

Exploring the linkage between digital entrepreneurship intentions and personality traits among university students in Morocco



Zakia Ait Oufkir^a ✉ | Brahim Ouzaka^b

^aResearch laboratory of Organizations Management, Cadi Ayyad University, Marrakesh, Morocco.

^bLaboratory of Multidisciplinary Research in Economics and Management, Sultan Moulay Slimane University, Beni Mellal, Morocco.

Abstract The world of business has been transformed by digitalization, giving rise to a new style of entrepreneurship known as 'digital entrepreneurship'. Recently, a growing body of research has been devoted to studying the impacts and links of this new form of entrepreneurship on business transformation, particularly during and after the period of the recent health crisis (COVID-19). This exploratory empirical study examines the intention of Moroccan university students to engage in digital entrepreneurship. To this end, we conducted an empirical study of students at Cadi Ayyad University-Morocco using the Big Five model. We collected data by means of an online questionnaire sent to the students and the processing and results were carried out using Smart PLS software. The results confirmed a direct and significant impact of the two personality traits 'open-mindedness' and 'extroversion' on students' attitudes, as well as on their intention to undertake digital entrepreneurship. The study also revealed that gender had no significant effect on university students' attitudes toward digital entrepreneurship. The results obtained have made it possible to contribute to the literature on student entrepreneurship, particularly with regard to the contribution of personality traits and the personal attitudes of individuals and their impact on the intention to become a digital entrepreneur. This will enable practitioners, academics and public authorities to give more and more priority to the psychological aspect of young people in order to better configure their entrepreneurship training platforms and their strategies for developing entrepreneurship among young people in Morocco.

Keywords: digital entrepreneurship, personality traits, students entrepreneurial intentions, attitude, Morocco

1. Introduction

Today, digital technology is globally recognized as the 4th industrial revolution, the fastest in terms of its spread, creating significant economic and social opportunities (ADD, 2020). On a global scale, the digital wave has transformed economies around the world, enabling the creation of wealth through productivity gains, thereby making it a true lever of economic competitiveness. Morocco is currently betting on digital technology to increase its competitiveness and economic growth, particularly among SMEs and microenterprises. Certain manifestations of digital capital in Morocco are particularly reflected in the growth of e-commerce, which is considered one of the main drivers of the digital economy. This has been made possible owing to the digital infrastructure in Morocco, particularly the digital platforms dedicated to the transaction of goods and services.

Furthermore, Morocco's ambitious strategy for 2025 aims to leverage the dynamics of digital transformations to establish itself as a digital Hub in Africa. This involves Morocco's investment in attracting innovative digital companies and talent from the continent, as well as encouraging the creation of national digital enterprises (ADD, 2020). This necessitates the promotion and encouragement of digital culture and digital entrepreneurship. One way to address this challenge is to initiate and encourage university students, future graduates, toward digital entrepreneurship, especially since higher education in Morocco is one of the sectors that has been digitized in the country (Kerrouch & Bouazizi, 2023). Indeed, the 2019 pandemic contributed to accelerating the digital transformation of the economy and education and stimulated the use of information technologies (Bamarouf & Laiachi, 2024), which created strong potential for digital businesses that, in turn, could offer further opportunities to young people through digital entrepreneurship. Additionally, the creation of digital teaching platforms and the digitization of various processes has attracted the attention of students, mainly because they are concerned with current and future studies and adaptation models. The explosive growth of internet usage has somewhat facilitated access to numerous opportunities in the business field, particularly owing to digital tools and media (Nachit & Belahcen, 2020). Digital entrepreneurship is currently receiving significant attention from countries because of its enormous potential for the global economy.



Digital entrepreneurship involves undertaking technology and digital platforms to generate added value through innovation, marketing, and the sale of products online and has emerged in the context of globalization, which is expanding on a global scale. He defines it as the search for business opportunities through technologies and digital platforms. (Nambisan, 2016). Despite the growing importance of digital entrepreneurship, research in this field is still in its infancy. (Badarudin et al., 2015). Kraus et al. (2018) described five levels of analysis for studying digital entrepreneurship, namely, the cultural level, the international level, the industrial level, the organizational level, and the individual level. They emphasize that at the individual level, demographics; psychological traits such as skills, cognitive abilities, personalities, motivations, and values—known as the entrepreneurial mindset—along with entrepreneurship training, expertise, industry knowledge, and personal networks—are variables that deserve consideration in the study of this field. Similarly, Hmaidouch et al. (2023) propose a model of the five main predictors of entrepreneurial intention in digital settings among students, namely, general attitude, entrepreneurial self-efficacy, social context, technical knowledge, and participation in events and programs. Entrepreneurial intention is a fundamental concept in the study of entrepreneurship; the creation or development of a business requires prior intention from the entrepreneur. This concept has been the subject of several studies in the literature (Shapiro and Sokol, 1982; Ajzen, 1991; Kolvereid, 1996; Krueger et al., 2000; Koubaa & Eddine, 2012) aimed at understanding its antecedents and consequences. The study by Yáñez-Valdés & Guerrero (2024) on the antecedents of intention for digital entrepreneurship shows that variables such as perceived behavioral control and subjective norms have been quite frequently studied in addition to digital knowledge. The author suggested exploring a wide range of additional factors that impact students' intentions to start a digital business, such as personality traits, demographic factors, the cultural context, and environmental factors. This highlights the importance of studying both individual and situational variables.

The present study aims to examine the impact of the personality traits of Moroccan university students related to their entrepreneurial intentions in the digital field. By mobilizing the five-factor personality model, she examines the extent to which personality traits affect entrepreneurial intention in digital contexts among university students. She then analyzes the impact of behavioral attitudes, as important factors in the dimensions of the theory of planned behavior, on university students' intentions regarding digital entrepreneurship. She analyzes the direct and indirect relationships between the three constructs: Personality traits - Attitude - Entrepreneurial intention. She also explores the moderating effect of gender on Moroccan university students' attitudes toward digital entrepreneurship.

2. Literature review

2.1. Concept of digital entrepreneurship

Entrepreneurship is now regarded as one of the most diverse, crucial, and celebrated areas of human skills today. This diversification struggles to generate a real fragmentation of knowledge in this field (we now talk about social entrepreneurship, green entrepreneurship, intrapreneurship, female entrepreneurship, etc.). The traditional definition of entrepreneurship is broadened by the concept of digital entrepreneurship, which is defined as the pursuit of business opportunities through digital technologies and platforms. (Nambisan, 2016). It involves engaging in online business by leveraging technology and digital platforms to generate added value through innovation, marketing, and the sale of products online. It has emerged in the context of globalization, which is expanding on a global scale. (Hull et al., 2007) characterize digital entrepreneurship as a subcategory of entrepreneurship in which the traditional components of a business are transformed from physical formats into digital formats. Piff et al. (2010) estimate that digital entrepreneurship occurs when a company integrates digital elements into its assets, in a service it provides, or in an aspect of its overall activity.

