consumers' knowledge of and experience with medium and technology have been found to impact intention to use and actual usage of online shopping positively. Here, *previous experience* refers to past purchase experiences on the internet and with other in-home shopping formats. Since online shopping represents a new consumer activity, prior experience is likely to foster the development of consumers' confidence and skills that facilitate future purchases and provide important clues for judging the extent of desirability regarding the next purchase (Goldsmith & Goldsmith, 2002). Rogers (1995) highlighted prior practice with innovation as fundamental to building how-to knowledge and enhancing trialability, while researchers pointed to the inclusion of past behavior in TPB as it significantly

9

improves the prediction of behavior (e.g., Bentler & Speckart, 1979). Therefore, a positive relationship with purchase behavior is expected.

A considerable body of empirical research suggests that demographics may be related to shopping behaviors in both traditional and virtual environments (Chang et al., 2005; Pan & Zinkhan, 2006). However, findings on *demographic variables* are mixed, and no consensus exists about the relationship between shoppers' demographic profiles and their attitudes toward online shopping, purchase intentions, and behaviors. Although recent studies and reports indicate that the gender gap in purchasing products and services online is disappearing, prior evidence highlight the importance of gender differences. For example, male consumers have been found to be more inclined to buy online than female consumers owing to their greater familiarity with technology, different perceptions of risk, and diverse shopping orientations, higher convenience orientation, and being less motivated by emotional and social interactions. In contrast, some studies indicated that women are more likely to buy home furnishings, apparel, and jewelry online, representing an important online shopper segment for these items (e.g., Goldsmith & Goldsmith, 2002). As with gender, findings about the effect of age are discrepant. Studies suggest that younger consumers are more knowledgeable about the internet and end-user computing, and they show more favorable attitudes and intentions toward online shopping, supporting the notion that innovators tend to be younger (Rogers, 1995; Teo, 2001). However, age differences are not always significant, and the knowledge gap between young and mature consumers is decreasing. Given the inconsistent findings, we considered age and gender as control variables of the model, and their effect on the final dependent variable (purchase behavior) was tested, without any explicit expectations.

2.3 Potential moderators

The empirical context—in particular, the country where the study was conducted, the type of product under investigation, and the year of publication—could play a major role in the importance of the antecedents of online shopping by consumers. Therefore, these factors were considered possible moderators of the relations hypothesized in the proposed framework.

Country plays a crucial role in the consumer decision-making process because it defines the

territorial boundaries from which culture originates (i.e., history, geography, political vision, technology, and social institutions) (Cateora et al., 2020). Culture influences purchasing behavior, hierarchy of needs, interpretation of needs and desires, preferences, and consumption habits (Alonz et al., 2016). The moderating role of cultural traits in the online shopping environment has been found in several studies (Chai & Pavlou, 2004; Ganguly et al., 2010; Yoon 2009). Chai and Pavlou (2004) found a moderating effect of the culture (uncertainty avoidance trait) on the relationships between subjective norm and intention, and perceived behavioral control and intention.

To test the effect of cultural traits in the context of online shopping, we considered Hofstede's (1984, 2011) six cultural dimensions: power distance, uncertainty avoidance, individualism/ collectivism, masculinity/femininity, long-term orientation, and indulgence/restraint. Power distance is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally (Hofstede, 1984). Uncertainty avoidance expresses the degree to which the members of a society feel uncomfortable with uncertainty and ambiguity (Hofstede, 2001), individualism/collectivism is defined as the degree to which people derive their identity primarily from being an individual versus being a member of social groups (Hofstede 1984), masculinity/femininity refers to dominant values in society (Hofstede, 1984), long-term orientation expresses the link with traditions and willingness to change (Hofstede, 2001), indulgence/restraint refers to the gratification of needs, where indulgence stands for a society that allows relatively free gratification of basic and natural human desires related to enjoying life and having fun, and restraint stands for a society that controls gratification of needs and regulates it by means of strict social norms (Hofstede, 2011).

Based on their characteristics, such as whether or not they can be physically inspected (Koppius, 1999), products are commonly classified into tangible and intangible (Lal & Sarvary, 1998; Poon & Joseph, 2001). Type of product influences both the choice of channel (e.g., Bouwman & Van De Wijngaert, 2003) and the transaction process in the virtual environment. In particular, it acts on perceived risk (e.g., Hassanein & Head, 2004; Phau & Poon, 2004) trust toward the retailer (e.g., Hassanein & Head, 2004), and perceived usefulness (e.g., Hassanein & Head, 2004; Phau & Poon, 2004). In the offline environment, consumers associate intangible products with higher perceived risk and ambiguity compared to tangible ones (Murray & Schlacter, 1990), as intangibility makes their

11

evaluation difficult. Hence, given the inability to physically touch and test tangible products in the online environment (e.g., Alba et al., 1997; McKnight et al., 2002), the impact of several antecedents of e-commerce may change for these products. Chiu et al. (2009) identified product type as a potential moderator, and Singh and Srivastava (2018) demonstrated the moderating effect of product type on the online medium, specifically on the relationship between perceived usefulness and purchase intention.

As e-commerce is an increasingly consolidated reality, more and more companies own their online sales channel and more and more consumers shop online. Therefore, the impact exerted by the antecedent variables on the dependent variables may have changed over the years, and we examine this dynamic pattern.

In addition, and in line with recommendations and previous meta-analyses (see Grewal et al., 2018), we consider several methodological moderators, such as, methodological approaches adopted by researchers, namely research type (experimental, and cross-sectional data and longitudinal data), respondent type (non-students versus students), journal rank (top journals versus non-top journals, based on the Chartered Association of Business Schools, ABS, journal ranking), and research stream (i.e., marketing and communications, economics, business and management, information technology and computer science, psychology and social science, and others, including general engineering, and arts and humanities).

3. Method

In line with previous meta-analyses in marketing (e.g., Bijmolt et al., 2005; Blut et al., 2018; Sethuraman et al., 2011), three phases were followed: data collection, data coding, and data analysis.

3.1 Data collection

For the meta-analysis, different streams of literature were searched for information on the effect of different antecedent factors on three identified dependent variables: attitude toward online shopping, purchase intention, and purchase behavior. A series of search strategies were carried out to identify both published and unpublished studies. The first step included searches of electronic full-text databases,

such as Business Source Complete, ABI/INFORM, ScienceDirect, JSTOR, Emerald, ACM, IEEE Xplore, SpringerLink, Web of Science, Social Science Research Network, and dissertation and theses database ProQuest. We used a large set of keywords and their combinations; the keywords were "online shopping," "e-commerce," "internet shopping," "web retailing," "driver," "factor," "determinant," "antecedent," and "predictor." Second, Google Scholar search engine and the Web were used to identify other relevant working papers, books, dissertations, and conference proceedings. Such sources of grey literature were included to increase the sample size and attenuate publication bias (Rosenthal, 1979, 1995). Thus, the data collection procedure attempted to obtain a complete set of both published and unpublished studies. Third, in relevant literature reviews and empirical papers, the references were screened to locate additional studies. When the full text was not available or there was missing information, the authors of the original papers were contacted.

The decision to include a specific study was based on three criteria: it must (1) empirically investigate consumer behavior in online platforms, reporting on one or more antecedent factors of online shopping by consumers; (2) examine constructs such as attitude, purchase intention, and purchase behavior; and (3) consider relevant effect sizes, such as correlation coefficients or other metrics that could be converted into correlations (e.g., beta, Cohen's d, t, F).

Based on theoretical reasoning and previous empirical studies, we developed a conceptual model presenting the expected relationships between the variables. Initially, the search strategy and inclusion criteria resulted in a set of 252 articles, with 302 studies, published during 1999–2020 (2,034 effect sizes). Based on the search results, we had to remove some of the relationships from the final model, because they did not reach the minimum required number of observed effect sizes (K => 9). Therefore, the final proposed conceptual framework (Figure 1) was investigated through a meta-analysis to obtain a generalization of the results (Grewal et al., 2018; Kirca & Yaprak, 2010). For our proposed conceptual model, the article set was composed of 224 articles, with 266 studies, 742 effect sizes, and a total sample size of 107,844 subjects.

On average, 4.5 papers on online shopping were published per year. The sample size used ranged from 50 to 8,691 respondents. The majority of studies were conducted in Asia and North America (41% and 32%, respectively), 12% in Europe, 3% in Africa, 2% in Australia, New Zealand, and South America, and 10% did not specify the country. Most of the effect sizes originate from

observational studies (89%). The research streams were represented as follows: 31.7% of the articles came from business and management journals, 24.5% from marketing, 24.2% from information studies and computer science, and 19.6% from economics and others, such as psychology, general engineering, and arts and humanities. A list of the articles is provided in Web Appendix A.

