



# Managing entrepreneurs' behavior personalities in digital environments: A review

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## Abstract

During the present-day digitization, entrepreneurs can make use of the great connectivity offered by the Internet. The digital entrepreneur is just a click away from any information needed, buying products, exchanging opinions on a public level, and making use of many other functions offered by the network. This power given to the entrepreneurs is of utmost importance for the good achievement of concrete actions according to their personality types and for relevant success in their entrepreneurial projects. However, the differences between digital entrepreneurs and users' personalities and traits have made marketers aware of having to adapt their actions according to what consumers demand. In addition to keeping abreast of trends and dominant patterns, entrepreneurs should be aware of the personalities and the influence they exert on users' behavior. In this context, the present study explores the influence of different digital entrepreneurs' personalities on their digital behavior and usage processes. In order to identify the different roles and personalities adopted by entrepreneurs in digital environments, in this study, we undertake a systematic literature review. Based on the results, we classify 7 personalities of digital entrepreneurs that directly influence their relationship with the environment and with brands, as well as companies with digital presence. In addition, information about five classic personalities (also known as Big Five) of the digital entrepreneur are analyzed. The paper concludes with a discussion of the different processes that can be followed to find out what type of role each entrepreneur belongs to. We also discuss the issue of personal data and privacy issues on the Internet.

**Keywords** Entrepreneurs' behavior · Digital entrepreneurs · Digital personalities · Entrepreneurs

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## Introduction

While it has always been important to understand who users interact with, in the present-day competitive world, this need has become even more imperative (Saura et al., 2021a, b). In the domain of business, it is of vital importance, for the success of an organization, to understand what influences entrepreneurs' or consumers' satisfaction to take relevant actions. In recent years, technology coupled with innovation processes has led to the emergence of new consumer trends (Alam & Patwary, 2021), as well as promoted digital development (Desai, 2019), creation of digital communities (von Briel & Recker, 2017), use of social networks (Luqman et al., 2021), among other aspects (Huizingh et al., 2011). All these trends jointly determine and directly affect how entrepreneurs relate within the online world (Tu & Akhter, 2022).

In this paradigm, which has a direct relationship to research on human psychology and marketing, there is a well-known classification of personality traits or factors into the so-called Big Five (Leutner et al., 2014). This classification model, which has been widely used in psychology, analyzes the composition of five personality dimensions in a broad sense (Roccas et al., 2002). Within this classification, the first factor is "Openness to experience", which refers to open-minded, imaginative, curious individuals, with a preference for adventure, emotions, creativity, and a taste for variety. Secondly, there is the so-called "extraversion" factor that encompasses individuals with a high level of sociability, a pronounced connection with the external world, and a tendency to avoid loneliness. The third factor is called "conscientiousness/scrupulousness", also known as conscientiousness, this is typical of individuals with good levels of self-control, and who are good at planning, organizing, and executing tasks. Fourth, there is the factor "cordiality, friendliness, or agreeableness" which refers to people who reflect on their intrapersonal tendencies, are trustworthy, obedient, and conciliatory in attitude. Finally, there is the trait "emotional instability", which is typical of people with certain levels of anxiety, worry, and lack of homogeneity in behavior.

Both marketing companies and entrepreneurs can use this classification to successfully implement their actions or strategies aimed at their specific audiences (Weinmann et al., 2016). This has been a useful and valuable resource for years; however, with technological advances and innovation, as well as the emergence of the Internet, there are new needs to know users with whom companies and entrepreneurs with a digital presence relate have emerged. In a connected ecosystem where a large amount of information is generated daily, the Internet and social networks have become optimal systems for exploring the world (Ribeiro-Navarrete et al., 2021), creating knowledge and extracting ideas on both traditional and new topics (Tandon et al., 2021).

In these settings, it is important to apply the theory of personality traits in the domain of digital entrepreneurship. The digital entrepreneur is becoming increasingly aware of what s/he is worth within the network (Malgieri & Custers, 2018). Indeed, today's digital entrepreneurs are increasingly active, impatient, willing to invest a lot of time on online searching and sharing information of all kinds, be it

news, promotions, products, opinions ( ). Accordingly, it is necessary to analyze which traits are determinant in the entrepreneurs' digital environments. Therefore, the main aim of the present study is to explore different personalities of the digital entrepreneurs. The main research questions addressed in the present study are as follows: RQ1—“What are the personalities of digital entrepreneurs?” and RQ2—“Does digital entrepreneurs' behavior affect how entrepreneurs develop their projects online? To answer these two questions, we formulate the following objectives:

- To create knowledge about digital entrepreneurs' behavior;
- To identify new perspectives on the boundaries of online entrepreneurs' behavior and personalities;
- To establish guidelines for the use of digital personality classification models for entrepreneurs;
- To develop new digital entrepreneurs' behavior personalities in digital environments.

The originality of this study lies in a review of relevant scientific literature focused on digital entrepreneurs' personality classifications, an area that requires constant updating. An important contribution lies in the fact that, in addition to filling a gap in the literature, the results provide significant implications for companies and organizations with a digital presence. Methodologically, as will be specified below, we will conduct a systematic literature review following the approaches previously proposed by Carvalho et al. (2019). Based on the results, the theoretical implications of digital personalities in consumption patterns and the relationship in the digital environment will be discussed. In addition, we will also discuss theory building based on the most current major articles and relevant papers on the relationship between the studied topics.

The remainder of this paper is structured as follows. Section 2 presents an in-depth review of the relevant literature on the topic. Section 3 provides detail on the methodology, while section 4 reports the results. Section 5 provides a discussion of the topic. Finally, section 6 contains the conclusions, theoretical and practical implications, as well as the limitations of the present study.

## Theoretical framework

The digital world and the Internet have become integral parts of the social life of individuals, both on personal and professional levels; therefore, entrepreneurs' behavior is one of the factors that any marketing expert should handle to perfection in order to successfully develop projects (Pereva et al., 2020). One of the clear objectives of marketing is to sell a product or a service to a specific audience, and the only way to achieve this is by learning customers' patterns, getting to know their needs, and analyzing what actions they perform at each moment of the process. Said differently, digital marketing is an indispensable tool to obtain a better understanding and interpretation of what happens on the virtual plane (Bala & Verma, 2018).

It is a modern, dynamic, and constantly evolving tool that every company can use to improve its performance and achieve its objectives.

In the past, understanding the behavior of human beings in relation to organizations was not a relevant factor, or at least one that was of paramount importance. Today, this has changed, and understanding human behavior has become an important aspect for all those who want to achieve good results (Skalicka et al., 2022). Every day, users or consumers become much more demanding in terms of the approach that companies use when selling or interacting with them. In this context, it is necessary to be very attentive to their attitudes, interactions with each other and digital media, movements when making a purchase, as well as preferred channels to communicate (Godwin, 2019).

Classic marketing differs from digital marketing in that the latter puts the network user as the main actor. The power no longer belongs only to marketing departments and their executives; instead, the entrepreneurs set guidelines and directives with their behaviors (Ullal et al., 2021). Due to its constant evolution, digital marketing is a challenge that highlights the interaction between human and computer, described with the acronym HCI (Human Computer Interaction) (Saura et al., 2021a, b). This area of study blends computer engineering, mobile systems, user experience, and context (Balaskas & Rigou, 2021).

Today, it is essential to understand the impact of consumer behavior on every factor of life, including cultural, economic, technological, and routine changes for people (Ebrahimi et al., 2022). In addition, understanding who the specific target audience of each organization facilitates the marketing work through creating an offer for a product, service or good that better fits the needs, tastes, and expectations of the target audience (Cartwright et al., 2021). By adapting the strategy, communication, and tactics to reach a specific market, a company can achieve the ideal of reaching and keeping itself in the minds of its potential customers, who will then feel that they relate to the organization and turn to it when they need any of the goods or services it offers (Sahu et al., 2020).