At this level, emphasis is placed on transforming traditional business processes through digital means. Similarly, the European Commission (2015) describes digital entrepreneurship as the use of innovative digital technologies to generate and enhance economic and social value. This concept encompasses both start-ups and established traditional companies. In this sense, entrepreneurship goes beyond the use of digital tools in traditional business processes; it positions itself as a distinct new business model that takes the form of a project through the exploitation of digital technologies. On the other hand, in terms of typology, the literature divides digital entrepreneurship into three types. The first, "light" digital entrepreneurship, involves venturing into the digital economy alongside more traditional activities. The second, called "moderate" digital entrepreneurship, requires a close interest in digital products, digital delivery, or other digital components of the business. Moderate digital entrepreneurship cannot exist without a digital infrastructure. The third, "extreme" digital entrepreneurship, means that the entire business is digital, including production, the goods or services themselves, advertising, distribution, and customers. (Hull et al., 2007).

Although the meaning of digital entrepreneurship in the literature is quite clear regarding its typology, a consensus on its terminology is still lacking. Researchers in the field use interchangeable terms such as "E-entrepreneurship," "Internet entrepreneurship," "Cyber entrepreneurship," and "Web entrepreneurship" to describe this concept. (Guthrie, 2014). This article adopts the broad definition provided by Nambisan (2016) and focuses on the student-entrepreneur as a central figure and his or her intentions, attitudes, and personalities, leading him or her to engage in digital entrepreneurship.

2.2. Digital entrepreneurship intention

Entrepreneurial intention is a fundamental concept in the study of entrepreneurship; the creation or development of a business requires prior intention from the entrepreneur. This concept has been the subject of several studies in the literature (Shapiro and Sokol, 1982; Ajzen, 1991; Kolvereid, 1996; Krueger et al., 2000; Koubaa & Eddine, 2012), aimed at understanding its antecedents and consequences. In the social sciences, intention refers to the cognitive state of an individual who is directed toward the accomplishment of a specific action or the exploitation of a particular opportunity. (Ajzen, 1991), with his theory of planned behavior, attempted to model the main determinants of behavioral intention, viewing it as the driving force behind the behavior itself. He emphasized attitudes, subjective norms, and perceived behavioral control in the formation of behavioral intention. (y compris entrepreneuriale). Consequently, this study posits that intention plays a crucial role in engagement in digital entrepreneurship. Thus, a stronger intention leads to a greater likelihood of engaging in such entrepreneurial behavior.

The literature includes several studies on the factors impacting entrepreneurial intention. However, research on the factors influencing the intention for digital entrepreneurship is scarce. Singh & Dwivedi (2022) stated that entrepreneurial motivations and entrepreneurial skills are factors influencing the intention of North Indian students to engage in digital entrepreneurship. Thus, according to the authors, mastery of digital skills (access to digital information, proficiency in using digital information, communication of digital information, competence in managing digital information, evaluation of digital information) combined with motivation for digital entrepreneurship (economic and social motivation) are determinants for shaping students' intentions toward digital entrepreneurship in particular and have become essential survival elements for individuals in the digital age. (Primahendra et al., 2021), following their study conducted among university students in Indonesia, suggest that students' digital knowledge influences their intention for digital entrepreneurship and consequently contributes to the development of the digital economy. A systematic literature review (Alkhalailah, 2021) summarized the factors influencing the intention for digital entrepreneurship, which include digital knowledge, perceived behavioral control, subjective norms, personality traits, and entrepreneurial self-efficacy and attitudes toward entrepreneurship. The author concludes that future research should place greater emphasis on contextual, cultural, and demographic factors and personality traits.

On the basis of the above literature, we conclude that engagement in digital entrepreneurship is an intentional behavior primarily related to the person and the context. In addition to Ajzen's model, individual and situational factors also seem to be important to study to better understand this concept. In this context, the present research aims to investigate the effects of cognitive dimensions, notably personality traits, attitudes, and demographic dimensions, particularly gender, on university students' intention to engage in digital entrepreneurship.

2.3. Relationships between personality traits and digital entrepreneurship intention

The influence of personality traits is also one of the essential factors for stimulating and developing the entrepreneurial spirit. (Krauss, 2005). Personality traits are enduring psychological characteristics that remain stable over time and manifest in individuals' behaviors. (Kluckhohn, 1961).

The Big Five personality traits model (BFP) is often used in the entrepreneurship literature to study the personality differences that distinguish successful entrepreneurs from ordinary entrepreneurs. It represents a multidimensional approach that allows for the definition of an individual's characteristics, their modes of thinking, their feelings, and their behavior in response to change and risk by measuring five dimensions: agreeableness, conscientiousness, extraversion, openness to experience, and neuroticism. These five personality traits have been found to influence career choices and organizational performance. (Rauch & Frese, 2007). Indeed, studies suggest that personality traits are relevant for predicting entrepreneurial intentions and performance. (Ip, 2018). The authors emphasize that the personality traits associated with entrepreneurial spirit are significantly correlated with the development of entrepreneurial intention.

According to Zhao (2010), agreeableness is the degree to which a person forgives, is willing to help others, thinks of others, and has the trust of others. Agreeableness encourages people to forgive, to be warm, to be honest, to be modest, to have sympathy for others, and to be helpful. Compared with those who are less pleasant and appear to be manipulative, self-centered, and distrustful, pleasant people seem to have a good heart to be compassionate and tolerant. Pleasant people adapt easily and tend to engage with others, whereas skeptical individuals, who challenge others' ideas and are reluctant to become involved, have a low level of agreeableness. (Akanbi & Akanbi, 2013) indicated that agreeableness has a positive effect on the intention among university students in Nigeria. Yusuf (2015), according to their study conducted among university students in Malaysia, confirmed the positive link between students' agreeableness and entrepreneurial intention. In reality, agreeableness can be a personality trait that allows entrepreneurs to gain the trust of clients and partners. Nevertheless, other studies indicate the existence of a negative relationship between the two. Thus, (Zhao, 2010) suggested that individuals who are too agreeable and trustworthy in business transactions can be easily exploited by competitors. They therefore hypothesized that agreeableness would be negatively related to performance, although their hypothesis was not confirmed by the results of their meta-analysis study. According to their study conducted among university students in Taiwan et al. (2015) reported a negative relationship between agreeableness and entrepreneurial intention, highlighting that agreeableness involves a lower level of

competitiveness, a greater degree of social orientation, and a focus on others rather than oneself. Finally, (Soumyaja & Alexander, 2016), following their study conducted with 108 Indian employees, reported no significant correlation between their entrepreneurial intention and the trait of agreeableness.