3.2 Coding

An extensive coding protocol was developed and discussed, checked, and verified by all authors. In the coding procedure, each article was read to find the information needed on effect sizes, antecedent factors, and general study characteristics. Coding was done by three coders using the same construct definitions described in the taxonomy (see Table 1). All articles were coded by each of the coders; the intercoder overall agreement was 0.97. Any inconsistency in coding was resolved through discussion until a final consensus was reached.

Over 240 different variables were identified and classified to capture the reported relationships. Since a multitude of constructs were investigated in the selected studies, variables with different names could have similar meaning; such constructs were merged in accordance with the terminology most commonly used in the literature and consistent with the variables in the proposed model, leading to the development of a single definition for each construct. For example, self-efficacy, controllability, facilitating conditions, and perceived behavioral control were aggregated in the construct of perceived behavioral control, whereas playfulness and entertainment were included in the enjoyment construct.

Additional information, such as the year of the study, characteristics of the publication, investigated country, and research model were also collected. The type of research (0 = experimental; 1 = survey and others), type of respondents (0 = non-students; 1 = students), and type of publication (0 = article in a peer-reviewed journal; 1 = others) were dummy variables. Country, product category, and research stream were coded as factors with multiple levels. Year of publication was coded as a continuous variable and mean-centered before conducting the analyses.

4. Meta-analysis procedures and results

Consistent with previous meta-analytic studies (e.g., Hogreve et al., 2017; Landis & Ronald, 2013;

Zhang et al., 2012), we conducted the analysis in three steps: an assessment of the bivariate relationships, a moderator analysis, and MASEM.

4.1. Assessment of bivariate relationships

4.1.1. Method. The Pearson correlation coefficient r was selected as the effect size metric, consistent with other meta-analyses in marketing (e.g., Arts et al., 2011; Hogreve et al., 2017; Pan & Zinkhan, 2006). When a correlation between two variables was not reported in a paper, other statistical measures (e.g. Cohen's d, F-tests, t-tests, chi-squared tests, the standardized regression coefficient β) were transformed into Pearson's r (Cooper et al., 2009; Hunter & Schmidt, 2004; Rosenthal, 1991). Following Peterson and Brown's (2005) formulas, standardized regression coefficients were included in the analysis after being transformed into Pearson's r. Only 15.3% of all the 742 measures considered in the analysis were not Pearson's correlation coefficient r. Finally, before conducting the analyses, Pearson's r was transformed into Fisher's Z.

All bivariate relationships between the drivers and the outcome variables in the proposed conceptual framework were examined and for each relationship, different descriptive statistics were computed. In total, 742 measures related to 22 relationships were included in the meta-analysis. For each relationship investigated, we conducted a meta-analysis using the random effects model and inverse variance weighting to pool effect sizes, and the restricted maximum likelihood method to estimate between-study variance (DerSimonian & Kacker, 2007; Hartung & Knapp, 2003; Raudenbush, 2009; Viechtbauer, 2005; Viechtbauer et al., 2015). These analyses provide an estimate for the average effect size for each relationship. Moreover, heterogeneity was assessed considering the I^2 (percentage of variation due to study heterogeneity rather than chance) and the related Cochran's Q (the probability of the observed between-study heterogeneity being due to chance) (Cooper et al., 2009; Higgins et al., 2003; Huedo-Medina et al., 2006). The I^2 scale has a range of 0–1, where 0 indicates perfect homogeneity. In contrast, when I^2 is large, it is reasonable to conduct a meta-regression to assess potential moderators explaining this heterogeneity (Higgins et al., 2003; Huedo-Medina et al., 2006). Finally, publication bias was addressed by computing the fail-safe N for the correlation coefficients (Hunter & Schmidt, 2004; Rosenthal, 1979), which reports the number of field effect sizes or the tolerance for future null results, to check whether a publication bias affected our results.

4.1.2 Results. Table 2 summarizes the effect sizes of the bivariate relationships between the drivers and the outcome variables.[1] The data reveal that the greatest attention has been directed at capturing the effects of trust on purchase intention (k = 74), of perceived ease of use on purchase intention (k = 57), perceived ease of use on perceived usefulness (k = 57), of perceived usefulness on purchase intention (k = 55), of perceived risk on purchase intention (k = 54), and of attitude on purchase intention (k = 52). Purchase intention represents the most investigated dependent variable, with a range of 21 to 74 effect sizes per relationship.

Overall, all groups of drivers (consumer–channel interactions, website characteristics, social influence, consumer characteristics) provide relatively large or moderate effect sizes in their relationship with consumers' online shopping. Collectively, the findings in Table 2 provide the first evidence that online commerce literature has been effective in identifying key drivers of online shopping and supports conventional wisdom regarding the directionality of relationships.

In line with TAM, perceived usefulness ($r = .571$, $p < .001$) and perceived ease of use ($r = .449$, $p < .001$) positively and significantly act on attitude. Contextually, perceived ease of use has a positive effect on perceived usefulness ($r = .605$, $p < .001$).

For purchase intention, the bivariate analyses support most of the predictions, except for privacy concerns, which is not statistically significant ($p > .05$). The largest effect is related to attitude toward online shopping ($r = .605$, $< .001$). Among consumer–channel interactions, the strongest effect sizes are displayed for convenience ($r = .563$, $p < .001$), perceived usefulness ($r = .535$, $p < .001$), perceived ease of use ($r = .466$, $p < .001$), and trust ($r = .465$, $p < .001$). Among website characteristics, both website design ($r = .488$, $p < .001$) and information quality ($r = .396$, $p < .001$) are important. Subjective norm shows a significant positive impact ($r = .412$, $p < .001$), similar to the impact of innovativeness ($r = .359$, $p < .001$).

In turn, purchase intention is the strongest predictor of purchase behavior ($r = .453$, $< .001$), followed by previous experience ($r = .414$, $p < .001$), and perceived behavior control ($r = .232$, $p < .001$). Finally, the effects of control variables are not equal: only age exerts a significant, even if weak,

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[1] With the aim to strengthen the results obtained, a meta-analysis with only "observational studies" data (primary data obtained from non-experimental studies - longitudinal data and cross-sectional data) was conducted additionally. The results obtained (in Web Appendix E) largely confirm the findings presented in the main text.

effect ($r = .079$, $p < .001$).

The high fail-safe Ns suggest that the findings are robust against publication bias, with 20 out of 22 relationships exceeding Rosenthal's (1979) tolerance level of $5 \times k + 1$, where k is the number of observed correlations. Fail-safe Ns below tolerance levels are found for age and gender for purchase behavior. Finally, as I^2 is large for all relationships, bivariate relations show high heterogeneity; therefore, moderator analysis is needed.

[Insert Table 2 about here]

4.2. Moderator analysis

4.2.1. Method. For reasons of stability of the results, we limited the moderator analysis to relationships with at least 10 observed effect sizes, which led to the exclusion of three relationships in this stage ($k < 10$): purchase behavior–gender, purchase behavior–age, and purchase behavior–previous experience. For continuous moderators (Hofstede's cultural dimensions and year of publication), meta-regressions (Bijmolt & Pieters, 2001; Konstantopoulos, 2011) were performed to estimate and test the linear effect of the moderators on considered bivariate relationships. For categorical moderators with more than two levels, Q tests were used to test whether the effect size varied significantly across the groups defined by the moderator. The Q test is similar to ANOVA: it compares the between-study heterogeneity with the within-study heterogeneity and supplies the related probability that differences in heterogeneity across studies are due to chance (Wilson & Lipsey, 2001). When the Q test is significant for a moderator, the effect size differs between levels of the moderator. For such categorical moderators, meta-regressions were conducted to examine and test the differences between the specific moderator levels.

4.2.2. Results. Tables 3, 4, and 5 present the results for the moderator analyses, revealing that contextual and methodological moderators partly explain the variation in effect sizes reported in the literature. The impact of the moderators differs greatly in magnitude and consistency across predictors.[2]

Regarding cultural dimensions (Table 3), long-term orientation was the only trait that did not

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[2] To keep under control the Type 1 errors, it could be considered a very conservative solution for adjusting the threshold value of p with the Bonferroni method by dividing the cutoff (0.05) by the number of moderators: 0.05 / 12 = 0.004. This value becomes the new cutoff.

significantly moderate any of the relations of the proposed model. Power distance positively influences the link between convenience and purchase intention, and between innovativeness and purchase intention. Individualism weakens the relationship between privacy concerns and purchase intention: as the cultural trait grows, the strength of the relationship diminishes. Uncertainty avoidance positively acts on perceived usefulness–purchase intention, and subjective norm–purchase intention relationships. Indulgence shapes three relationships: as it increases, the links between privacy concerns and purchase intention, website design and purchase intention, and information quality and purchase intention decrease. Finally, masculinity negatively acts on system security–purchase intention and information quality–purchase intention relationships.