At present, consumers are rapidly changing. With constant technological innovation, changes in mentality and routine (Mirsch et al., 2017), as well as new formulas for work and life, the customers no longer wait for brands, have a defensive position, or indulge in impulse buying (Bao et al., 2022). Today, owing to the advent of the digital world, people freely share their opinions about a companies, products, or service via the Internet (Mackey et al., 2015). It is already a necessity that they can give their opinions about the products they purchase. This is called omni-channel, which is a great opportunity for entrepreneurs to obtain knowledge and extract useful insights for their projects (Bijmolt et al., 2021).

To reach this point, some phenomena have had to occur that explain, to some extent, current trends in consumer behavior (Song, 2019). On the one hand, there is the so-called Google effect, which refers to the impact that this search engine has had on the society. The Google effect is responsible for the great capacity to obtain necessary information with a very simple action of typing what we are interested in the search engine. The number of options that this tool gives directly influences the market, since it can offer all kinds of information a user wants to show and make known (Sparrow et al., 2011). From this source, digital entrepreneurs acquire ideas,

information, and specific guidelines for both users and the organizations that, when capable of working with SEO strategies, can create a better positioning in the network (Saura, 2021). On the other hand, there is the effect of social networks (Saxton & Wang, 2014). The creation of social networks has dramatically changed communication in the society on both personal and business levels. As social networks are part of people's daily lives, organizations and brands have been gradually taking positions and entering this ever-changing world that offers many opportunities (Ullal et al., 2021).

Social networks are now a determining factor in any marketing department, and, when used properly, they can boost sales of any product in record time (Ebrahimi et al., 2022). Social networks are a great alternative in terms of advertising and promotions of any brand, as, with the large amount of information obtained from users, entrepreneurs can also make a much more segmented strategy, direct actions towards a specific audience, as well as get much closer to the target audience (West & Bogers, 2014). In addition, social networks join all that Big Data can offer today (Amado et al., 2018), such as possibility to get and work with a large amount of valid, contrasted, and useful information to understand target customer groups that an organization wants to address and their needs and expectation. In addition to being a great place to know who the entrepreneurs are, social networks are very dynamic and open in terms of freedom of expression, so users can freely share their opinions about brands and their products and services (Sahu et al., 2020).

Finally, the third phenomenon that has influenced the construction of digital entrepreneurs' behavior is the service effect (Auzair & Langfield-Smith, 2005). Service delivery platforms initiated considerable changes in terms of building a business model that implied a more human advance for brands worldwide. Owing to these service applications, many other businesses, which are mediated by digital systems that allow the exchange of information between consumers and entrepreneurs or vice versa, have emerged (Schneider et al., 2018). With service being a big part of the organizational culture of businesses and brands around the world, apps or platforms offering services changed the game for all entrepreneurs to achieve a successful development of their projects.

There are certain characteristics that define the new way of consuming (Minami et al., 2021) and that any company in digital media should consider keeping up with the needs and desires of its target audience. The focus on customer experience is one of the most relevant points, since advertising and the way in which products or services are sold or offered has a great impact on performing an action. Despite depersonalization promoted by the digital world, the current trend is precisely to demystify digital personalities and create synergies of trust between companies and consumers (Boyd & Pennebacker, 2017). Overall, the quality of advertisements or product prices are less relevant factors unless they are coupled with a satisfactory customer experience (Neumeyer et al., 2020).

This is where another determining aspect of the new characteristics that define the current model comes in: the customer has the power. What may be a classic definition is today more important than ever. With the social networks, the revolution of the real power of the customer has taken on more significance than ever (Shafer et al., 2005). In the digital world, customers always have the power and have the

final say, which is why, in the digital world, there are so many options to involve consumers in every step of their customer's journey. Finally, the humanizing trend should also be noted, which marks a shift from the use of very formal language and abundance of corporate and technical terms to a more colloquial, dynamic, and natural language. This trend enhances creating links and generating relationships with the audience (Mauri et al., 2018).

Of note, digital personality is an accurate reflection of not only how digital consumers and entrepreneurs behave and feel, but also of what actions they perform regarding their personal information and how much value they assign to their data protection (Da Veiga & Martins, 2015). Although, in recent years, several laws have been introduced to protect Internet users, there is a great deal of general ignorance about such a specific and technical subject, even though entrepreneurs are increasingly informed about the use and handling of their personal data and digital identity. All this means that their actions can be modified, or that there is a change in the hierarchy of the type of information they are willing to share on the Internet.

## Methodology

In the present study, to ensure that our research is carried out in a rigorous, transparent, and reproducible manner, we conducted a systematic literature review. Overall, SLR is a type of literature review that collects and critically analyzes all relevant papers through a rigorous systematic process. It is a systematic method to identify, evaluate, and interpret the work of different researchers, academics, and professionals in the chosen field (Rother, 2007). This includes studies that collect information previously generated by other authors and come from already published articles evaluated through a meta-analysis.

In general, for an optimal research results, a systematic review should be conducted in a rigorous and objective manner, and strategies that limit errors are frequently used (Noble et al., 2019). Some of these strategies include the search for reproducible and explicit selection criteria (Leonelli, 2018), the exhaustive search of all relevant articles on the topic, the evaluation of the synthesis, and interpretation of the results (Papadopoulos et al., 2019). In this type of research, quantitative and qualitative viewpoints are used, and data are collected through primary studies using mathematical and methodological tools to create a combined effect to conclude with a synthesis of the generated evidence. One of the strengths of a systematic review is that it constitutes an efficient research design, is consistent in the generalization of the results, is precise in estimation and, as argued by Saura (2021), offers a strict evaluation of the published information. Furthermore, if the aim is to answer the same question by integrating different studies, the sample size can be increased, which, in turn, increases statistical power (Dickersin & Berlin, 1992).

Our aim was to identify which personality components determine entrepreneurs and online users' behaviors. Our second goal was to provide a comprehensive summary of the available literature. The documents were initially retrieved from one of the most relevant bibliographic databases in the field of Social Sciences: Web of

Science (WoS); we additionally searched Scopus, AIS Digital Library, and IEEE Access. To rule out the subjective bias, a keyword search of the bibliography was used.

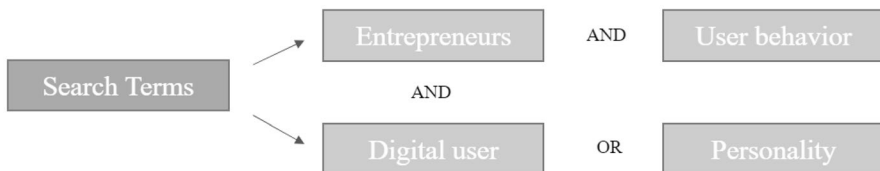
The search focused on the articles published in peer-reviewed journals in the WoS, Scopus, AIS Digital Library, and IEEE Access database. A structure like the one proposed by Saura (2021) was followed; specifically, the key terms of the research were first identified, and then the relevant searches were performed. As shown in the Fig. 1, the search terms were “entrepreneurs” AND “user behavior” AND “digital user” OR “personality”.

The search focused on papers published in the period from 2020 to the present, carrying out the data search in April 2022. The search returned a total of 2,651 related articles, of which 177 met the established criteria. In this way, we obtained more rigorous, accurate, and complete results. Table 1 provides further detail on all publications included in the final sample. Furthermore, the details of all articles, including the title, abstract, and keywords, were thoroughly reviewed to verify that the documents were related to our topic. In cases of doubt, or of greater interest in a specific article, the entire document was read, and the most interesting parts were extracted. In this way, all documents that were less relevant for the topic were excluded. The PRISMA diagram in Fig. 2 shows the search and filtering progress (Table 2).