An entrepreneurial adventure requires exploring new ideas, demonstrating creativity to solve problems, and applying innovative approaches to develop products, services, and business strategies. (Krauss, 2005). They assert that entrepreneurs are often seen as heroes who challenge the status quo and pursue their creative vision despite the resistance and obstacles they encounter along the way. Thus, depending on their level of risk tolerance and the impact of their past experiences, digital entrepreneurs may or may not be more open to experience than traditional entrepreneurs. However, the rapid pace and evolution of digital technology may require a greater ability to adapt and embrace new experiences, which would justify a greater expectation of openness among digital startup entrepreneurs than among founders of conventional startups. Thus, open-minded people are naturally curious about their surroundings, and their lives are rich in experience, which allows them to adapt better to changes. According to Zhao (2010), openness is the degree to which an individual is creative, original, and tries new things. People who are open to experience and the exploration of new things are in search of novelty, are imaginative, and are always ready to try unusual experiments. (Soumyaja & Alexander, 2016) reported that openness to experience and extraversion are the only significant predictors of entrepreneurial intention. Similarly, Yusuf (2015) reported a very significant correlation between openness and entrepreneurial intention among university students in Malaysia, whereas Ip (2018) reported a negative correlation between these two variables in the context of university students in Hong Kong.

The extraversion trait (Zhao, 2010) is an energetic approach characterized by sociability, confidence, a positive attitude, and the ability to influence others. Extraverted individuals seek to connect with others, thrive in high-energy environments, and take on leadership roles. Extraverted individuals may exhibit higher levels of self-efficacy and, as a result, appear more confident in their ability to achieve outcomes. (Zhao, 2010) reported conditional or weak support for the impact of extraversion on business performance, whereas (Liang et al., 2015) reported that extraversion has a weak influence on students' entrepreneurial intention. In contrast, other authors (Soumyaja & Alexander, 2016) and (Akanbi & Akanbi, 2013) concluded that extraversion is positively and significantly related to entrepreneurial intention.

The conscientious character is considered the ability of an individual to think before making a decision, to follow a set of standards and procedures, to act responsibly and analytically (as opposed to emotionally or intuitively), and to plan and organize activities. (Zhao, 2010). Very conscientious people are disciplined, organized, ambitious, results oriented, and self-disciplined. They work hard, are punctual, and diligent. (Zhao, 2010), conscientious entrepreneurs do not make hasty decisions; they seek causal deductions and often limit impulsive decisions in favor of goal-oriented choices. Previous studies have shown that entrepreneurs are highly motivated to achieve their goals and exhibit high levels of professional conscientiousness. (Liang et al., 2015). On the other hand, Rothmann & Coetzer (2003) indicated that high levels of professional conscientiousness can lead to meticulousness, compulsive organization, or workaholic behavior, which may be detrimental to the intention to undertake. The results of previous studies regarding the relationship between conscientiousness and entrepreneurial intention are inconclusive. Although (Akanbi & Akanbi, 2013) and (Liang et al., 2015) established a positive and significant link between the two variables, (Soumyaja & Alexander, 2016) showed that conscientiousness is not a predictive and significant factor of entrepreneurial intention.

Neuroticism is the extent to which a person feels tense, gloomy, and anxious and is easily affected by negative or unpleasant emotions. (Zhao, 2010). Neurotic individuals are extremely irritable, depressed, distrustful, moody, uncomfortable, and have low self-esteem (Pagès, 2017). A high level of neuroticism is linked to negative emotions such as anxiety, anger, or depression, whereas a low level suggests resilience, calmness, and the capacity to manage impulses and stress. (Zhao, 2010). It is then suggested that individuals who display these traits as entrepreneurs may be less likely to persist, seek innovative solutions, and effectively handle criticism and unexpected challenges. Zhao (2010) identified a positive connection between emotional stability (viewed as the opposite of neuroticism) and entrepreneurial intention and performance. In this context, Yusuf (2015) identified a negative correlation between anxiety and the entrepreneurial intention of university students in Malaysia. (Liang et al., 2015) and (Soumyaja & Alexander, 2016) did not find a significant effect of neuroticism on entrepreneurial intention, whereas (Hsu & Wang, 2018) and (Ip, 2018) reported a positive impact of neuroticism on the entrepreneurial intention of university students in Taiwan and Hong Kong.

In the work of Liu et al. (2020), the authors tested the impact of personality traits on the development of intentions for social entrepreneurship (SEI). Their results revealed that openness to experience positively predicts entrepreneurial self-efficacy through entrepreneurial creativity but that conscientiousness is inversely associated with originality. Extraversion and agreeableness positively predict SEI through moral obligation. Neuroticism could not predict self-esteem, and the effect of self-esteem on SEI was not significant. Openness and agreeableness positively predict self-esteem through perceived social support, whereas extraversion is inversely associated with self-esteem through perceived social support. Openness and agreeableness positively predict entrepreneurial self-efficacy through entrepreneurial creativity, just as extraversion does through utility, whereas neuroticism and conscientiousness are inversely associated with originality. Neuroticism and agreeableness positively predict self-esteem through empathy. Neuroticism and agreeableness positively predict moral obligation, but moral obligation

cannot predict SEI. Extraversion positively predicts emotional intelligence through perceived social support, whereas conscientiousness is inversely associated with emotional intelligence through perceived social support.

In conclusion, research on the relationship between personality traits and digital entrepreneurship continues to emerge as digital commerce gains importance in the global economy. One of the objectives of this study is to understand the extent to which the personality traits of university students in Morocco affect their entrepreneurial intention for digital entrepreneurship. (Bandera & Passerini, 2020) highlighted that traditional entrepreneurs who experience anxiety are likely to have a strong positive correlation with risk and a negative correlation with business performance. However, their study also revealed that in the case of digital entrepreneurs, anxiety has a strong positive correlation with business performance. They suggest that the strongest factor influencing entrepreneurial intention and the creation of new digital businesses is the awareness of the internal professional reasons of the company. Research on the effects of personality traits on entrepreneurial intention in the digital field is scarce.