Year of publication (Table 3) positively influenced some relationships. The link that trust, website design, and perceived behavioral control have with purchase intention has grown over the years. In other words, increase in user experience and technological advancement reinforced the importance of certain factors as drivers of online commerce adoption.

All the studied effect sizes did not vary systematically according to the type of product, except for the negative effect of privacy concerns on purchase intention, which weakens when product categories in the studies are intangible (Tables 4 and 5).

With respect to methodological moderators (research type, respondents, journal rank, research stream), only type of research did not influence the relationships between the drivers and the dependent variables. Regarding journal ranking, perceived ease of use was more impactful on purchase intention in top journals. Type of respondent moderator was relevant in three relationships. Specifically, when the respondents were not students, the effects of website design, and the perceived ease of use on purchase intention were stronger, while the effect of convenience on purchase intention decreased (Table 4). Among the methodological moderators, research stream exerted the most influence on relationships; it acted on the link between attitude and purchase intention, convenience and purchase intention, privacy concerns and purchase intention, perceived ease of use and purchase behavior, perceived usefulness and purchase behavior, and perceived behavioral control and purchase behavior (see Table 5 for the differences between the levels).

[Insert Tables 3, 4, and 5 about here]

4.3. Meta-analytic structural equation modeling

4.3.1. Method. In addition to the bivariate and moderator analyses, additional insights can be derived from a model-driven meta-analysis using a structural equation modeling (SEM) strategy. To test the entire conceptual framework (Figure 1) and add to the understanding of the contribution of the antecedent factors to online shopping, a two-stage SEM (TSSEM) approach to MASEM was applied (Cheung & Chan, 2005; Jak, 2015), using both R and LISREL 8.80.

Traditional meta-analysis assesses one element of a theoretical model at a time, typically through a bivariate correlation coefficient; thus, it is unable to provide higher-level assessments (Bergh et al., 2016; Cooper et al., 2009; Jak, 2015). However, an integration with SEM allows the simultaneously testing of multiple relationships while providing statistical efficiency (Hair et al., 1995; Jöreskog, 1973). Hence, MASEM enables researchers to take all the available information from an entire stream of research and use it as the basis for testing complex models, and assess chains of connections among predictors and outcomes (Bergh et al., 2016; Cooper et al., 2009; Jak, 2015). The major advantages are the opportunity to test path models not tested in any primary study, possibility of testing an intermediate mechanism in a chain of relationships, possibility of comparing alternative theoretical models, and maximization of external validity as it includes all the available data for a particular relationship (Bergh et al., 2016). MASEM is also subject to some limitations and potential problems unique to this framework, such as missing values in the correlation matrix, which sample size to use, which values to apply in the diagonal of the matrix, difficulties with testing moderation, correlation matrix that fails to be positive definite, and the inability to make strong, and casual inferences based on data from nonexperimental studies (Bergh et al., 2016; Viswesvaran & Ones, 1995). Judgment calls on the part of the research are needed for every potential problem or decision point. Despite these limitations, MASEM represents a more powerful technique than traditional meta-analysis, and has been applied successfully in recent marketing meta-analyses (Bennett et al., 2018; Schulze, 2007).

Here, we apply TSSEM to MASEM, which consists of two stages. Specifically, in the first stage, correlation coefficients are combined to develop a pooled correlation matrix; in the second stage, a model is fitted to the pooled correlation matrix from the previous stage using weighted least squares estimation methods (Cheung & Chan, 2005; Jak, 2015). In the first stage the R-package was used to

19

form the pooled correlation matrix (Cheung, 2015; Jak, 2015), as shown in Table 6 together with the number of studies for the single relationships of the correlation matrix.

[Insert Table 6 about here]

For the second stage, any SEM program could be used, and we chose to use LISREL 8.80 as it can read the weight matrix in addition to the pooled correlation matrix formed in the first stage. Furthermore, it automatically adds smoothing solutions to maintain the positive matrix without affecting the data and relationships (Eby et al., 1999; Jöreskog & Sörbom, 1989; Wothke, 1993).

The results from the analysis of the bivariate relationships were the basis for the MASEM analysis. The harmonic mean size was used as input (n = 3,799) for the sample size to estimate MASEM (Bergh et al., 2016; Burke & Landis, 2003; Landis, 2013; Viswesvaran & Ones, 1995). The use of the harmonic mean is preferable, as it is consistent with the literature on unweighted analysis of variance and it balances the influence of smaller and larger values (Bergh et al., 2016; Johnson et al., 2001; Landis, 2013; Viswesvaran & Ones, 1995).

4.3.2. Results. The model tested includes all the relationships meta-analyzed (Table 7). The model fit was satisfactory ($\chi^2(44)$ = 1732.014; CFI = .897; GFI = .933; NFI = .895; SRMR = .059; RMSEA = .099). All relationships were significant except for the influence of enjoyment and perceived ease of use on purchase intention and the influence of gender on purchase behavior.

The results of the meta-analytic SEM show that among the consumer–channel interaction drivers, only enjoyment and perceived ease of use do not significantly influence intentions; all the other drivers exerted a significant effect: positive for perceived usefulness (β = .122; p<.01), perceived behavioral control (β = .096; p<.01), convenience (β = .066; p<.01), and system security (β = .073; p<.01) and trust (β = .042; p<.01), but negative for privacy concern (β = -.055; p<.01) and perceived risk (β = -.082; p<.01). The results of the mediation analysis show that the direct effect of perceived ease of use on intention was not significant because it was fully mediated by attitude. A partial mediation was found for all other relationships (Table 7).

The influence exerted by website characteristics (information quality and website design) and social influence (subjective norm) on behavioral intention was positive and significant (respectively, β

= .095, p<.01; β = .104, p<.01; β = .129; p<.01). Regarding consumer characteristics, the impact of innovativeness on intention (β = .045; p<.01), and of previous experience (β = .133; p<.01) and age (β = -.043; p<.01) on behavior were confirmed.

Finally, according to TAM and the TPB, perceived ease of use significantly affects attitude (β = .088; p<.01) and perceived usefulness (β = .289; p<.01); perceived usefulness positively affects attitude (β = .088; p<.01); and attitude was a direct driver of intention (β = .149; p<.01) which, in turn, was a direct antecedent of behavior (β = .256; p<.01).

[Insert Table 7 about here]

5. Discussion

5.1 Theoretical implications

In the past two decades, many studies have advanced our understanding of the drivers of consumers' online shopping. By synthesizing the literature on drivers of online shopping in a formal way, our meta-analysis gauges the current level of knowledge and provides generalizations on the strength of the most important drivers and the conditions that moderate these relationships. It also provides a comprehensive meta-analytic conceptual framework that informs scientists and managers how to enhance e-commerce websites' performance, leveraging different dimensions of their online marketing strategy. Table 8 summarizes the key findings and related managerial implications.

Our meta-analysis advances the theoretical understanding of online shopping in several ways. First, all the four groups of drivers (consumer–channel interactions, website characteristics, social influence, consumer characteristics) contribute to explaining consumers' online commerce choice. The results show that e-commerce literature has been effective in identifying key drivers of online commerce channel choice. All the expected effect of online commerce adoption drivers hypothesized in Table 1 have been verified, except for privacy concerns that ran contrary to previous studies (Alshare et al., 2019; Park & Jun, 2003; Verhoef, 2007).

Second, attitude is confirmed to be the strongest driver of intention to choose an online channel, in line with the theories (including TAM and TPB) and numerous empirical studies (Pennington et al.

21

2003; Reimers et al., 2016; Wu, 2006). The next strongest drivers are convenience, perceived utility, and website design. Given the significant and large effects of website design and quality of information on the intention to choose a channel, it can be said that the characteristics of a website are highly relevant for the customer. Our findings underline that website design can create positive emotional effects and please the customer.

Third, despite security system being considered a central element for the choice of an online channel (e.g., Jones & Vijayasarathy, 1998; Salisbury et al., 2001), this variable exerts a relatively small effect, albeit significant, on intention. In addition, privacy concerns was the only predictor that did not exert a significant influence. In line with this, the negative role of perceived risk on the intention to use an online commerce channel appears minor compared to the large positive effects of other predictors. Hence, the results on privacy concerns, system security, and perceived risk seem to show that the consumer is beginning to develop greater confidence in e-commerce sites and greater security in their use. In addition, it is necessary to consider also specific situations in which consumers are forced to use the online channel (e.g., during the Covid-19 pandemic).