The obtained results were then classified according to the consequences or influence that these types of personalities have on online entrepreneurs and users’ behavior, and theoretical and practical implications of the results for companies, businesses, and organizations with an online presence were analyzed.

According to the studies mentioned above, in the present study, we conducted a literature review to classify relevant studies in the most relevant databases. The terms “entrepreneurs” and “user behavior” were used to determine which of the studies addressed our research question. When the results were inconclusive, “user behavior”, “entrepreneurs’ behavior” OR “personality” were used. The results were then sorted and filtered according to previously established selection criteria in order to select relevant articles, conferences, or book chapters. The articles were then carefully studied to determine whether they contained terms relevant to our topic. In this way, all studies containing irrelevant specifications were excluded.

Figure 2 shows the step-by-step development of the methodology. First, using four databases (Web of Science, Scopus, AIS Digital Library, and IEEE Access), we



Source: The authors

Fig. 1 Search terms in databases

**Table 1** Search terms used and results

Database	Web of Science (WoS), Scopus, AIS Digital Library, and IEEE Access	
Data range	2020—2022	
Search date	April 2022	
Search terms	“entrepreneurs” AND “user behavior” AND “digital user” OR “personality”	
Initial number of documents	2,651	
Filtered process	Research areas: Computer science Inclusion criteria: Articles, Open Access	Duplicates Author not identified Not related to the topic
Final number of documents	177 (18)	

Source: The authors

conducted the searches related through two key terms—“entrepreneurs” AND “user behavior” OR “digital user”, with which a total of 2,651 articles were found. Then, the key word “personality” was used to focus the results to a greater linkage with our research objective. Next, the results were filtered (see Table 1), leaving only the articles published between 2020 and 2022, Open Access, within the category of Computer Science. The results were then analyzed by title, abstract and keywords. At this stage, 2,460 articles were eliminated as irrelevant to the objective of our study. Finally, 18 potential articles were extracted.

## Results

The results of this systematic literature review shed light on this very current and necessary topic in order to understand what entrepreneurs’ personalities are like (RQ1), and how different personalities affect their digital projects (RQ2). The emergence of new relationships between entrepreneurs and users as a result of the spread of Internet and its multiple possibilities for two-way communication have given risen to the need to attend to these relationships and work to make them maximally efficiently (Neri & Calderón, 2019). This involved tracking different multifaceted behaviors that digital users and entrepreneurs may have (Vamosi et al., 2022), as well as click streams, geolocation, recording and leveraging the data they generate, and so forth. Today, companies become increasingly interested in optimally using these data; indeed, many of the organizations that store these data do not know how to treat, analyze, and work with them, thus losing an important part of all positive things that Big Data can offer (Márquez et al., 2018).

All this information that can be used to segment entrepreneurs and look for those behavioral similarities can be measured with novel technologies such as the generic framework based on deep neural networks to quantify the similarity of ordered frequencies in observed event histories (Vamosi et al., 2022). Another new technology is the model proposed by Feng (2022), an e-commerce data prediction and analysis method based on the GBDT deep learning model. This



**Table 2** Included articles

Article	Journal	Main goals	Category
Alojail and Bhatia (2020)	<i>IEEE Access</i>	<ul style="list-style-type: none"> <li>■ To define OBA as online profiling</li> <li>■ To analyze OBA as a personalization technique that helps companies to publish appropriate messages for different customers and entrepreneurs using technology</li> <li>■ To show a remarkable benefit by integrating commercial and technological strategies</li> </ul>	Computer Science Information Systems
Aylett et al. (2017)	<i>IEEE Transactions on Affective Computing</i>	<ul style="list-style-type: none"> <li>■ To analyze synthetic expressions according to personality traits and the naturalness of the Big Five</li> <li>■ To develop implications for speech synthesis and system type selection for applications such as personal assistants and embedded conversational agents where it is important to develop an emotional relationship with the user, the brand and entrepreneurs</li> </ul>	Computer Science Cybernetics
Balaskas and Rigou (2021)	<i>Information</i>	<ul style="list-style-type: none"> <li>■ To analyze HEXACO personality traits as predictors of consumers' advertising recognition ability</li> <li>■ To identify the Big Five model for predicting digital user and entrepreneurs' responsiveness</li> <li>■ To correlate consumers with high extraversion scores with high rates of correlation to advertising</li> </ul>	Computer Science Information Systems
Ban and Lee (2021)	<i>Electronics</i>	<ul style="list-style-type: none"> <li>■ To analyze how to improve entrepreneurs' and users' retention on the digital platform using a recommender system</li> </ul>	Computer Science Information Systems

Table 2 (continued)

Article	Journal	Main goals	Category
Cheng et al. (2021)	<i>European Journal of Information Systems</i>	<ul style="list-style-type: none"> <li>■ To explore how the various types of information suggested to a user can influence his/her behavior</li> <li>■ To explore how digital entrepreneurs and users' cognitive appraisals are influenced and to what extent their participatory behavior will be affected</li> <li>■ To develop privacy control that has a positive effect on perceived benefits and to encourage people to use the platform</li> <li>■ To identify the Big Five model as the starting point for more complex studies</li> </ul>	Computer Science Information Systems
Christian et al. (2021)	<i>Journal of Big Data</i>	<ul style="list-style-type: none"> <li>■ To develop a new prediction using a multi-model deep learning architecture combined with multiple pre-trained language models such as BERT, RoBERTa, and XLNet</li> </ul>	Computer Science Theory Methods
Feng (2022)	<i>Data Analysis and Prediction Modeling Based on Deep Learning in E-Commerce</i>	<ul style="list-style-type: none"> <li>■ To extract 107 features that can reflect user and entrepreneurs' behavior and build the GBDT model</li> <li>■ To develop a method for prediction and analysis of e-commerce data based on the GBDT deep learning model</li> </ul>	Computer Science Software Engineering
Hacker and Riemer (2021)	<i>Business and Information Systems Engineering</i>	<ul style="list-style-type: none"> <li>■ To identify enterprise social networks as an important tool for informal interactions</li> <li>■ To develop a process-based method for identifying user and entrepreneurs' roles from data</li> </ul>	Computer Science Software Engineering

Table 2 (continued)

Article	Journal	Main goals	Category
Hou et al. (2021)	<i>WHICEB 2021 Proceedings</i>	<ul style="list-style-type: none"> <li>■ To explore the use of data to derive metrics that characterize users and entrepreneurs' participation behavior, message content, and network structure positions</li> <li>■ To define three categories of options for designing digital content</li> <li>■ To explore how these design choices enhance the engagement of different users and entrepreneurs</li> <li>■ To identify digital marketing content in user engagement behavior</li> </ul>	Economics
Jabeen et al. (2020)	<i>Applied Network Science</i>	<ul style="list-style-type: none"> <li>■ To explore what can influence the responses and behaviors of digital users and entrepreneurs</li> <li>■ To develop a complex adaptive mental network model of a narcissist to see how popularity may adaptively influence their behavior</li> </ul>	Computer Science Theory Methods
Pavan Kumar and Gavrilova (2021)	<i>IEEE Transactions on Computational Social Systems</i>	<ul style="list-style-type: none"> <li>■ To explore which users, reveal aspects of their personality through the content they share with their followers on social networks and through patterns in their interactions on online networking platforms</li> <li>■ To examine the power of emerging natural language processing (NLP) methods for analyzing social network activity</li> <li>■ To develop a lingual-stylistic personality trait assessment (LPTA) system to estimate the personality traits of Twitter users</li> </ul>	Computational Science