2.4. *Personality traits and digital entrepreneurship intention: the moderating role of attitude*

Previous research has identified several factors that may influence the intention to undertake such tasks. One of the important factors is attitude. In their analysis, Tremblay & Gasse (2007) assert that numerous empirical studies demonstrate the relevance of the concept of attitude as a strong and reliable predictor of entrepreneurial intention. Researchers argue that attitudes and personalities are closely linked when predicting behavior. Attitudes are likely to change and can be influenced by an environment that promotes entrepreneurial activity. (Krueger et al., 2000). Furthermore, according to the theory of planned behavior (Ajzen, 1991), it provides a recognized explanatory model of behavior and intention. This theory posits that human behavior, to be effective, must be decided and planned. She assumes that behavior is determined by intention, which is defined by attitudes, social norms, and perceived control of the situation. More precisely, attitudes reflect managers' positive or negative judgments about the appropriateness of their behavior and its consequences. (Kolvereid, 1996), who studied entrepreneurial intention among a sample of Norwegian business school students, concluded that the intention to start a business is closely linked to attitude (favorable or unfavorable toward entrepreneurship). However, despite this significant correlation, he concluded that attitude does not have a major direct effect on entrepreneurial intention; rather, according to his study, the latter is influenced more by social norms and perceived behavioral control. Similarly, Krueger, Reilly, and Carsrud (2000) share the same findings as Kolvereid by establishing that entrepreneurial intention is more influenced by feasibility than by the attitudes of American business school students. On the other hand, (Solesvik, sd), following his study conducted among Norwegian university students using the theory of planned behavior, reported a significant influence of attitudes and social norms on the entrepreneurial intention of students but no significant influence of perceived behavioral control. By also utilizing Ajzen's model, Koubaa & Eddine (2012) concluded that the entrepreneurial attitude of Moroccan higher education students is a significant predictor of their entrepreneurial intention. Similarly, (Boudabbous, 2011), using the same model to study the entrepreneurial intention of forty-nine graduates from the higher school of commerce in Sfax, concluded that attitude is the only factor significantly related to entrepreneurial intention. In other words, the study does not establish a significant link between social norms and behavioral perceptions. Other authors have emphasized that attitudes play a mediating role between individual characteristics and entrepreneurial intentions. Thus, (Harris & Gibson, 2008), following their study conducted with a sample of American university students, asserted that the entrepreneurial characteristics of students are significantly related to their entrepreneurial attitudes. Furthermore, their study also shows that entrepreneurial attitude has a significant influence on entrepreneurial intention. Similarly, (Pen, 2014) demonstrated that the personality trait of self-efficacy positively and significantly affects entrepreneurial intention through behavioral attitudes.

Finally, the impact of demographic characteristics has also been extensively studied in the literature. Solesvik (sd) studied the relationships among age, gender, and entrepreneurial family background and concluded that only gender affects the entrepreneurial intentions of students; thus, the author concluded that women have lower entrepreneurial intentions than men do. Pen (2014) also concluded that the direct effect of entrepreneurial self-efficacy on entrepreneurial intention diminishes as subjective norms (gender, age, education, previous experiences) increase. On the other hand, the indirect effects of entrepreneurial self-efficacy on intention, through attitudes toward entrepreneurship and planned entrepreneurial control, increase as subjective norms rise.

In the context of this study, we are preparing to investigate, among other things, first, the direct and indirect linkages between digital entrepreneurship intentions and personality traits, then the moderating role of gender in the relationship between behavioral attitudes and intention for digital entrepreneurship, and, second, the mediating role of attitude in the relationship between personality traits and digital entrepreneurship intention. Figure (1) below presents the relational model of the study.

2.5. *Research Hypotheses*

On the basis of the review of the literature above, this study proposes the following hypotheses:

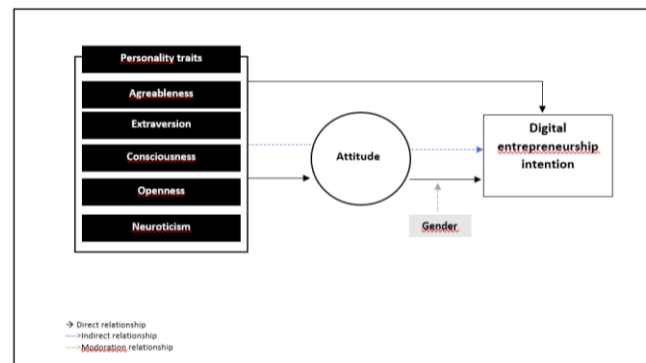


Figure 1 Conceptual model.

- The first set of hypotheses suggests that personality traits directly influence the intention of university students toward digital entrepreneurship:

- H1: There is a positive relationship between agreeableness and students' intention for digital entrepreneurship.
- H2: There is a positive relationship between extraversion and students' intention for digital entrepreneurship.
- H3: There is a positive relationship between conscientiousness and students' intention for digital entrepreneurship.
- H4: There is a positive relationship between openness to experience and students' intention for digital entrepreneurship.
- H5: There is a negative relationship between neuroticism and students' intention for digital entrepreneurship.

-The second set of hypotheses suggests that the attitudes of university students directly influence their intention toward digital entrepreneurship:

- H6: There is a positive relationship between students' attitudes toward digital entrepreneurship and their intentions toward digital entrepreneurship.

-The third set of hypotheses suggests that personality traits influence university students' attitudes toward digital entrepreneurship:

- H7: There is a positive relationship between agreeableness and students' attitudes toward digital entrepreneurship.
- H8: There is a positive relationship between extroversion and students' attitudes toward digital entrepreneurship.
- H9: There is a positive relationship between conscientiousness and students' attitudes toward digital entrepreneurship.
- H10: There is a positive relationship between openness to experience and students' attitudes toward digital entrepreneurship.
- H11: There is a negative relationship between neuroticism and students' attitudes toward digital entrepreneurship.

The fourth set of hypotheses suggests that the attitudes of university students act as a mediating variable between their personality traits and their intention for digital entrepreneurship:

- H12: The attitudes of students have a mediating effect on the relationship between personality traits (agreeableness) and students' intention for digital entrepreneurship.
- H13: The attitudes of students have a mediating effect on the relationship between personality traits (extraversion) and students' intention for digital entrepreneurship.
- H14: The attitudes of students have a mediating effect on the relationship between personality traits (conscientiousness) and students' intention for digital entrepreneurship. Table 9 displays the confirmatory results.
- H15: The attitudes of students have a mediating effect on the relationship between personality traits (openness to experience) and students' intention for digital entrepreneurship.
- H16: The attitudes of students have a mediating effect on the relationship between personality traits (neuroticism) and students' intention for digital entrepreneurship.

The fifth set of hypotheses suggests that the relationship between university students' attitudes and their intention for digital entrepreneurship is influenced by gender effects:

- H17: Gender moderates the relationship between students' attitudes toward digital entrepreneurship and their intention for digital entrepreneurship.