Fourth, regarding the effects on channel choice behavior, socio-demographic characteristics show little to no systematic effects (the effect of gender is not significant, while that of age is very weak). Conversely, consistent with the literature (e.g., Bhatti & Rehman, 2020; Celik, 2016; Lennon et al., 2007), previous experience and intention are the main drivers of behavior.

Fifth, the results on the moderating role of cultural dimensions display relatively few significant effects, which also differ greatly in magnitude and consistency across drivers. Long-term orientation did not significantly moderate any of the hypothesized relationships, while the other cultural traits moderated some relationships. In particular, in individualistic and indulgent cultures, the effect of privacy concerns on intention diminishes. Furthermore, the characteristics of the website appear less relevant in individualistic cultures. Even in masculine cultures, some predictors related to the website lost strength, such as system security and information quality. The results of the moderation analysis show that in more individualistic, indulgent, and masculine cultures, predictors related to website characteristics, such as security, information quality, and privacy, have lower effects. Yet, other cultural traits increase the predictive power of some drivers; where power distance is greater, innovativeness and convenience exert a greater effect on intention, and the same happens for perceived usefulness and

22

subjective norm in cultures with higher uncertainty avoidance.

Sixth, the conceptual framework examined through MASEM presents an overall view of the most significant factors and their relationships with the outcome variables. Unlike the bivariate analyses carried out in the meta-analysis, MASEM allows testing of the model by considering and analyzing simultaneously all the relationships hypothesized in the model. The results show that the strongest links are for drivers derived from TAM and TPB. However, the effects exerted by the other variables present in the model should not be underestimated, in particular, those exerted by the characteristics of the website (website design and information quality) on intention, and past experience on purchasing behavior. Capitalizing on technologies that enable a pleasant and functional design, together with the display of accurate information in several forms (e.g., text, pictures, videos), certainly influences consumers' adoption.

5.2 Managerial implications

The findings of our meta-analysis have several implications for practitioners (see Table 8). In particular, they provide insights on the importance of the many factors that impact different outcome variables related to online shopping behavior, as discussed in the previous subsection. Such an understanding is a fundamental starting point to identify and implement appropriate online marketing strategies to target, attract, and retain e-commerce platforms' consumers, and thereby, create value and generate positive performances.

First, the results imply that different variables can be successfully leveraged for various yet intertwined purposes. For example, if the focus is on promoting favorable attitudes, placing emphasis on the quality of information provided, website atmospherics, and the entertainment value offered would be appropriate for triggering and enhancing interest in the commercial website. The enjoyable aspect of online shopping should be emphasized in promotional activities as well. Of utmost importance for all customer outcomes is enhancing and communicating the ease of use and usefulness of the online channel, and implementing adequate and up-to-date technological solutions both to increase consumers' perceptions of utility and ease when purchasing online and to reduce perceptions of risk. Perceived risk and privacy concerns are still a barrier to adoption, although their importance as evaluative criteria to select online shopping seems secondary.

Second, although perceived ease of use and perceived usefulness have multiple effects, a sole

23

focus on the technological perspective is limiting. Other elements like social influence, trust, perceived behavioral control, previous experience with online shopping, and innovativeness have considerable influence on online shopping behaviors. In particular, to stimulate the final outcome of the actual purchase, managers should acknowledge the relevance of consumers' previous experiences and innovativeness. Taking into consideration one aspect in isolation might not lead to such positive results.

This study also suggests whom to target most effectively when selling online. Consumers displaying higher degrees of innovativeness are not only more likely to shop online, but also to stimulate others to buy (Goldenberg et al., 2009), which is crucial given the influence of previous experiences on future purchases and subjective norms on purchase intention. In this perspective, opinion leaders and innovators may be targeted to increase purchases, and the use of tools of social influence, such as the "recommend to a friend" option, is highly recommended to managers.

Furthermore, results indicate that other consumer characteristics including demographics are not the finest criteria to target potential buyers. Even though younger and female consumers may show more favorable attitudes toward online shopping, gender does not predict purchase intention, while age impacts but very weakly and certainly lower than other important predictors. Similarly, the results do not vary between product type (tangible versus intangible) but might differ between more fine-grained product categories, for example, apparel or electronics (e.g., Goldsmith & Goldsmith, 2002); unfortunately, this moderation could not be tested due to insufficient information.

Finally, in cultures with high power distance and uncertainty avoidance indexes, companies should act to enhance, respectively, perceived convenience and perceived usefulness, since their influence on intention is emphasized. Any solution capable of minimizing the time taken to make a transaction and shopping basket filling appears functional to this purpose.

[Insert Table 8 about here]

5.3. Limitations and directions for further research

The study is not without limitations, but they point to fruitful areas for future research on online shopping adoption. As is widely recognized in the literature (Cooper et al., 2009; Hunter & Schmidt, 2004), meta-analysis is limited by the quality and availability of its foundation, which should be borne

24

in mind when interpreting the findings. Hence, the proposed framework should be viewed as a quantitative summary of the most investigated antecedent factors and not as an exhaustive list. In addition, not all studies reported sufficient information to compute correlations between all the predictors. Among the predictors excluded for insufficient correlations, there are important variables including search intention, assortment and product quality, brand name, and exchange/return policies. These factors have not received sufficient attention from researchers yet. Future studies could focus on such underexplored relationships.

Variations in the definitions of independent variables and some interdependency among them may also have affected the findings. For example, some overlap was found between system security and privacy concerns, as recognized in previous studies (Hsu et al., 2014; Pavlou & Fygenson, 2006). A few of the scales used were ambiguous, as in the case of trust, which has been operationalized in different ways and its measure confused with its antecedents (Gefen et al., 2003). Therefore, validation of the measures and of the psychometric properties of the scales used in online shopping is crucial to understanding the relationships among variables.

The contextual and methodological moderators specified leave a substantial amount of variance unexplained. A meta-analysis is constrained to examining moderating elements that can be coded from the extant literature. Examining additional methodological factors (e.g., multi-item versus single-item scales) and/or contextual factors (e.g., company size, additional product types) could help future studies gain a deeper understanding of the drivers and boundary conditions of online shopping.

Moreover, the findings are largely based on cross-sectional studies, which limits the ability to make confident causal inferences. A reliance on cross-sectional data naturally arises from the unavailability of time series data. However, a customer's buying decision process is affected over time. Therefore, future research should identify dynamic effects using longitudinal data, which would enhance understanding of the direction of mediation mechanisms.

Finally, the focus of the present meta-analysis is online shopping on traditional devices (i.e., desktop), ignoring other important phenomena such as mobile and social commerce, channel choice, and migration between traditional and online channels. Future research could investigate key drivers of mobile shopping through meta-analytic approaches and assess the differences in the importance of the predictors when comparing different channels and devices in the path to purchase (e.g., Ansari et al.,

25

2008), to shed light on additional drivers that might be important when considering different touchpoints and capturing the interrelationships among antecedent factors.

To conclude, this meta-analysis provides important generalizations on the drivers of choice of the online channel by consumers, revealing the different impacts of predictors and the moderators of this impact, and highlighting the intricate and multifaceted nature of the e-commerce phenomenon. Based on our findings, we propose in Table 9 some directions for future research that scholars may consider advancing the research on online shopping behavior.

[Insert Table 9 about here]