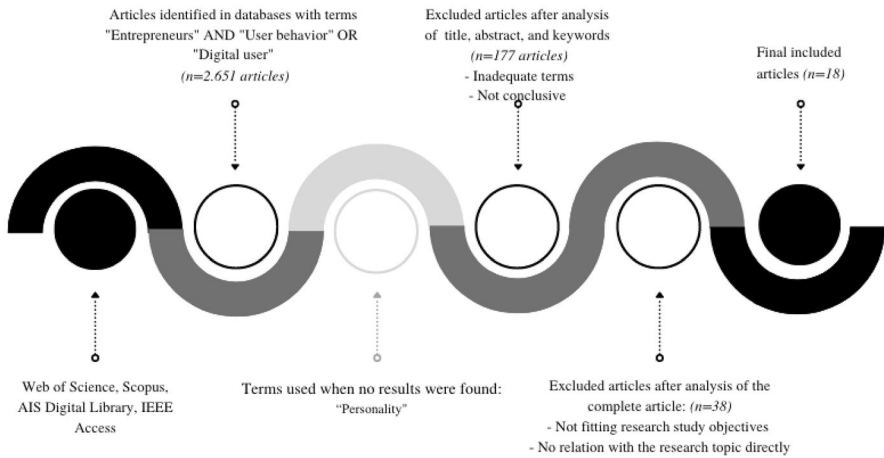
Table 2 (continued)

Article	Journal	Main goals	Category
Monaci and Cerisetti (2021)	<i>Qwerty</i>	<ul style="list-style-type: none"> <li>■ To discuss the characteristics of the false self-online</li> <li>■ To explore how a false self presents itself online, including the different types of false self, as well as possible motivating factors</li> </ul>	Computer Science Interdisciplinary Applications
Neumann et al. (2020)	<i>53<sup>rd</sup> Hawaii International Conference on System Sciences</i>	<ul style="list-style-type: none"> <li>■ To analyze progress in the understanding of what end-user enrollment really is</li> </ul>	Computational Science
Nguyen et al. (2019)	<i>IEEE Transactions on Visualization and Computer Graphics</i>	<ul style="list-style-type: none"> <li>■ To explore the development of end-user acquisition systems</li> <li>■ To identify the visual analytics approach to help analysis, gain a comprehensive understanding of user and entrepreneurs' behavior on multiple levels</li> <li>■ To design a visual analytics framework to support user analysis and the numerous activity sessions they perform within digital applications</li> </ul>	Computer Science Software Engineering
Papangelis et al. (2020)	<i>ACM Transactions on Computer-Human Interaction</i>	<ul style="list-style-type: none"> <li>■ To explore whether, with the help of interactive visual hierarchical user profiles, analysts can effectively perform exploratory and investigative analysis</li> <li>■ To identify expressions of territoriality as a main reason why users and entrepreneurs modify their behaviors when interacting with social networks</li> <li>■ To explore the perceived power structures facilitated by claims of identity over a virtual area</li> </ul>	Computer Science Information Systems

Table 2 (continued)

Article	Journal	Main goals	Category
Pretiliã et al. (2021)	<i>Behavior and Information Technology</i>	<ul style="list-style-type: none"> <li>■ To analyze the encouragement to obtain user feedback on digital engagement</li> <li>■ To investigate how digital tools can offer inclusive ways for people to participate in social process according to their profiles</li> </ul>	Computer Science Cybernetics
Shmakov (2021)	<i>Journal of Institutional Studies</i>	<ul style="list-style-type: none"> <li>■ To define the factors that determine behavior and decision making</li> <li>■ To develop a systematization of cognitive distortions</li> <li>■ To propose an overview of the use of nudges</li> </ul>	Economics
Vamosi et al. (2022)	<i>Decision Support Systems</i>	<ul style="list-style-type: none"> <li>■ To identify a generic framework based on deep neural networks for quantifying sequence similarity between digital users</li> <li>■ To develop the methodology to cluster substrings and reclassify users and entrepreneurs based on their observed clickstream behavior</li> </ul>	Computer Science Information Systems Computer

Source: The authors



Source: The authors

Fig. 2 PRISMA

model was proposed as a response to the low efficiency of traditional data analysis methods for massive analysis in e-commerce. The GBDT model is an iterative decision tree algorithm and consists of different decision trees. As these technologies arrive and are implemented, there emerges the need to work with previous classifications that can shed light on this paradigm.

Personality determines how Internet users act and interact with companies. Accordingly, empirical research on the impact of digital marketing content with user engagement behaviors (Hou et al., 2021) is essential to categorize and obtain different options to design digital content that enhances online consumer and entrepreneur engagement.

These options for successful designs can be broadly classified into three groups: (1) fundamental elements (e.g., the theme and the emotional association) of the content; (2) structural elements (e.g., the use of the first person and segmentation); and (3) presentation elements (e.g., images, videos, etc.). In psychology, the theory of personality traits refers to the attempts to better describe different personalities. Such traits include behavioral patterns and emotional patterns, in addition to the previously established personality types, all of which provide a theoretical basis. A common widely used model is the theory of five personality factors. Other types of personalities proposed in previous research are summarized in Table 3.

The seven personalities mentioned in Table 3 can be decisive at the time of developing a strategy or knowing how to address the most recurrent type of user. In what follows, we present further detail on each of these types. (i) Altruistic: this type of personality is characterized as informers, i.e., entrepreneurs who share information with others since they consider that their findings can also be important for their acquaintances; (ii) Professionals: in this case, we are dealing with people who share specific information about their professional facet and

**Table 3** The identified entrepreneurs' personalities

Personality	Main characteristics	Authors
Altruistic	Present interesting information for them and their circle	Ban and Lee (2021) Pavan Kumar and Gavrilova (2021)
Professional	Share information about their work	Hou et al. (2021) Pavan Kumar and Gavrilova (2021)
Boomerang	Post for feedback	Aylett et al. (2017) Jabeen et al. (2020)
Selective	Segment contacts for preferences	Nguyen et al. (2019) Dalpé et al. (2019) Jabeen et al. (2020)
Connector	Share all kinds of information, the best for brands	Aylett et al. (2017) Ban and Lee (2021) Hou et al. (2021)
Rebel	Believe they are at the forefront of everything	Ban and Lee (2021) Pavan Kumar and Gavrilova (2021), Monaci and Cerisetti (2021)
Troll	Seek to harm the brand	Nguyen et al. (2019)

Source: The authors

use the Internet to make their work known. It is their own marketing strategy, consciously or not, to expose themselves to the professional world; (iii) Boomerang: these entrepreneurs publish content expecting a return; thus, they seek the response from their contacts in the network, either through views, comments, likes, and so forth; (iv) Selective: this type of personality is the most exquisite, as such entrepreneurs make a great selection of contacts with whom they have a virtual relationship and always consider sharing certain interests or preferences. Entrepreneurs of this type of focus on sharing information specifically with that segmented group they form; (v) Connectors: in this case, entrepreneurs do share information or opinions of all kinds, they are not limited to a specific group or to specific interests. Entrepreneurs of this type are very attractive for companies and brands, as they tend to have a greater reach and a greater number of followers; (vi) Rebels: these entrepreneurs are the most selective entrepreneurs and believe they are at the forefront in many types of topics. Finally, (vii) Trolls: these entrepreneurs criticize brands or companies, add uncomfortable and harmful comments or opinions, and do not seek to provide constructive criticism. This group is most problematic for marketing departments, since it is not possible to have a great control of what these entrepreneurs do on the Internet.

Many entrepreneurs seek to become more connected with their users and employ the network as a means of communication and sales; in addition, they look for their market niche and address it in a much more direct way than years ago, i.e., when

**Table 4** Types of digital entrepreneurs

Type	Main features	Authors
Broad communicators	Possess digital knowledge and take less risk-averse actions	Aylett et al. (2017) Balaskas and Rigou (2021) Costa and McCrae (1992)
Core participants	Seek to interact in a simple way	Aylett et al. (2017) Balaskas and Rigou (2021) Costa and McCrae (1992) Zuckerman et al. (1993)
Exclusively buyers	Search, research, and buy digitally	Christian et al. (2021) Costa and McCrae (1992) Dalpé et al. (2019)
Passive users	Have less time to use of the Internet	Balaskas and Rigou (2021) Costa and McCrae (1992) Hacker and Riemer (2021)
Proactive guardians	Are aware of the digital market and cautious	Aylett et al. (2017) Balaskas and Rigou (2021) Christian et al. (2021) Costa and McCrae (1992)

Source: The authors

communication channels were more rigid and distant. Knowing what type of personality an entrepreneur has can inform an organization about his/her tastes, interests, and needs. In addition, today's users are active parts of the brand (Kokina et al., 2021), rather than passive receivers. Therefore, it is important to attend to them and make them feel part of the brand's community.