3. Methodology

This study follows an exploratory quantitative approach. An exploratory quantitative approach is an effective methodology for studying the impact of personality traits on students' digital entrepreneurship intentions because it allows researchers to gather objective, numerical data from a broad sample, making it possible to identify patterns and correlations that might not be evident in a qualitative analysis. This approach enables the examination of a range of personality traits and their potential influence on entrepreneurial intentions, which is essential in understanding how different personality profiles may contribute to or hinder digital entrepreneurship. Quantitative data can provide statistical insights that reveal the strength and significance of these relationships, offering a foundation for hypothesis testing and generalizability across different student

populations. Moreover, using an exploratory design allows flexibility in uncovering unexpected connections or trends in students' intentions, ultimately enriching the research with a more comprehensive view of how personality factors influence entrepreneurial aspirations in a digital context. Therefore, we explored how the personality characteristics of university students in Morocco, notably the traits of agreeableness, openness, neuroticism, extraversion and conscientiousness, can influence their entrepreneurial aspirations digitally via the theory of planned behavior. Using the theory of planned behavior and the Big Five model as a theoretical framework provided a solid framework for analyzing these dynamics.

3.1. Measures and tools for data collection

This study developed measures on the basis of previous research. To the best of our knowledge, existing measures have been used or modified to meet the objectives of this study. Thus, following the previous conceptual model (Figure 2), we identify our dependent variable "entrepreneurial intention for digital entrepreneurship." The items of the variable "Intention for digital entrepreneurship" are taken from the study by (Lai, 2019) and adapted for the needs of our study. The variable "intention for digital entrepreneurship" was measured by three items with a constant reliability coefficient of (α : 0.754). The attitudes of students toward digital entrepreneurship were adapted and measured via four items derived from the theory of planned behavior by (Ajzen, 1991) and (Fragoso et al., 2019), with a constant reliability coefficient of (α : 0.826). The five personality traits were measured via items taken from the five-factor personality inventory. The initial inventory consisted of sixty items, which we reduced for the needs of the study to avoid overly condensing the questionnaire and to ensure ease of administration, data collection, and processing. (Soumyaja & Alexander, 2016). The five personality traits showed a consistently satisfactory reliability coefficient, namely, the agreeableness dimension (α : 0.679), the extraversion dimension (α : 0.689), the neuroticism dimension (α : 0.747), the openness dimension (α : 0.657), and the conscientiousness dimension (α : 0.667). The empirical study was conducted via an online questionnaire. The introductory part of the questionnaire focused on describing the purpose of the questionnaire. The second part of the questionnaire includes questions designed to identify the sociodemographic characteristics of the student. The third part of the questionnaire focused on the main questions related to the study. Except for the variable gender, which was coded as "Female" or "Male," all the responses to the questions followed a Likert scale (1--5), ranging from (5) "strongly agree" to (1) "strongly disagree."

3.2. Sample, data collection and statistical methods

Students from the National School of Commerce and Management of Marrakech (ENCGM), at the fourth and last levels, were randomly selected to participate in this study through a questionnaire. This specific population has been targeted because it is expected to be engaged in digital entrepreneurship because of 1) the creation of the ENCG Marrakesh Incubator (EMI) in 2016, which works to support students in learning about entrepreneurship and assist them in creating their own businesses; 2) the participation of students in the "student entrepreneur award", an event organized annually by the ENCGM; 3) their field training as future managers in commerce and management; and 4) the appropriation of digital tools by young students through the digitalization of education. The questionnaire was administered online to students from December 2023 to February 2024. We managed to collect 112 usable responses. The questionnaire did not undergo any major changes during the data collection process.

With respect to the statistical methods used in this study to assess the reliability and validity of measurement scales for concepts, confirmatory factor analysis (CFA) was used because this approach can verify whether the measurements of a concept are consistent with the nature of that concept, and it has been widely used in social research. (Hair et al., 2010). For hypothesis testing, an analysis using structural equation modeling (PLS) was employed in line with the recommendations of Hair Jr et al. (2021) to overcome the limitations of regression methods suited for less complex models. The Smart PLS-SEM method is considered suitable for analyzing complex research models that are proposed as an estimation framework that integrates relevant theories and empirical data.

4. Results

4.1. Sociodemographic analysis

The statistical analysis of our sample reveals that its structure is composed of 58% male students and 42% female students. Regarding their experience in digital entrepreneurship (DE), 26.8% reported having (or having had) a digital project; 8% stated that they are currently in the process of considering creating their own digital project, and 65.2% indicated that they have never thought about or had any previous experience in DE. The age of the participants mostly ranged between 18 and 20 years (52%), whereas 57.1% of their high school majors were in economics and 42.9% were in science. A total of 51.8% of the respondents were from the "management" field, whereas 33.9% were from the commerce field, and 14.3% were in the common core program. The diversity of the sample above makes the study more significant.

4.2. Descriptive statistics

Descriptive statistics were examined via the means and standard deviations. The mean value of the respondents ranges between 1.428 and 3.821, and the standard deviation (SD) ranges between 0.495 and 1.193. This indicates a satisfactory degree of dispersion of the results around the mean value. Furthermore, the examination of multicollinearity among the variables indicates that the variance inflation factor (VIF) is less than 5, which suggests the absence of problematic strong correlations among the explanatory variables. Finally, the kurtosis and skewness coefficients range between -1 and 1, which means that the collected data follow a normal distribution.

The measurement scales are examined via several statistical techniques. First, we conducted an exploratory factor analysis to identify the main factors of the study, assess their reliability, and evaluate their internal consistency. According to Table 1, the values of the Cronbach's alpha (α) test range from 0.721 to 0.881, and those of the composite reliability (CR) test range from 0.765 to 0.912, whereas previous studies indicate that a value above 0.7 is satisfactory, which informs us about the acceptable reliability of the measurement instruments used in this study. Next, convergent validity was tested via the average variance extracted (AVE), and the results of the test all had values greater than 0.5, which represents the minimum acceptable level deemed adequate for the convergent validity of the measurement scale.

Table 1 Results of the descriptive statistics.

Statistics	Average	Standard Error	Median	Mode	Standard deviation	Variance	Kurtosis	Skweness	Sum	Count
INTE	3,244048	0,108063	3	4	1,143627	1,308988	-0,29249	-0,52845	363	112
ATD	3,821429	0,08424	4	4	0,891511	0,800676	1,278609	-0,84855	428	112
AGR	3,389994	0,112275	4	4	1,193499	1,425954	-0,56133	-0,4948	383	112
EXT	3,404762	0,111576	4	4	1,180806	1,396182	-0,49606	-0,52636	381	112
CSN	3,424107	0,101507	4	4	1,074246	1,159508	-0,31899	-0,47763	383	112
OPN	3,357143	0,108947	4	3	1,176722	1,335264	-0,73639	-0,25243	369	112
NRV	2,690476	0,111761	3	3	1,148678	1,404869	-0,76756	0,203053	306	112
Gender	1,580357	0,046841	2	2	0,495718	0,245737	-1,92575	-0,3301	177	112

Source: SPSS analysis.