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Figure 1 - Conceptual framework
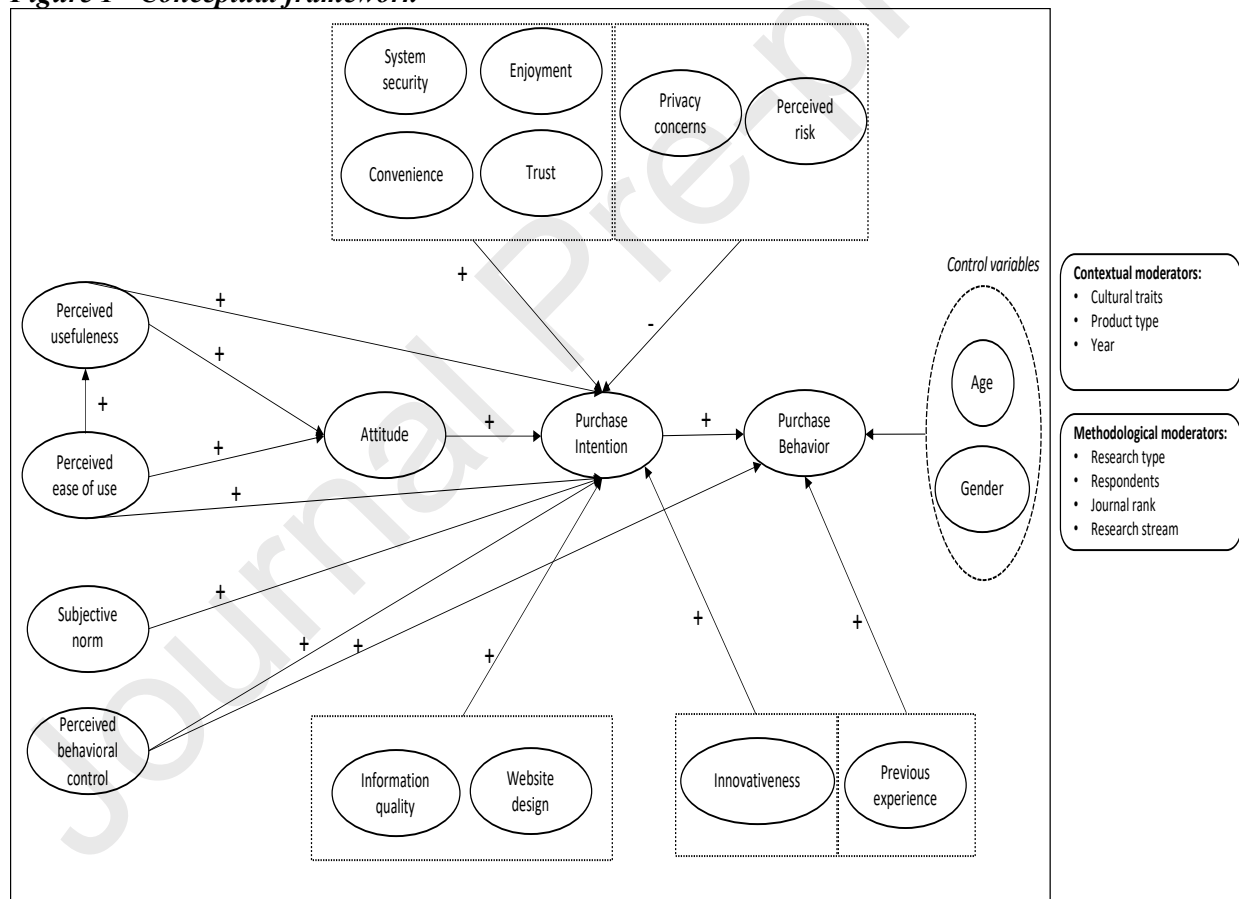
(In the path model there are no moderators)

Table 1 Definitions and expected effect of online commerce adoption drivers

Variable	Definition	Aliases	Link	Past studies	Past results	Expected effect
Outcomes Variables						

Attitude toward online shopping	The extent to which a consumer evaluates online shopping affirmatively or negatively.	Attitude toward Internet shopping, attitude toward the shopping medium.	→Purchase intention.	Penning ton et al. 2003; Wu, 2006; Reimers et al., 2016.	Positi ve and Sign.	Positi ve
Purchase intention	Likelihood that a consumer would use the online channel to make a product purchase.	Intention to transact, willingness to buy, intention to adopt, intention to use.	→Purchase behavior.	Chen et al., 2004; Wu, 2006; Bhatti and Rehman , 2020.	Positi ve and Sign.	Positi ve
Purchase behavior	Frequency of use of the online channel to make a product purchase, based on past experiences.	Actual use, purchase choice, usage behavior, actual transaction behavior, Internet purchasing.	-			-
Consumer-Channel Interaction						
Perceived ease of use	The extent to which a consumer believes that online shopping will be free of effort.	-	→Perceived usefulness.	Chen et al., 2004; Smith et al., 2013; Ardians ah et al., 2020.	Positi ve and Sign.	Positi ve
			→Attitude.	Chen et al., 2004; Aslam et al., 2018; Changc hit et al., 2019.	Positi ve and Sign.	Positi ve
				Nadeem et al., 2012.	NS	
			→Purchase intention.	Smith et al., 2013; Kloppin g and McKinn ey, 2004; Sachdev a et al., 2018;	Positi ve and Sign.	Positi ve

37

				Ardiansah et al., 2020.	NS	
Perceived usefulness	The extent to which a consumer believes that using the online channel will enhance the effectiveness of purchasing products or services.	-	→Attitude.	Chen et al., 2004; Reimers et al., 2016.	Positive and Sign.	Positive
				Nadeem et al., 2012; Changchit et al., 2019.	NS	
			→Purchase intention.	Chen et al., 2004; Smith et al., 2013; Ardiansah et al., 2020.	Positive and Sign.	Positive
				Vijayasarathy, 2004; Kuhil and Temesgen, 2020.	NS	
Perceived behavioral control	The person's perception of the ease or difficulty of making a product purchase online.	Self-efficacy, controllability, facilitating conditions.	→Purchase intention.	Tan and Teo, 2000; Vijayasarathy, 2004.	Positive and Sign.	Positive
				Wu, 2006.	Negative and Sign.	
				Sachdeva et al., 2018.	NS	
			→Purchase behavior.	Montoya-Weiss et al., 2003; Pavlou and Fygenson, 2006; Escobar-Rodríguez and Carvajal-Trujillo, 2013.	Positive and Sign.	Positive

				Wu, 2006.	Negative and Sign.	
Convenience	The customer's perception of time saved, and physical, cognitive and emotional expenditure conserved by shopping at an online store.	-	→Purchase intention.	Kumar, 2000; Zhang, 2010; Ramayah et al., 2018.	Positive and Sign.	Positive
				Wang et al., 2016.	Negative and Sign.	
System security	The extent to which consumers believes that the Web is secure for transmitting sensitive information.	Perceived security, information protection, transaction safety, system assurance.	→Purchase intention.	Wang et al., 2016; Alshare et al., 2019; Ardiansah et al., 2020.	Positive and Sign.	Positive
				Wu et al., 2008.	Negative and Sign.	
Enjoyment	The extent to which online shopping is perceived to be enjoyable in its own right, apart from any performance consequences that may be anticipated.	Perceived playfulness, pleasure, entertainment value.	→Purchase intention.	Verhoef, 2007; Won Jeong et al., 2009.	Positive and Sign.	Positive
Trust	The belief that allows consumers to willingly become vulnerable to Web retailers after having taken the retailers' characteristics into consideration.	Trust in the store, trust in the retailer, trust in the channel.	→Purchase intention.	Suh and Han, 2003; Alshare et al., 2019; Kuhil and Temesgen, 2020.	Positive and Sign.	Positive
Perceived risk	The consumer's expectation associated with purchasing goods or services online that could have unwanted outcomes.	Uncertainty.	→Purchase intention.	Tan and Teo, 2000; Verhoef, 2007; Kuhil and Temesgen, 2020.	Negative and Sign.	Negative
Privacy concerns	The consumer's general concern about how organizations collect,	Privacy risk.	→Purchase intention.	Park and Jun, 2003; Verhoef	Negative and Sign.	Negative

39

	store, use and protect personal information.			, 2007; Alshare et al., 2019.	
Website characteristics					
Information quality	The degree to which information provided by a website facilitates the consumer's evaluation of products to complete online purchasing.	Product diagnosticity, efficacy of information acquisition, information availability.	→Purchase intention.	Klopping and McKinney, 2004; Xu, 2017.	Positive and Sign.
				Wang et al., 2016.	NS	Positive
Website design	The sum of all visible and audible cues consciously designed to create positive effects and favorable consumer responses.	Aesthetic appeal, web atmospherics, design quality.	→Purchase intention.	Won Jeong et al., 2009; Shaouf et al., 2016; Dikčius et al., 2019.		Positive
Social influence					
Subjective norm	The person's perception that most people who are important to him think he should or should not purchase online.	-		Wu, 2006; Xu-Priour et al., 2017.	Positive and Sign.
			→Purchase intention.	Tan and Teo, 2000;Pentz, 2020.	NS	Positive
Consumer Characteristics					
Innovativeness	The individual's predisposition to seek novelty or to be receptive to new ideas.	General and domain-specific innovativeness, novelty seeking.	→Purchase intention.	Park and Jun, 2003; Thakur and Srivastava, 2015; Singh, 2016.	Positive and Sign.	Positive
Previous experience	Past purchase experiences on the Internet and with other in-home shopping formats.	Channel knowledge, past purchasing behavior.	→Purchase behavior.	Goldsmith and Goldsmith, 2002; Lennon et al., 2007; Celik, 2016.	Positive and Sign.	Positive
Gender	Dummy: male = . female = 1		→Purchase behavior.			-

			→Purchase behavior.				-
Age							

Table 2. Meta-analytic results: Descriptive statistics of the bivariate relationships