In addition to the classification, there are other types of digital entrepreneurs. Table 4 shows the classification of 5 digital consumer personalities, Big Five Model (Zuckerman et al., 1993) developed by Costa and McCrae (1992):

As can be seen in Table 4, the broad communicator is defined as the one who tends to engage in less risk-averse online activities, has extensive digital knowledge, and acts accordingly. Furthermore, core entrepreneurs seek a beneficial return from other brands, i.e., when they share information, they do so to benefit from a promotion, discount, etc. Next comes the group of basic participants, understood as those entrepreneurs who are not as technologically skilled as the previous group, but who seek interaction and a presence on the network, albeit in a more timid and secondary way. In fourth place in the classification come the so-called exclusively buyers, i.e., the ones who have more confidence in the network to buy and acquire the products they want. Such entrepreneurs search options, compare prices, and make decisions based on the information they find within their reach. On the other hand, another group is passive users who remain reticent to use the benefits of the Internet and spend less time online to perform fewer concrete actions. Finally, there is the group of proactive gatekeepers, who have a great value for companies; such entrepreneurs



are highly aware that, in the network, there is a targeted market based on their personal data to suggest a type of products or services; such entrepreneurs see the positive side to this reality. They are not as active on social networks as other groups, but they are very cautious when doing so, so they do not tend to pour opinions or content harmful to brands, and they do feel some reticence regarding privacy issues concerning their personal data (Dalpé et al., 2019).

From this base comes the HEXACO model (Lee & Ashton, 2004), which is based on the following personality factors: honesty-humanity (H), emotionality (E), extroversion (X), agreeableness (A), conscientiousness (C), and openness to experience (O). The scores on each of these factors are obtained based a series of specially designed questions (Ashton and Lee 2009). Other authors have used the five-factor personality model to extract valuable information about entrepreneurs relying on psycholinguistic analysis of entrepreneurs to improve prediction of entrepreneurial performance (Lambiotte & Kosinski, 2014). In this way they distinguish between digital entrepreneurs and traditional entrepreneurs, determining that the former is less concerned about the future than the latter, also using neuroticism to their advantage (Bandera & Passerini, 2020). There is literature that offers more specific insights by conducting personality studies of entrepreneurs through their actions on Twitter (Obschonka et al., 2017). The aim of the study was to test whether there were consistent differences between the personality of entrepreneurs and superstar managers, with the understanding that the former should have more entrepreneurial traits within their behavior and personality. Through a univariate analysis and several multivariate analyses, it was found that there were notable differences between the personalities of the two groups.

In addition, certain practices that directly affect the relationship of digital entrepreneurs with other brands, companies, and users have emerged. The emergence of digital nudging has brought increasing attention of marketers (Djurica & Figl, 2017), as well as researchers who see an opportunity in this theory of nudging. Rather than not using changing or prohibiting anything to potential consumers, this theory focuses on giving the last push that users need to buy in an easy and uncomplicated way. This technique involves many ideas that have been practiced in the marketing world for years and that are already established on a regular basis, such as, for example, suggested or predetermined purchases on web pages that a certain user usually visits. In today's highly competitive world, with so many options available to individuals, this theory has gained ground by guiding and convincing consumers (Shmakov, 2021). In this way, there is a higher probability that a potential consumer will end up making a purchase decision with only a small change in digital marketing strategies, including a minor change in the environment and with a simple and inexpensive way to implement it.

## Discussion

In the present study, we investigated the relationship between different personalities and traits of online entrepreneurs and their online behavior. Based on a review of previous research, we obtained conclusive results that confirm that there a close relationship between digital entrepreneurs' personalities and their online behavior. Our literature review provided a deep understanding of the main

research developed in this field of study, obtaining results and data that offer several important implications for further research.

There has been considerable general research on the relationship between digital personalities and entrepreneurs' online behavior. Several more specific studies analyzed voice systems in virtual environments (Aylett et al., 2017). The results of the latter studies supported the general conclusions of influence of personalities, but qualified specific aspects regarding the implications for the synthesis of voices, the choices of voices to communicate through digital media, and the selection of the type of system for applications used as personal assistants or conversational agents. These findings are important, as it is important to develop an emotional relationship with the entrepreneur who receives spoken information.

On the technological level, there are many avenues to continue exploring in order to work with values such as personality traits, as well as to create a deep learning architecture and obtain the best performance from the existing models. In this respect, previous studies demonstrated that using Natural Language Processing (NLP) to predict personality traits yields a better performance of the system (Christian et al., 2021). These models are characterized by making personality predictions through extracting digital content (Benartzi, 2017) into specific features and then mapping them according to a personality model. This has led to the emergence of the Big Five theory (Azucar et al., 2018), which is now being further developed and refined.

There has also been research into how digital entrepreneurs and users reveal specific aspects of their personality through the content they share on the network (e.g., through opinions, forums, and other interactions) either with their acquaintances and virtual contacts (KN et al., 2021). In the study, a personality assessment system was developed to demonstrate the effectiveness of estimating personality traits through users' online linguistic-stylistic cues. This knowledge about the entrepreneurs can help to anticipate movements and behaviors from a marketing perspective, directly influencing the actions taken by companies in order to induce them to buy their suppliers products or services (Martín & León, 2018).

One of the important challenges in this domain is the safe implementation of artificial intelligence which, along with making it possible to make more accurate decisions, carries some risk to the privacy of digital users' personal information (). All information that can be extracted by companies has a counterpoint in terms of the large amount of data continuously generated and accumulated by all devices that digital entrepreneurs have today.

In this study, we investigated major security issues in terms of everything that encompasses artificial intelligence and identified 10 main issues in terms of privacy and user security problems. Some of these issues include malware, cybersecurity attacks, data storage vulnerabilities, use of test software in IoT (Internet of Things), as well as potential leaks due to the lack of digital user experience. All these issues can have negative consequences for users. To minimize such risks, the Data Protection Regulation was recently approved by the European Parliament, where, among other regulations, the concept of the Right to be Forgotten was developed ().

## Conclusions

The main aim of the present study was identified major classifications of digital users and entrepreneurs' personalities so that to provide a clearer view of the issue for companies, brands, and organizations in the digital world and to enable them to take advantage of this knowledge to create their digital marketing strategies. Doing so would also increase brand value and help companies to position themselves correctly in a changing and very demanding environment.

To this end, we conducted a Systematic Literature Review (SLR) through which we identified 18 potential articles that provide useful knowledge on this topic. Based on this finding, it can be concluded that there is room for the creation of new literature on the subject, since there are no studies in the academic or business literature that have analyzed the subject using same approach. Our results also demonstrate that we are facing a challenging topic, of complete actuality and necessity, on which new relevant research can be developed. Along these lines, this study aims to open new perspectives.

With respect to our first research question (*RQ1: What are the personalities of digital entrepreneurs?*), our results suggest that there is specific knowledge about the traits, personalities, and behavior of certain types of entrepreneurs who surf the Internet. Accordingly, in order to obtain successful results in their online projects, companies must consider this information and develop a marketing plan and corresponding specific strategies. In this way, they will be able to achieve benefits in the short-, medium-, and long term.