Table 2 Reliability of Measurement Items.

	α	CR	AVE	Items	Loading	VIF
Intention	0,755	0,800	0,572	INT_1	0,781	1,562
				INT_2	0,764	1,849
				INT_3	0,722	1,413
Attitude	0,803	0,831	0,622	ATT_1	0,842	1,656
				ATT_2	0,729	1,758
				ATT_3	0,791	1,861
				ATT_4	0,852	2,008
Agreeableness	0,881	0,912	0,776	AGR_1	0,889	1,183
				AGR_2	0,883	1,484
				AGR_3	0,871	1,583
Extraversion	0,870	0,904	0,758	EXT_1	0,861	1,197
				EXT_2	0,894	1,53
				EXT_3	0,856	1,674
Openness	0,749	0,794	0,563	OPN_1	0,781	1,248
				OPN_2	0,692	1,327
				OPN_3	0,775	1,278
Conscientiousness	0,747	0,836	0,561	CNS_1	0,797	2,193
				CNS_2	0,789	2,189
				CNS_3	0,682	1,535
				CNS_4	0,722	1,011
Neuroticism	0,721	0,765	0,521	NRT_1	0,695	1,489
				NRT_2	0,727	1,556
				NRT_3	0,743	1,441

Source: PLS analysis.

Next, we tested the discriminant validity of our measurement scale by conducting cross-factor analysis, the Fornell–Larcker test, and the multitrait–monotrait test. (HTMT). As shown in Table 3, the cross matrix of factors indicates that the value



of each unobserved latent variable is greater than those crossed with other measures, which ensures discriminant validity. Furthermore, the values of the AVE are greater than the intervariable correlation coefficient, which also indicates that discriminant validity is well established. (Cf. Table 4). For the HTMT test, the values are less than 0.85 (Kline, 2011), which indicates satisfactory discriminant validity. (Cf. Table 5). Overall, the results of the previous tests support the reliability, consistency, discriminant validity, and convergent validity of the measurement scale used in this study, as they have been validated in the external measurement model of the study. That said, we can then move on to the external structural model to test our hypotheses.

Table 3 Correlations between constructs and assessment of discriminant validity.

	AGREEABLNESS	ATTITUDE	CONSCIENTIOUSNESS	EXTRAVERSION	ED_INTENTION	NEUROTICISM	OPENNESS
AGR1	0.889	0.380	0.291	0.710	0.507	0.017	0.316
AGR2	0.883	0.451	0.449	0.775	0.390	0.173	0.396
AGR3	0.887	0.310	0.593	0.841	0.541	0.160	0.454
ATTI1	0.408	0.842	0.386	0.412	0.430	0.084	0.225
ATTI2	0.359	0.729	0.299	0.358	0.208	0.131	0.291
ATTI3	0.450	0.791	0.444	0.439	0.342	0.097	0.390
ATTI4	0.354	0.852	0.501	0.357	0.424	0.106	0.400
CNS1	0.573	0.462	0.797	0.576	0.294	0.070	0.386
CNS2	0.557	0.443	0.789	0.572	0.456	0.165	0.419
CNS3	0.334	0.415	0.682	0.325	0.438	0.004	0.429
CNS4	0.317	0.309	0.722	0.167	0.183	0.225	0.116
EXT1	0.733	0.383	0.308	0.861	0.516	0.013	0.337
EXT2	0.776	0.449	0.450	0.894	0.399	0.168	0.393
EXT3	0.830	0.310	0.593	0.856	0.541	0.160	0.454
INTE1	0.593	0.485	0.440	0.589	0.781	0.307	0.515
INTE2	0.447	0.330	0.381	0.454	0.764	0.285	0.410
INTE3	0.452	0.231	0.306	0.464	0.722	0.155	0.311
NRT1	0.030	0.152	0.045	0.020	0.165	0.695	0.093
NRT2	0.198	0.012	0.101	0.190	0.339	0.727	0.068
NRT3	0.093	0.198	0.201	0.098	0.122	0.743	0.066
OPN1	0.396	0.402	0.395	0.403	0.493	0.125	0.781
OPN2	0.282	0.216	0.344	0.277	0.351	0.046	0.692
OPN3	0.471	0.278	0.367	0.478	0.308	0.002	0.775

Source: PLS.

Table 1 Fornér–Larcker test.

	AGR	ATT	CNS	EXT	INTE	NRV	OPN
AGR	0.88						
ATTI	0.48	0.79					
CNS	0.56	0.51	0.75				
EXT	0.59	0.48	0.57	0.87			
INT_DE	0.61	0.44	0.46	0.62	0.76		
NRV	0.13	0.05	0.09	0.13	0.31	0.72	
OPN	0.49	0.40	0.48	0.50	0.51	0.08	0.75

Source: PLS.

Table 2 HTMT Test.

	AGR	ATT	CNS	EXT	INTE	NRV	OPN
AGR							
ATTI	0.648						
CNS	0.766	0.612					
EXT	1.452	0.641	0.766				
INT_DE	0.645	0.525	0.577	0.647			
NRT	0.224	0.201	0.197	0.212	0.394		
OPN	0.745	0.524	0.652	0.746	0.693	0.162	

Source: PLS.

4.3. Evaluation of the internal structural model

To test the proposed hypotheses of the study, a structural equation survey was implemented with the aim of examining the model's ability to explain and predict the variation in endogenous variables caused by the exogenous variable. (Hair Jr, et al., 2021). Indeed, (N. Miller & R. Falk, 1992) suggest an R² value of at least 0.10 to ensure a satisfactory fit of the model. Indeed,



the R² value (Table 6) of the endogenous variable "digital entrepreneurship intention" is 0.527, and that of the endogenous variable "digital entrepreneurship attitude" is 0.337. Both values are above the recommended thresholds and indicate that the study model sufficiently represents the exogenous variables. Similarly, the calculation of Q² (Table 6), which measures the predictive relevance of the model, yielded a value of 0.352 for the variable "digital entrepreneurship intention" and a value of 0.202 for the variable "digital entrepreneurship attitude." The two variables are greater than zero (Fornell & Cha, 1994), indicating the satisfactory predictive capacity of the model. Finally, Table 6 reveals that the value of the SRMR of the model is (0,049). Hair Jr et al. (2021) suggested that the value of SRMR should be less than 0.08 for the model to be acceptable. Additionally, the value of the NFI should be greater than (0.9), and the model has a value of (0.911). Given that both values exceed the recommended thresholds, the adequacy of the research model is therefore satisfactory.