Relationship	k	Cumulative N	r	Z (se)	I²	Q(df)	Fail-safe N	Egger test
Attitude - Purchase intention	52	17493	.605	.701(.048)***	.976	2150.214(51)***	152268	-1.310
Purchase intention - Purchase behavior	28	11260	.453	.488(.070)***	.979	1289.629(27)***	24015	-.939
Perc. ease of use - Perc. usefulness	57	18839	.605	.702(.029)***	.942	960.369(56)***	156769	2.580
Perc. ease of use - Attitude	24	9441	.449	.484(.039)***	.936	358.486(23)***	18424	2.783
Perc. ease of use - Purchase intention	57	17676	.466	.504(.031)***	.938	904.471(56)***	87771	-1.323
Perc. usefulness - Attitude	24	9597	.571	.648(.054)***	.969	743.032(23)***	33839	-3.559
Perc. usefulness - Purchase intention	55	18063	.535	.597(.035)***	.953	1148.511(54)***	112677	1.085
Perc. behavioral control - Purchase intention	48	17150	.374	.393(.039)***	.963	1256.962(47)***	41761	-1.327
Perc. behavioral control - Purchase behavior	18	8283	.232	.237(.059)***	.964	469.489(17)***	3347	-6.037
Convenience - Purchase intention	21	7414	.563	.637(.176)***	.993	2735.306(20)***	17298	11.153
System security - Purchase intention	36	13638	.251	.257(.061)***	.978	1588.096(35)***	8367	4.419
Enjoyment - Purchase intention	28	11508	.440	.472(.043)***	.953	570.553(27)***	23283	2.384
Trust - Purchase intention	74	21419	.465	.504(.032)***	.961	1871.481(73)***	118745	2.829
Perceived risk - Purchase intention	54	22004	-.214	-.217(.059)***	.981	2791.251(53)***	21176	4.982
Privacy concerns - Purchase intention	31	13762	-.064	-.064(.047)	.961	764.695(30)***	419	-2.628
Information quality - Purchase intention	29	10258	.396	.419(.055)***	.974	1087.143(28)***	18894	-3.583
Website design - Purchase intention	27	9344	.488	.534(.048)***	.952	536.122(26)***	25285	1.484
Subjective norm - Purchase intention	38	15046	.412	.438(.039)***	.951	752.445(37)***	35283	1.321
Innovativeness - Purchase intention	23	6596	.359	.376(.045)***	.919	271.763(22)***	7224	.948
Previous experience - Purchase behavior	9	5012	.414	.441(.127)***	.989	731.385(8)***	3824	-20.503
Gender - Purchase behavior	5	3595	-.057	-.057(.069)	.918	48.931(4)***	8	-2.814

Age - Purchase behavior	4	2573	.079	.079(.020)***	.093	3.309(3)	11	-2.544**

** p < .05
*** p < .001

Table 3 Moderator analysis: Meta-analytic regression results of the continuous moderators

	Power Distance		Individualism - Collectivism		Uncertainly avoidance		Long term orientation		Indulgence		Masculinity		Years	
	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p
Attitude - Purchase intention	-.004(.003)	.180	.003(.001)	.071	.002(.003)	.437	-.002(.002)	.200	.003(.003)	.252	.008(.005)	.080	.014(.008)	.090
Purchase intention - Purchase behavior	-.003(.006)	.623	.001(.002)	.556	.003(.004)	.341	.000(.003)	.978	.004(.004)	.298	.006(.007)	.419	.005(.012)	.697
Perc. ease of use - Perc. usefulness	-.001(.002)	.477	.001(.001)	.171	.001(.001)	.43	-.001(.001)	.256	.003(.002)	.13	.003(.002)	.304	-.003(.005)	.524
Perc. ease of use - Attitude	.002(.003)	.339	.002(.001)	.224	.002(.002)	.396	.002(.001)	.191	-.003(.002)	.119	-.004(.003)	.269	.009(.007)	.249
Perc. ease of use - Purchase intention	-.001(.002)	.735	.001(.001)	.187	.001(.002)	.488	-.001(.001)	.516	-.001(.002)	.767	-.002(.002)	.329	.004(.005)	.383
Perc. usefulness - Attitude	-.002(.003)	.462	.001(.002)	.577	.005(.003)	.066	.000(.002)	.854	.000(.003)	.84	-.005(.005)	.288	-.001(.011)	.955
Perc. usefulness - Purchase intention	-.001(.002)	.568	.000(.001)	.825	**.005(.002)**	**.003***	.001(.001)	.698	.000(.002)	.861	-.005(.003)	.095	.003(.006)	.613
Perc. behavioral control - Purchase intention	.001(.002)	.579	.001(.001)	.334	.001(.002)	.727	.001(.001)	.591	-.001(.002)	.713	.001(.003)	.840	.012(.006)	.055
Perc. behavioral control- Purchase behavior	.002(.005)	.634	.000(.002)	.995	.004(.003)	.203	-.001(.002)	.577	.000(.004)	.918	-.005(.007)	.424	**.028(.01)**	**.006**
Convenience - Purchase intention	**.020(.009)**	**.023**	-.007(.005)	.176	-.013(.009)	.174	.007(.007)	.279	-.019(.010)	.058	.017(.018)	.355	.016(.025)	.527
System security - Purchase intention	-.002(.003)	.496	-.001(.002)	.681	-.001(.003)	.764	-.003(.002)	.080	.000(.003)	.971	**-.010(.004)**	**.015**	.007(.009)	.394
Enjoyment - Purchase intention	.000(.002)	.836	-.001(.001)	.318	-.001(.002)	.565	-.002(.001)	.149	-.003(.002)	.42	.000(.002)	.894	.008(.009)	.360
Trust - Purchase intention	.002(.002)	.398	-.001(.001)	.179	.002(.002)	.361	-.001(.001)	.371	-.001(.002)	.506	-.002(.003)	.411	**.012(.005)**	**.016**
Perceived risk - Purchase intention	.004(.003)	.2	-.001(.)	.6	-.002(.002)	.7	.002(.002)	.42	.001(.003)	.71	.000(.004)	.911	.014(.009)	.13

42

	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p	b (se)	p
(continued)	.046	(.002)	.059	003) 1				7		1			7	
Privacy concerns - Purchase intention	.006(.004)	.084	**-.003(.002)**	.047	-.004(.005)	.376	.005(.003)	.055	**-.011(.003)**	**.001***	-.004(.004)	.321	.005(.009)	.522
Information quality - Purchase intention	-.006(.003)	.090	-.001(.002)	.480	-.003(.003)	.217	-.003(.002)	.165	**-.007(.003)**	.017	**-.009(.004)**	**.020**	.014(.009)	.105
Website design - Purchase intention	.002(.003)	.524	-.002(.001)	.186	-.004(.003)	.112	.000(.002)	.761	**-.004(.002)**	.037	-.001(.003)	.784	**.025(.008)**	**.002***
Subjective norm - Purchase intention	.003(.002)	.236	-.002(.001)	.143	**.004(.002)**	**.046**	.002(.001)	.141	-.002(.003)	.471	-.001(.004)	.878	.01(.005)	.052
Innovativeness - Purchase intention	**.005(.003)**	**.049**	-.001(.001)	.342	-.001(.002)	.653	.001(.002)	.718	-.003(.003)	.269	.000(.005)	.960	.009(.006)	.113
Previous experience - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gender - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Age - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Note: font in bold refers to significant effect; n/a = not applicable.
* Significant at 0.004 level (Threshold value of p with the Bonferroni method)

Table 4. Moderator analysis: Meta-analytic regression and Q-test results of the categorial moderators

	Journal rank		Subjects		Research Stream		Product type		Rsearch type	
	b (se)	p	b (se)	P	Qb(df)	p	Qb(df)	p	Qb(df)	p
Attitude - Purchase intention	-.044(.101)	.666	.186(.097)	.055	**24.058 (7)**	**.001**	.67(4)	.955	.534(2)	.766
Purchase behavior - Purchase intention	.064(.146)	.660	-.064(.143)	.653	10.625(6)	.101	.464(3)	.927	1.187(1)	.276
Perc. ease of use - Perc. usefulness	-.030(.070)	.669	.003(.060)	.955	**13.953 (5)**	**.016**	7,31(3)	.063	2.327(2)	.312
Perc. ease of use - Attitude	-.062(.090)	.495	-.046(.099)	.642	1.185(4)	.881	.794(2)	.672	2.158(2)	.340
Perc. ease of use - Purchase intention	**.152(.065)**	**.018**	**.189(.058)**	**.001***	.391(5)	.996	.974(3)	.807	2.586(2)	.274
Perc.usefulness - Attitude	-.164(.130)	.207	.162(.131)	.215	2.22(4)	.695	1.992(2)	.369	.549(2)	.760
Perc. usefulness - Purchase intention	.146(.079)	.063	-.057(.071)	.418	4.646(6)	.590	2.263(3)	.520	1.152(2)	.562
Perc. behavioral control - Purchase intention	.022(.084)	.792	-.005(.088)	.955	6.426(6)	.377	.807(3)	.848	.474(1)	.491
Perc. behavioral control - Purchase behavior	.008(.122)	.948	.035(.123)	.773	**15.280 (3)**	**.002***	.465(2)	.793	.038(1)	.845