As concerns the second question (*RQ2: Does digital entrepreneurs' behavior affect how they develop their projects online?*), a review of the published literature revealed that digital entrepreneurs' behavior it does affect the success of a entrepreneurs depending on what kind of behavior its audience has, those who interact with them, since these actions can drive good product innovations by detecting certain needs, and new marketing campaigns with more specific approaches can emerge. For these reasons, and in order to work with more concrete and achievable objectives, it is important to highlight the need to implement techniques and training to detect what type of consumers the entrepreneur is interested in.

## Theoretical implications

The present study offers a broader and more comprehensive understanding of a complex topic that can be explored in depth in future research, as there are different variables to consider regarding the constant changes in the digital world. Our results can help to simplify concepts so that future academics can establish new relevant research. Opportunities in the digital science and technology sectors, as well as advances in psychology discussed in the present study, are rapidly and continuously advancing, so this study will be updated with the development of new formulas and relevant behavioral factors. In addition, several of the topics discussed here can be considered in future research, as they are of interest to the business domain related to or positioned in the digital world.

## Practical implications

The results of the present study are also of interest to all professionals related to the world of digital marketing, and all entrepreneurs, managers, and workers in the digital sector who want to improve the results of their companies, brands, or customers, deepen their knowledge on the subject, and become more efficient in their communication on the Internet and management. Of note, the implementation of strategies based on the types of personalities or behaviors described in this study will improve not only in the processes of creating actions, but also in the quality of the offered services.

The results reported in the present study can be used by entrepreneurs or by the marketing or communication departments of the companies themselves, to better understand which consumers they have and which methods and tools they should better use to improve effectiveness of their practices and communication. This will improve results, help entrepreneurs make better decisions, actions, and campaigns, as well as become reference companies or brands with a remarkable success in the sales of goods or services. Today when technology and all the options it offers are a premium, it is essential to use this knowledge for the benefit of the company and its potential customers that, owing the data, can ensure a fast and easy communication of the Internet and improve the image and services offered by designing better solutions.

## Limitations and future research

The limitations of the present study include a rather small number of reviewed papers published to date at the same time, scarcity of previous research on the topic also demonstrated that this field of study can be expanded and studied soon. Another limitation is related to the chosen databases since, although the selected databases are among the most relevant and prestigious in the field of social sciences, any choice may lead to the omission of some relevant articles.

It is interesting to analyze how technological progress is transforming the business domain, which brings the digital world to the forefront, from the perspective of who it is addressed to. This also fills and completes the limited available literature and provides novel opportunities for further research. In terms of directions of future research, the following aspects deserve further investigation: (i) the heterogeneity of end-users, (ii) collective aspects of end-user empowerment, and (iii) contextual aspects of end-user empowerment. Overall, there has been some previous research on the importance of digital entrepreneurs not only in terms of the end-user, but also in terms of organizations and how it affects them more internally. Workers are, after all, consumers with personalities to be valued (Hacker & Riemer, 2021). It is at this point where another interesting avenue of conducting a CSR analysis to identify different roles of this type of digital entrepreneur emerged. Digital entrepreneurs' empowerment with a human-centered approach towards the online economy must be considered as a fundamental aspect (Neumann et al., 2020).

## References

- Alam, M. M. D., & Patwary, A. K. (2021). Global brand and global consumers. In *Cross-Border E-Commerce Marketing and Management* (pp. 148–171). IGI Global. <https://doi.org/10.4018/978-1-7998-5823-2.ch007>
- Alojail, M., & Bhatia, S. (2020). A novel technique for behavioral analytics using ensemble learning algorithms in E-commerce. *IEEE Access*, 8, 150072–150080. <https://doi.org/10.1109/ACCESS.2020.3016419>
- Amado, A., Cortez, P., Rita, P., & Moro, S. (2018). Research trends on big data in marketing: A text mining and topic modeling-based literature analysis. *European Research on Management and Business Economics*, 24(1), 1–7. <https://doi.org/10.1016/j.iemeen.2017.06.002>
- Ashton, M. C., & Lee, K. (2009). The HEXACO–60: A short measure of the major dimensions of personality. *Journal of Personality Assessment*, 91(4), 340–345. <https://doi.org/10.1080/00223890902935878>
- Auzair, S. M., & Langfield-Smith, K. (2005). The effect of service process type, business strategy and life cycle stage on bureaucratic MCS in service organizations. *Management Accounting Research*, 16(4), 399–421. <https://doi.org/10.1016/j.mar.2005.04.003>
- Aylett, M. P., Vinciarelli, A., & Wester, M. (2017). Speech synthesis for the generation of artificial personality. *IEEE Transactions on Affective Computing*, 11(2), 361–372. <https://doi.org/10.1109/TAFFC.2017.2763134>
- Azucar, D., Marengo, D., & Settanni, M. (2018). Predicting the Big 5 personality traits from digital footprints on social media: A meta-analysis. *Personality and Individual Differences*, 124, 150–159. <https://doi.org/10.1016/j.paid.2017.12.018>
- Bala, M., & Verma, D. (2018). A critical review of digital marketing. *International Journal of Management, IT & Engineering*, 8(10), 321–339.
- Balaskas, S., & Rigou, M. (2021). Effect of personality traits on banner advertisement recognition. *Information*, 12(11), 464. <https://doi.org/10.3390/info12110464>
- Ban, Y., & Lee, K. (2021). How the multiplicity of suggested information affects the behavior of a user in a recommender system. *Electronics*, 10(6), 741. <https://doi.org/10.3390/electronics10060741>
- Bandera, C., & Passerini, K. (2020). Personality traits and the digital entrepreneur: Much of the same thing or a new breed? *Journal of the International Council for Small Business*, 1(2), 81–105. <https://doi.org/10.1080/26437015.2020.1724838>
- Bao, Z., & Yang, J. (2022). Why online consumers have the urge to buy impulsively: Roles of serendipity, trust and flow experience. *Management Decision*. <https://doi.org/10.1108/MD-07-2021-0900>
- Benartzi, S. (2017). *The smarter screen: Surprising ways to influence and improve online behavior*. Penguin.
- Bijmolt, T. H., Broekhuis, M., De Leeuw, S., Hirche, C., Rooderkerk, R. P., Sousa, R., & Zhu, S. X. (2021). Challenges at the marketing–operations interface in omni-channel retail environments. *Journal of Business Research*, 122, 864–874. <https://doi.org/10.1016/j.jbusres.2019.11.034>
- Boyd, R. L., & Pennebaker, J. W. (2017). Language-based personality: A new approach to personality in a digital world. *Current Opinion in Behavioral Sciences*, 18, 63–68. <https://doi.org/10.1016/j.cobeha.2017.07.017>
- Cartwright, S., Liu, H., & Raddats, C. (2021). Strategic use of social media within business-to-business (B2B) marketing: A systematic literature review. *Industrial Marketing Management*, 97, 35–58. <https://doi.org/10.1016/j.indmarman.2021.06.005>
- Carvalho, T. P., Soares, F. A., Vita, R., Francisco, R. D. P., Basto, J. P., & Alcalá, S. G. (2019). A systematic literature review of machine learning methods applied to predictive maintenance. *Computers & Industrial Engineering*, 137, 106024. <https://doi.org/10.1016/j.cie.2019.106024>
- Cheng, X., Su, L., Luo, X., Benitez, J., & Cai, S. (2021). The good, the bad, and the ugly: Impact of analytics and artificial intelligence-enabled personal information collection on privacy and participation in ridesharing. *European Journal of Information Systems*. <https://doi.org/10.1080/0960085X.2020.1869508>
- Christian, H., Suhartono, D., Chowanda, A., & Zamli, K. Z. (2021). Text based personality prediction from multiple social media data sources using pre-trained language model and model averaging. *Journal of Big Data*, 8(1), 1–20. <https://doi.org/10.1186/s40537-021-00459-1>
- Costa, P. T. Jr., & McCrae, R. R. (1992). Reply to eysenck. *Personality and Individual Differences*, 13(8), 861–865. [https://doi.org/10.1016/0191-8869\(92\)90002-7](https://doi.org/10.1016/0191-8869(92)90002-7)
- Da Veiga, A., & Martins, N. (2015). Information security culture and information protection culture: A validated assessment instrument. *Computer Law & Security Review*, 31(2), 243–256. <https://doi.org/10.1016/j.clsr.2015.01.005>