Table 3 Model Fit.

	R-square	Q-square
ATTITUDE_DE	0.337	0.202
INTENTION_DE	0.527	0.352
Model Fit index	SRMR	NFI
	0.049	0.911

Source: Smart PLS.

4.4. Hypothesis Testing

The model was then evaluated via the bootstrapping approach with five thousand resamples to assess the significance of the path coefficient and to verify the validity of the hypotheses. The present study proposed seventeen hypotheses according to which students' intention toward entrepreneurship is associated with their perception of digital entrepreneurship, which in turn is affected by their personality traits. Table 7 shows the regression coefficients, the value (ρ), and the coefficients (β).

Table 4 Hypothesis Testing (Set 1).

	Coefficient (β)	Valeur (τ)	Valeur (ρ)	Hypothèse	Résultat
AGR→INT	-0.086	2.099	0.021	H1	Non confirmed
EXT→INT	0.233	3.595	0.011	H2	Confirmed
CSN→INT	0.145	5.749	0.004	H3	Confirmed
OPN→INT	0.389	3.157	0.007	H4	Confirmed
NRT→INT	-0.277	2.132	0.023	H5	Confirmed
ATT→INT	0.136	5.511	0.000	H6	Confirmed

Table 5 Hypothesis Testing (Set 2).

	Coefficient (β)	Valeur (τ)	Valeur (ρ)	Hypothèse	Résultat
AGR→ATT	0.403	7.126	0.000	H1	Confirmed
EXT→ATT	0.252	3.024	0.000	H2	Confirmed
CSN→ATT	0.287	4.464	0.000	H3	Confirmed
OPN→ATT	0.439	7.971	0.000	H4	Confirmed
NRT→ATT	-0.075	4.151	0.001	H5	Confirmed

Table 6 Hypothesis Testing (Set 3).

	Coefficient (β)	Valeur (τ)	Valeur (ρ)	Hypothèse	Résultat
AGR→ATT→INT	0.194	5.629	0.003	H12	Confirmed
EXT→ATT→INT	0.174	3.408	0.016	H13	Confirmed
CSN→ATT→INT	0.139	3.251	0.004	H14	Confirmed
OPN→ATT→INT	0.225	5.157	0.007	H15	Confirmed
NRT→ATT→INT	-0.217	2.132	0.044	H16	Confirmed

Table 7 Hypothesis Testing (Set 4).

	Coefficient (β)	Valeur (τ)	Valeur (ρ)	Hypothèse	Résultat
Genre X ATT→INT	0.088	0.487	0.627	H17	Non confirmed

5. Discussion

The objective of this study was to analyze the relationships among personality traits, attitudes, and the intentions of university students toward digital entrepreneurship. The focus was on the Big Five model (agreeableness-extraversion-consumption-openness to experience-neuroticism) discussed within the conceptual framework of this article to operationalize the personality traits of students at the National School of Commerce and Management in Marrakech. The analysis was divided into four parts: first, an examination of the direct relationship between personality traits and students' behavioral attitudes



toward digital entrepreneurship; second, an analysis of university students' intentions toward digital entrepreneurship; second, an analysis of the indirect relationship between the two constructs, taking into account the mediating effect of students' attitudes; and finally, an analysis of the direct relationship between students' attitudes toward digital entrepreneurship and their intentions toward digital entrepreneurship, considering the effect of the intermediary variable of gender.

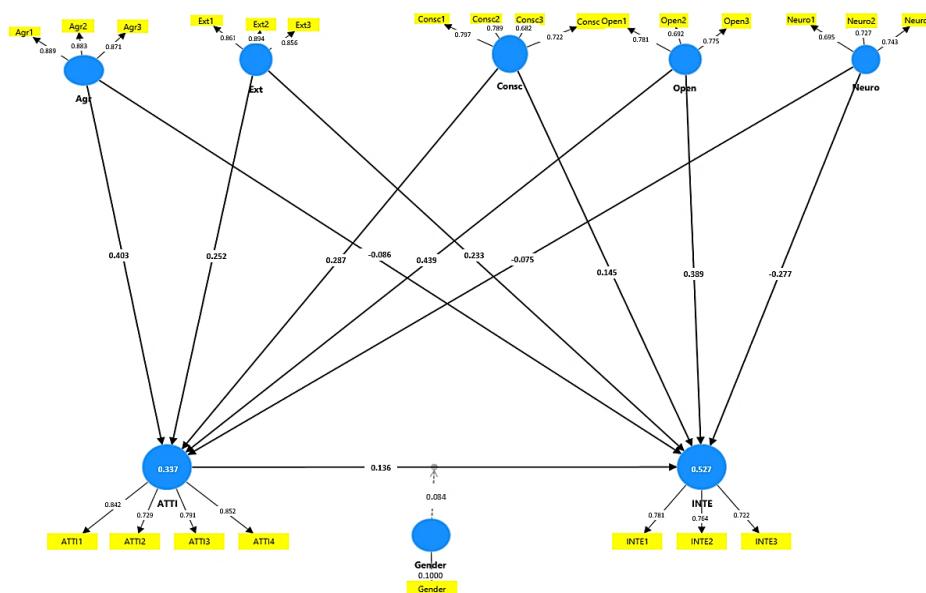


Figure 2 Final Model.
Source: PLS analysis.

To the best of our knowledge, this empirical study is one of the few carried out in Morocco to explore the links between personality traits, attitudes, and gender and their impact on the intention to engage in digital entrepreneurship within the Moroccan academic environment. The results of the study validate the explanatory model of entrepreneurial intention through personality traits and the attitudes of university students toward digital entrepreneurship. Some results seem interesting to discuss.

With respect to personality traits and their direct impact on the intention for digital entrepreneurship, the results of the study indicate that all personality traits (with the exception of neuroticism and agreeableness, which have a significantly negative relationship) have a significantly positive relationship. Hypotheses H2 to H5 were therefore validated, whereas H1 was rejected. The Agreeability trait shows a significantly weak and negative relationship and a weak influence on students' intention for digital entrepreneurship. This result is in line with the results of previous studies (Liu et al., 2020) and differs from those of the studies cited in the literature review, which proposed agreeableness alongside open-mindedness and conscientiousness as the main traits determining entrepreneurship (Akanbi & Akanbi, 2013). This allows us to deduce that students who are altruistic and modest probably prefer the status quo and are not very tempted to open up to new digital adventures and experiences. The study also supported hypothesis (H5) by identifying a significantly negative impact between neuroticism and the intention to undertake digital ventures. This differs from (Hsu & Wang, 2018) and (Ip, 2018), who reported a positive impact of neuroticism on the entrepreneurial intention of university students in Taiwan and Hong Kong and confirmed that (Zhao, 2010) supported the hypothesis that the emotional stability of students in the face of various contextual and technological changes positively affects their intention to become digital entrepreneurs.