Convenience - Purchase intention	-.061(.399)	.878	**-1.827(.45)**	**.000***	97.834(5)	**.000***	1.615(3)	656	n/a	n/a
System security - Purchase intention	-.295(.217)	.173	.031(.125)	.806	4,508(7)	.720	3,024(3)	.388	.127(2)	.939
Enjoyment - Purchase intention	-.108(.088)	.220	-.033(.094)	.729	5.914(6)	.433	.300(3)	.960	.450(1)	.502
Trust - Purchase intention	-.006(.069)	.930	-.003(.065)	.962	7,604(8)	.473	.374(3)	.946	1.030(2)	.597
Perceived risk - Purchase intention	-.08(.138)	.563	.103(.127)	.415	3,93(8)	.863	.974(3)	.808	1.189(1)	.276
Privacy concerns - Purchase intention	.048(.161)	.767	-.121(.097)	.212	**27.408(5)**	**.000***	**39.878(3)**	**.000***	n/a	n/a
Information quality - Purchase intention	.004(.138)	.975	.041(.131)	.756	1.259(5)	.939	3.057(3)	.383	2.256(2)	.324
Website design - Purchase intention	-.051(.111)	.645	**.356(.088)**	**.000***	10.715(5)	.057	5.221(3)	.156	2.007(1)	.157
Subjective norm - Purchase intention	.044(.081)	.588	.075(.092)	.412	1,36(5)	.929	2.015(3)	.569	.406(1)	.524
Innovativeness - Purchase intention	-.036(.106)	.736	.054(.093)	.563	1.359(5)	.929	1.141(2)	.565	.229(1)	.632
Previous experience - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Gender - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Age - Purchase behavior	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes: Qb = Q between levels of moderators; font in bold refers to significant effect; n/a = not applicable.
* Significant at 0.004 level (Threshold value of p with the Bonferroni method)

Table 5. Moderator analysis: Meta-analytic regression results of the difference between levels of categorial moderators

	Attitude – Purchase intention		Convenience – Purchase intention		Privacy concerns – Purchase intention		Perceived ease of use – Perceived Usefulness		Perceived behavioral control – Purchase behavior	
Research stream	**b (se)**	**p**	**b (se)**	**p**	**b (se)**	**p**	**b (se)**	**p**	**b (se)**	**p**
Marketing and communication	**.530 (.075)**	**.000***	**.368 (.119)**	**.002***	-.286 (.070)	**.000***	**.552 (.072)**	**.000***	**.356 (.067)**	**.000***
Economics	**.4110 (.181)**	**.023**	**3.800 (.340)**	**.000***	-.149 (.192)	.438	n/a	n/a	n/a	n/a
Business management	**1.069 (.094)**	**.000***	**.765 (.138)**	**.000***	**.430 (.140)**	**.002***	**.723 (.044)**	**.000***		n/a
Information technology and computer science	**.653 (.088)**	**.000***	.264 (.169)	.118	-.032 (.046)	.491	**.785 (.046)**	**.000***	-.029 (.138)	.836
Psychology and social science	**0.842 (.301)**	**.005**	n/a	n/a	n/a	n/a	n/a	n/a	.107 (.073)	.141
Others	n/a	n/a	.563	.097	-.151	.463	**.741**	**.00**	n/a	n/a

44

| | | | | | | (.339) | | (.206) | | **(.19 9)** | **2*** | | | | |

Product Type	b (se)	p	b (se)	p	b (se)	P	b (se)	p	b (se)	p
Tangible	-	-	-	-	.016 (.043)	.717	-	-	-	-
Intangible	-	-	-	-	**-.413 (.067)**	**.000***	-	-	-	-
Mixed	-	-	-	-	-.235 (.175)	.179	-	-	-	-
Unspecified	-	-	-	-	.125 (.060)	.059	-	-	-	-

Notes: font in bold refers to significant effect; n/a = not applicable.
* Significant at 0.004 level (Threshold value of p with the Bonferroni method)

Table 6 Correlation matrix and number of studies for the single relationships

	PU	PI	PB	ATT	PEOU	CON	SEC	RISK	PCO	ENJ	TRUST	INFO	WD	SN	GEN	AGE	EXP	PBC	INN
PU	1.00 (-)																		
PI	0.54 (55)	1.00 (-)																	
PB	0.21 (18)	0.47 (28)	1.00 (-)																
ATT	0.65 (24)	0.58 (52)	0.38 (14)	1.00 (-)															
PEOU	0.53 (57)	0.46 (57)	0.20 (12)	0.51 (14)	1.00 (-)														
CON	0.47 (7)	0.43 (21)	0.37 (8)	0.62 (4)	0.46 (7)	1.00 (-)													
SEC	0.23 (13)	0.24 (36)	0.02 (5)	0.15 (9)	0.28 (12)	0.25 (6)	1.00 (-)												
RISK	-0.15 (19)	-0.26 (54)	-0.14 (9)	-0.22 (15)	-0.19 (15)	-0.06 (7)	-0.07 (11)	1.00 (-)											
PCO	-0.12 (4)	-0.14 (31)	-0.11 (3)	-0.20 (3)	-0.23 (7)	0.07 (1)	0.17 (8)	0.27 (23)	1.00 (-)										
ENJ	0.36 (12)	0.41 (28)	0.20 (5)	0.60 (10)	0.41 (11)	0.58 (4)	0.42 (1)	-0.44 (2)	0.10 (0)	1.00 (-)									
TRUST	0.43 (30)	0.41 (74)	0.25 (8)	0.47 (29)	0.49 (26)	0.08 (4)	0.29 (25)	-0.27 (24)	-0.04 (23)	0.42 (9)	1.00 (-)								
INFO	0.51 (12)	0.41 (29)	0.09 (3)	0.52 (10)	0.60 (14)	0.39 (13)	0.16 (16)	0.12 (5)	-0.10 (5)	0.38 (7)	0.44 (11)	1.00 (-)							
WD	0.49 (4)	0.47 (27)	0.26 (4)	0.49 (9)	0.61 (13)	0.38 (5)	0.13 (14)	-0.33 (1)	-0.16 (8)	0.51 (10)	0.52 (13)	0.52 (27)	1.00 (-)						
SN	0.39 (13)	0.44 (38)	0.31 (11)	0.48 (22)	0.37 (14)	0.35 (5)	0.01 (5)	0.00 (11)	0.08 (2)	0.43 (2)	0.34 (8)	0.15 (2)	0.02 (2)	1.00 (-)					
GEN	-0.10 (2)	0.02 (14)	-0.03 (5)	0.01 (3)	-0.10 (1)	0.23 (2)	-0.05 (3)	0.10 (3)	0.02 (1)	-0.09 (5)	0.06 (5)	0.03 (4)	0.08 (3)	-0.01 (1)	1.00 (-)				
AGE	0.08 (2)	0.21 (11)	0.08 (4)	-0.02 (3)	-0.03 (1)	-0.06 (2)	-0.04 (2)	0.12 (2)	0.19 (1)	-0.02 (2)	-0.03 (4)	-0.15 (2)	-0.30 (1)	-0.04 (2)	-0.03 (9)	1.00 (-)			

45

EXP	0.34 (10)	0.35 (30)	0.46 (9)	0.38 (7)	0.46 (5)	0.36 (5)	0.21 (8)	-0.07 (6)	0.15 (2)	0.27 (3)	0.30 (14)	0.38 (4)	0.53 (2)	0.26 (7)	0.13 (5)	0.14 (5)	1.00 (-)		
PBC	0.42 (22)	0.40 (48)	0.31 (18)	0.45 (26)	0.58 (22)	0.34 (2)	-0.06 (9)	0.05 (7)	0.10 (1)	0.38 (4)	0.37 (14)	0.10 (8)	0.10 (7)	0.39 (34)	0.01 (2)	0.04 (3)	0.37 (10)	1.00 (-)	
INN	0.29 (3)	0.36 (23)	0.24 (12)	0.35 (5)	0.49 (1)	0.38 (5)	0.28 (3)	-0.10 (5)	0.10 (1)	0.35 (3)	0.35 (3)	0.32 (6)	0.35 (2)	0.32 (4)	-0.03 (1)	-0.04 (1)	0.33 (4)	0.36 (6)	1.00 (-)

Notes: PU = Perceived usefulness; PI = Purchase intention; PB = Purchase behavior; ATT = Attitude toward online shopping; PEOU = Perceived ease of use; CON = Convenience; SEC = System security; RISK = Perceived risk; PCO = Privacy concerns; ENJ = Enjoyment; TRUST = Trust; INFO = Information quality; WD = Website design; SN = Subjective norm; GEN = Gender; AGE = Age; EXP = Previous experience; PBC = Perceived behavioral control; INN = Innovativeness.