- Dalpé, J., Demers, M., Verner-Filion, J., & Vallerand, R. J. (2019). From personality to passion: The role of the Big Five factors. *Personality and Individual Differences, 138*, 280–285. <https://doi.org/10.1016/j.paid.2018.10.021>
- Desai, V. (2019). Digital marketing: A review. *International Journal of Trend in Scientific Research and Development, 5*(5), 196–200.
- Dickersin, K., & Berlin, J. A. (1992). Meta-analysis: State-of-the-science. *Epidemiologic Reviews, 14*(1), 154–176. <https://doi.org/10.1093/oxfordjournals.epirev.a036084>
- Djurica, D., & Figl, K. (2017). The effect of digital nudging techniques on customers' product choice and attitudes towards e-commerce sites.
- Ebrahimi, P., Khajehian, D., Soleimani, M., Gholampour, A., & Fekete-Farkas, M. (2022). User engagement in social network platforms: What key strategic factors determine online consumer purchase behaviour? *Economic Research-Ekonomska Istraživanja. https://doi.org/10.1080/1331677X.2022.2106264*
- Feng, L. (2022). Data analysis and prediction modeling based on deep learning in E-commerce. *Scientific Programming. https://doi.org/10.1155/2022/1041741*
- Godwin, E. U. (2019). *An empirical analysis on effect of digital marketing on consumer buying behaviour* (Doctoral dissertation, Masters Dissertation, The School of Postgraduate Studies Ahmadu Bello University, Zaria).
- Hacker, J., & Riemer, K. (2021). Identification of user roles in enterprise social networks: Method development and application. *Business & Information Systems Engineering, 63*(4), 367–387. <https://doi.org/10.1007/s12599-020-00648-x>
- Hou, R., Wang, F., Guo, B., & Zhao, J. (2021). An empirical study of the impacts of digital marketing contents on user engagement in social e-commerce platform. <https://aisel.aisnet.org/whiceb2021/41>
- Huizingh, E. K. (2011). Open innovation: State of the art and future perspectives. *Technovation, 31*(1), 2–9. <https://doi.org/10.1016/j.technovation.2010.10.002>
- Jabeen, F., Gerritsen, C., & Treur, J. (2020). Narcissism and fame: A complex network model for the adaptive interaction of digital narcissism and online popularity. *Applied Network Science, 5*(1), 1–31. <https://doi.org/10.1007/s41109-020-00319-6>
- Kokina, J., Gilleran, R., Blanchette, S., & Stoddard, D. (2021). Accountant as digital innovator: Roles and competencies in the age of automation. *Accounting Horizons, 35*(1), 153–184. <https://doi.org/10.2308/HORIZONS-19-145>
- Lambiotte, R., & Kosinski, M. (2014). Tracking the digital footprints of personality. *Proceedings of the IEEE, 102*(12), 1934–1939. <https://doi.org/10.1109/JPROC.2014.2359054>
- Lee, K., & Ashton, M. C. (2004). Psychometric properties of the HEXACO personality inventory. *Multivariate Behavioral Research, 39*(2), 329–358. [https://doi.org/10.1207/s15327906mbr3902\\_8](https://doi.org/10.1207/s15327906mbr3902_8)
- Leonelli, S. (2018, October). Rethinking reproducibility as a criterion for research quality. In *Including a symposium on Mary Morgan: curiosity, imagination, and surprise*. Emerald Publishing Limited. <https://doi.org/10.1108/S0743-41542018000036B009>
- Leutner, F., Ahmetoglu, G., Akhtar, R., & Chamorro-Premuzic, T. (2014). The relationship between the entrepreneurial personality and the Big Five personality traits. *Personality and Individual Differences, 63*, 58–63. <https://doi.org/10.1016/j.paid.2014.01.042>
- Luqman, A., Talwar, S., Masood, A., & Dhir, A. (2021). Does enterprise social media use promote employee creativity and well-being? *Journal of Business Research, 131*, 40–54. <https://doi.org/10.1016/j.jbusres.2021.03.051>
- Mackey, T. K., Cuomo, R. E., & Liang, B. A. (2015). The rise of digital direct-to-consumer advertising? Comparison of direct-to-consumer advertising expenditure trends from publicly available data sources and global policy implications. *BMC Health Services Research, 15*(1), 1–9. <https://doi.org/10.1186/s12913-015-0885-1>
- Malgieri, G., & Custers, B. (2018). Pricing privacy—the right to know the value of your personal data. *Computer Law & Security Review, 34*(2), 289–303. <https://doi.org/10.1016/j.clsr.2017.08.006>
- Marquez, J. L. J., Carrasco, I. G., & Cuadrado, J. L. L. (2018). Challenges and opportunities in analytic-predictive environments of big data and natural language processing for social network rating systems. *IEEE Latin America Transactions, 16*(2), 592–597. <https://doi.org/10.1109/TLA.2018.8327417>