Table 7 Path Model Results (MASEM)

	Model	
Path	B	t
Attitude --> Purchase intention	.149 (.015)**	9.518
Purchase Intention --> Purchase behavior	.256 (.017)**	15.629
Perceived ease of use --> Perceived usefulness	.289 (.016)**	17.621
Perceived ease of use --> Attitude	.088 (.018)**	4.955
Perceived ease of use --> Purchase intention	.017 (.019)	.879
Perceived usefulness --> Attitude	.088 (.018)**	4.939
Perceived usefulness --> Purchase intention	.122 (.016)**	7.463
Perceived behavioral control --> Purchase intention	.096 (.017)**	5.499
Perceived behavioral control --> Purchase behavior	.159 (.016)**	9.659
Convenience --> Purchase intention	.066 (.017)**	3.841
System security --> Purchase intention	.073 (.016)**	4.391
Enjoyment --> Purchase intention	.016 (.018)	.870
Trust --> Purchase intention	.042 (.017)*	2.375
Perceived risk --> Purchase intention	-.082 (.016)**	-4.909
Privacy concerns --> Purchase intention	-.055 (.016)**	-3.416
Information quality --> Purchase intention	.095 (.017)**	5.402
Website design --> Purchase intention	.104 (.018)**	5.794
Subjective Norm --> Purchase intention	.129 (.016)**	7.666
Innovativeness --> Purchase intention	.045 (.016)**	2.680
Previous experience --> Purchase behavior	.133 (.016)**	8.091
Gender --> Purchase behavior	-.021 (.016)	-1.313
Age --> Purchase behavior	-.053 (.016)**	-3.288
χ^2 (d.f.)	1732.014 (44)**	
CFI	.897	
GFI	.956	
NFI	.895	
SRMR	.059	
RMSEA	.099	

Relationship	Mediator	Direct Effect	Indirect Effect	Total Effect
Perceived usefulness --> Purchase intention	Attitude	.122**	.013**	.135**
Perceived ease of use --> Purchase intention	Attitude	.017	.052**	.069**
Perceived ease of use --> Attitude	Perceived usefulness	.088**	.025**	.113**
Perceived behavioral control --> Purchase behavior	Purchase intention	.159**	.025**	.184**

*p<.05
**p < .01
Notes: n (harmonic mean) = 3,799; CFI = Comparative Fit Index; GFI = Goodness of Fit Index; NFI = normed fit index; SRMR = Standardized Root Mean Residual; RMSEA = Root Mean Square Error of Approximation.

Table 8 Key findings and managerial implications

Key findings – Theoretical implications	*Managerial implications*
DRIVERS	
Consumer-Channel Interaction	
- The validity of TAM and TPB are confirmed also in e-commerce context. - The effect of perceived ease of use on intention is totally mediated by attitude. - System security, convenience and trust have a positive influence on intention. - In the MASEM analysis, the effect of enjoyment on intention is not significant. - Perceived risk impacts negatively on intention. - Meta-analysis does not confirm the influences of privacy concern on intention.	- Companies should reinforce the perception of ease of use and usefulness of online commerce to increase the intention to use the online channel. - Online operators should increasingly leverage the advantages offered by online commerce in terms of convenience, working on the relationships with their customers to develop a bond of trust and break down barriers related to privacy. - Marketing managers must convey the message of the security of the channel, payment systems, and delivery and return of goods. The consumer must be aware of the quality and safety achieved by the services offered and the advantages of the online channel over the physical one.
Website characteristics	
Information quality and website design exert a positive action on intention.	- Companies must pay attention to the website design and the quality of information provided as these are important elements in the purchase decision-making process. - Marketing strategies should carefully design the website atmosphere, evoke interest in the commercial website, and emphasize promotional activities.
Social influence	
The ability of subjective norm to acts on the intention is confirmed by analysis.	- Particular attention must be paid to word of mouth among users. - Marketing managers could use social communities to stimulate positive word of mouth among users and, at the same time, monitor the opinions and experiences of their customers.
Consumer Characteristics	
- Innovativeness positively acts on purchase intentions. - Previous experience is a direct antecedent of purchase behavior. - Age seems to have a significant effect on purchase behavior, but gender is irrelevant.	- Given the importance of consumers' previous experiences, companies should identify effective ways to attract the consumer, encourage them to purchase, and ensure that they have a pleasant and positive experience. - Companies should monitor their customer database to adapt offers and campaigns based on their characteristics, such as age.
OUTCOMES VARIABLES	
- Attitude is the strongest predictor of purchase intention. - The link between purchase intention and behavior is significant and relevant.	- Online operators have to focus on the factors that could increase attitude toward online commerce, such as perceived usefulness. - Fostering a positive attitude means increasing purchasing intention and, consequently, purchasing behavior.

MODERATORS

Culture

- Hofstede's cultural dimensions exert different influences on various relationships:
  - Power distance positively moderates the convenience–purchase intention and innovativeness–purchase intention relationships.
  - Individualism negatively moderates the privacy concerns–purchase intention relationship.
  - Uncertainty avoidance positively moderates the perceived usefulness–purchase intention and the subjective norm–purchase intention relationships.
  - Indulgence negatively moderates the privacy concerns–purchase intention, website design–purchase intention and information quality–purchase intention relationships.
  - Masculinity negatively moderates the system security–purchase intention and information quality–purchase intention relationships.
  - Long-term orientation has no moderating effect.

Years

- The link that trust, website design, and perceived behavioral control have with purchase intention grew over the years.

Type of product

- The effect of privacy concerns on purchase intention decreases for intangible product categories.

- Marketing managers must be able to adapt the planning of activities, design of the website, the type of information provided, and ways to communicate in the context of the culture of the countries in which they are present.
- For example, in countries characterized by a strong uncertainty avoidance, the role played by the subjective norm on purchase intention is greater. Therefore, more attention must be paid to word of mouth among users.
- Companies must monitor and strengthen the trust established with their customers because it is a driver whose importance has grown over time.
- Website design is increasingly relevant in the decision to buy online. This is why companies need to create a user-friendly website, and an intuitive interface to facilitate navigation and obtain a positive user experience of their web pages.

Table 9 Future research agenda

VARIABLES

- Convenience highly affects online purchase intention. Given that shopping on the Web provides convenience in several ways (i.e., reduced physical effort, expanded store hours, many payment methods, efficient checkouts), future research can investigate which of these ways are more relevant in the consumer's decision-making process.
- Our findings suggest that privacy concerns have a negative but not significant effect on purchase intention, in contrast with the literature. Further studies are necessary to deepen the knowledge on this relationship.
- Website design is a key driver of online purchase intention. For future research, scholars can investigate the effectiveness of visible and audible elements of the website, such as aesthetic appeal, web atmospherics, and design quality, which create positive effects and favorable consumer shopping experiences.

MODERATORS

- Given the relevance of previous experience on purchase behavior in the online context, in empirical studies, the level of consumer experience could be used as moderator variable on the relationships between drivers and outcome variables (purchase intention, purchase behavior, and continuance intention).
- Our meta-analysis considered only traditional devices (i.e., desktop) as tools for online shopping. Given the rise of mobile shopping, future research may consider the moderating role of the type of device in changing the effect of the antecedents of shopping behavior in the online context.
- This study considered trust in general terms, without distinguishing among the recipients of trust (channel, store, retailer). Therefore, scholars should examine the moderating role of different types of trust (trust in

the store, trust in the retailer, trust in the channel) on the relationships between drivers and outcome variables.

49

METHODS

- Studies on online shopping mainly adopt surveys methods to collect data and test the relationships among variables. Scholars may focus more on experimental research to investigate the effects of drivers on the purchase decision-making process in the online context.
- Since contributions are largely based on cross-sectional studies, future research should identify dynamic effects using longitudinal data that provide more insightful information considering the effect of time on the drivers–behavior relationships.