- Martín, A., & León, C. (2018). Semantic framework for an efficient information retrieval in the E-government repositories. In *Information Retrieval and Management: Concepts, Methodologies, Tools, and Applications* (pp. 631–652). IGI Global.
- Mauri, A. G., Minazzi, R., Nieto-García, M., & Viglia, G. (2018). Humanize your business. The role of personal reputation in the sharing economy. *International Journal of Hospitality Management*, 73, 36–43. <https://doi.org/10.1016/j.ijhm.2018.01.017>
- Minami, A. L., Ramos, C., & Bortoluzzo, A. B. (2021). Sharing economy versus collaborative consumption: What drives consumers in the new forms of exchange? *Journal of Business Research*, 128, 124–137. <https://doi.org/10.1016/j.jbusres.2021.01.035>
- Mirsch, T., Lehrer, C., & Jung, R. (2017). Digital nudging: Altering user behavior in digital environments. *Proceedings der 13. Internationalen Tagung Wirtschaftsinformatik (WI 2017)*, 634–648.
- Monaci, M. G., & Cerisetti, N. (2021). La presentazione di una falsa identità nell'era digitale. *Qwerty-Open and Interdisciplinary Journal of Technology, Culture and Education*, 16(1), 80–99. <https://doi.org/10.30557/QW000037>
- Neri, R. A. O., & Calderón, C. G. (2019). El nuevo opio del pueblo: apuntes desde la Economía Política de la Comunicación para (des) entender la esfera digital. *Iberoamérica Social: Revista-red de estudios sociales*, (XII), 84–96.
- Neumann, G., Human, S., & Alt, R. (2020, January). Introduction to the Minitrack on End-user Empowerment in the Digital Age. In *Proceedings of the 53rd Hawaii International Conference on System Sciences*.
- Neumeyer, X., Santos, S. C., & Morris, M. H. (2020). Overcoming barriers to technology adoption when fostering entrepreneurship among the poor: The role of technology and digital literacy. *IEEE Transactions on Engineering Management*, 68(6), 1605–1618. <https://doi.org/10.1109/TEM.2020.2989740>
- Nguyen, P. H., Henkin, R., Chen, S., Andrienko, N., Andrienko, G., Thonnard, O., & Turkay, C. (2019). Vasabi: Hierarchical user profiles for interactive visual user behaviour analytics. *IEEE Transactions on Visualization and Computer Graphics*, 26(1), 77–86. <https://doi.org/10.1109/TVCG.2019.2934609>
- Noble, S., Scheinost, D., & Constable, R. T. (2019). A decade of test-retest reliability of functional connectivity: A systematic review and meta-analysis. *NeuroImage*, 203, 116157. <https://doi.org/10.1016/j.neuroimage.2019.116157>
- Obschonka, M., Fisch, C., & y Boyd, R. (2017). Uso de huellas digitales en la investigación empresarial: Un análisis de personalidad basado en Twitter de empresarios y gerentes superestrellas. *Journal of Business Venturing Insights*, 8, 13–23. <https://doi.org/10.1016/j.jbvi.2017.05.005>
- Papadopoulos, A. V., Versluis, L., Bauer, A., Herbst, N., Von Kistowski, J., Ali-Eldin, A., & Iosup, A. (2019). Methodological principles for reproducible performance evaluation in cloud computing. *IEEE Transactions on Software Engineering*. <https://doi.org/10.1109/TSE.2019.2927908>
- Papangelis, K., Chamberlain, A., Lykourantzou, I., Khan, V. J., Saker, M., Liang, H. N., & Cao, T. (2020). Performing the digital self: Understanding location-based social networking, territory, space, and identity in the city. *ACM Transactions on Computer-Human Interaction (TOCHI)*, 27(1), 1–26. <https://doi.org/10.1145/3364997>
- Pavan Kumar, K. N., & Gavrilova, M. L. (2021). Latent personality traits assessment from social network activity using contextual language embedding. *IEEE Transactions on Computational Social Systems*. <https://doi.org/10.1109/TCSS.2021.3108810>
- Pererva, P., Kobieliev, V., & Dolyina, I. (2020). Digital Marketing Opportunities and Paradoxes of Communications. *Маркетинг і цифрові технології*, 4(4), 6–13. <https://doi.org/10.15276/mdt.4.4.2020.1>
- Pietilä, I., Meriläinen, N., Varsaluoma, J., & Väänänen, K. (2021). Understanding youths' needs for digital societal participation: Towards an inclusive Virtual Council. *Behaviour & Information Technology*, 40(5), 483–496. <https://doi.org/10.1080/0144929X.2021.1912182>
- Ribeiro-Navarrete, S., Saura, J. R., & Palacios-Marqués, D. (2021). Towards a new era of mass data collection: Assessing pandemic surveillance technologies to preserve user privacy. *Technological Forecasting and Social Change*, 167, 120681. <https://doi.org/10.1016/j.techfore.2021.120681>
- Roccas, S., Sagiv, L., Schwartz, S. H., & Knafo, A. (2002). The big five personality factors and personal values. *Personality and Social Psychology Bulletin*, 28(6), 789–801. <https://doi.org/10.1177/0146167202289008>
- Rother, E. T. (2007). Systematic literature review X narrative review. *Acta Paulista De Enfermagem*, 20, v–vi. <https://doi.org/10.1590/S0103-21002007000200001>

- Sahu, A. K., Padhy, R. K., & Dhir, A. (2020). Envisioning the future of behavioral decision-making: A systematic literature review of behavioral reasoning theory. *Australasian Marketing Journal (AMJ)*, 28(4), 145–159. <https://doi.org/10.1016/j.ausmj.2020.05.001>
- Saura, J. R., Palos-Sánchez, P., & Navalpotro, F. D. (2018). El problema de la Reputación Online y Motores de Búsqueda: Derecho al Olvido. *Cadernos De Dereito Actual*, 8, 221–229.
- Saura, J. R. (2021). Using data sciences in digital marketing: Framework, methods, and performance metrics. *Journal of Innovation & Knowledge*, 6(2), 92–102. <https://doi.org/10.1016/j.jik.2020.08.001>
- Saura, J. R., Palacios-Marqués, D., & Ribeiro-Soriano, D. (2021a). Using data mining techniques to explore security issues in smart living environments in Twitter. *Computer Communications*, 179, 285–295. <https://doi.org/10.1016/j.comcom.2021.08.021>
- Saura, J. R., Palacios-Marqués, D., & Ribeiro-Soriano, D. (2021b). How SMEs use data sciences in their online marketing performance: A systematic literature review of the state-of-the-art. *Journal of Small Business Management*. <https://doi.org/10.1080/00472778.2021.1955127>
- Saxton, G. D., & Wang, L. (2014). The social network effect: The determinants of giving through social media. *Nonprofit and Voluntary Sector Quarterly*, 43(5), 850–868. <https://doi.org/10.1177/0899764013485159>
- Schneider, C., Weinmann, M., & Vom Brocke, J. (2018). Digital nudging: Guiding online user choices through interface design. *Communications of the ACM*, 61(7), 67–73. <https://doi.org/10.1145/3213765>
- Shafer, S. M., Smith, H. J., & Linder, J. C. (2005). The power of business models. *Business Horizons*, 48(3), 199–207. <https://doi.org/10.1016/j.bushor.2004.10.014>
- Shmakov, A. V. (2021). Nudge in the conditions of digital transformation: Behavioral basis. *Journal of Institutional Studies*, 13(3), 102–116. <https://doi.org/10.17835/2076-6297.2021.13.3.102-116>
- Skalicka, M., Zinecker, M., Balcerzak, A. P., & Pietrzak, M. B. (2022). Business angels and early stage decision making criteria: Empirical evidence from an emerging market. *Economic Research-Ekonomiska Istraživanja*. <https://doi.org/10.1080/1331677X.2022.2063920>
- Song, A. K. (2019). The digital entrepreneurial ecosystem—a critique and reconfiguration. *Small Business Economics*, 53(3), 569–590. <https://doi.org/10.1007/s11187-019-00232-y>
- Sparrow, B., Liu, J., & Wegner, D. M. (2011). Google effects on memory: Cognitive consequences of having information at our fingertips. *Science*, 333(6043), 776–778. <https://doi.org/10.1126/science.1207745>
- Tandon, C., Revankar, S., & Parihar, S. S. (2021). How can we predict the impact of the social media messages on the value of cryptocurrency? Insights from big data analytics. *International Journal of Information Management Data Insights*, 1(2), 100035. <https://doi.org/10.1016/j.ijimei.2021.100035>
- Tu, J. J., & Akhter, S. (2022). Exploring the role of entrepreneurial education, technology and teachers' creativity in excelling sustainable business competencies. *Economic Research-Ekonomiska Istraživanja*. <https://doi.org/10.1080/1331677X.2022.2119429>
- Ullal, M. S., Spulbar, C., Hawaldar, I. T., Popescu, V., & Birau, R. (2021). The impact of online reviews on e-commerce sales in India: A case study. *Economic Research-Ekonomiska Istraživanja*, 34(1), 2408–2422. <https://doi.org/10.1080/1331677X.2020.1865179>
- Vamosi, S., Reutterer, T., & Platzer, M. (2022). A deep recurrent neural network approach to learn sequence similarities for user-identification. *DeCision Support Systems*. <https://doi.org/10.1016/j.dss.2021.113718>
- von Briel, F., & Recker, J. (2017). Lessons from a failed implementation of an online open innovation community in an innovative organization. *MIS Quarterly Executive*, 16(1), 35–46.
- Weinmann, M., Schneider, C., & Brocke, J. V. (2016). Digital nudging. *Business & Information Systems Engineering*, 58(6), 433–436. <https://doi.org/10.1007/s12599-016-0453-1>
- West, J., & Bogers, M. (2014). Leveraging external sources of innovation: A review of research on open innovation. *Journal of Product Innovation Management*, 31(4), 814–831. <https://doi.org/10.1111/jpim.12125>
- Zuckerman, M., Kuhlman, D. M., Joireman, J., Teta, P., & Kraft, M. (1993). A comparison of three structural models for personality: the big three, the big five, and the alternative five. *Journal of Personality and Social Psychology*, 65(4), 757. <https://doi.org/10.1037/0022-3514.65.4.757>

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