In addition, the results of the study show that openness to experience, extraversion and conscientiousness have a direct, positive and significant influence on students' intention to become digital entrepreneurs. These results corroborate those of (Soumyaja & Alexander, 2016), (Akanbi & Akanbi, 2013), (Zhao, 2010), (Yusuf, 2015), and (Liu et al., 2020)) and do not support those of (Ip, 2018). Indeed, our study shows that the intention for digital entrepreneurship is influenced by extroversion (23.3%) (Akanbi & Akanbi, 2013) and conscientiousness (14.5%) (Liu et al., 2020). Interestingly, openness to experience (38.9%) is the main direct predictor of entrepreneurial intention among ENCG-M students. This result supports that of (Soumyaja & Alexander, 2016). This is justified by the fact that the digital world is relatively new and constantly evolving. As a result, only students who are very open to experience and who are constantly looking for diverse and varied experiences are more likely to be attracted to this career. On the other hand, these results confirm that when students are cooperative, altruistic and sympathetic, they are less likely to engage in digital entrepreneurship.

Furthermore, the results of the study support Hypothesis 6 (H6) and support the findings of Boudabbous (2011), confirming a direct positive impact of students' attitudes toward digital entrepreneurial intention. Similarly, the theory of

planned behavior was further supported by the results of the study with regard to the direct relationship between personality traits and students' attitudes toward digital entrepreneurship. Thus, the study confirmed a significantly positive influence (40.3%) between agreeableness and students' attitudes toward digital entrepreneurship, which confirms H7. Additionally, the study supported hypothesis (H11) by identifying a significantly negative but small effect relationship (-7.5%) between neuroticism and digital entrepreneurship intention, indicating that anxiety and emotional instability could at least impact individuals' attitudes (Lai, 2019). Second, the study confirmed a significantly positive influence (25.5%, 28.7% and 43.9%) of extraversion, conscientiousness and openness to experience, respectively, on the attitudes of students toward engaging in digital entrepreneurship. This influence is consistent with those observed in previous studies analyzing the significant impact of personality traits on individuals' personal attitudes (Lai, 2019). These results confirm and support those of Ajzen's theory of planned behavior.

For the indirect relationships, the results confirmed that, with the exception of neuroticism, all the specific indirect effects were positive and significant. The results support the set of research hypotheses (H12 (Agreeableness: 19.4%), H13 (Extraversion: 17.4%), H14 (Conscientiousness: 13.9%), H15 (Openness: 22.5%) and H16 (Neuroticism: -21.7%)). This finding shows that students' attitudes act as a partial mediator of the influence of personality traits on entrepreneurial intention. This means that the influence of personality traits on the intention for digital entrepreneurship is not fully explained by attitudes. On the other hand, Lai (2019) stated that entrepreneurial attitudes reinforce the influence of personality traits on entrepreneurial intention. We can therefore deduce that Moroccan students' attitudes toward digital entrepreneurship pivot to the link between personality traits and intention. These results imply that entrepreneurship training and education should focus on improving students' positive attitudes toward entrepreneurship in general and digital entrepreneurship in particular.

The final objective of this study was to examine the moderating role of gender in the relationship between student attitudes and the intention to undertake digital entrepreneurship. The results of the study did not support Hypothesis H17; in fact, the study did not find a significant moderating effect between the two constructs (8%), which indicates that the effect of student attitudes toward the intention for digital entrepreneurship is similar regardless of gender. These results contradict the findings of the literature (Pen, 2014).

6. Conclusion

Overall, this study provides a new understanding of the antecedents of digital entrepreneurial intention, establishing the importance of personality traits and attitudes in shaping digital entrepreneurial intention. Regardless of gender, individuals with higher levels of openness, conscientiousness, extraversion and agreeableness and lower levels of neuroticism are more likely to have a more favorable attitude toward digital entrepreneurship. This finding also implies that by understanding the factors that motivate individuals to engage in digital entrepreneurship, it is possible to develop more effective interventions, training and support strategies to foster digital entrepreneurship and encourage students to become more engaged in entrepreneurship.

This study shows that universities are being asked to take greater advantage of Morocco's advances and achievements in the digital field (GITEX, 2024) and the openness of young people to digital platforms and tools on a daily basis, first, to improve the quality of the digital education service offered to university students; second, to increase awareness of digital entrepreneurship among university students; and third, to strengthen and innovate entrepreneurship training models adapted to the digital age, taking into account psychological dimensions, particularly personality traits. The aim is to develop students' entrepreneurial personalities and improve university students' entrepreneurial intentions in the digital field, especially given that unemployment among young graduates is on the rise. Entrepreneurship in general, and digital entrepreneurship in particular, is a necessary and promising alternative for employment and the creation of added value for tomorrow's Moroccan digital economy.

With respect to the limitations of this study, the sample is not representative of the cultural and contextual diversity of Moroccan universities. Additionally, the use of self-reported data may introduce bias. In addition, the research lacked experimental conditions and greater variability in the study population, suggesting the need for future studies. Future research should explore other psychological and cognitive aspects and use mixed approaches to validate these results. Despite these limitations, this study establishes a solid basis for understanding the influence of personality traits on the formation of entrepreneurial intentions.

Finally, the present exploratory study offers several avenues of research because, while it is interested in making an empirical contribution to validating the influence of personality traits and attitudes on the intention to pursue digital entrepreneurship, a field of entrepreneurship that is rarely sought after in Africa, it does not claim to conclude that this is the only factor affecting students' intention to pursue digital entrepreneurship. In fact, other cognitive factors (motivations and beliefs), social norms (culture and values), and perceptions of behavioral control (education, previous experience and digital skills) could be investigated further in future work to gain a better understanding of this subject. Additionally, this study focused only on students from one business school (ENCGM), so broadening the scope of the study to include students from other Moroccan university degree-granting structures, from different training specialities, and from diverse geographical contexts could also constitute a future research opportunity.

Acknowledgment

We would like to express our gratitude to all the students of the National School of Business and Management of Marrakesh for their valuable contributions and unwavering support. This research would not have been possible without the valuable collaboration of all individuals involved.

Ethical considerations

To protect the anonymity of respondents, all collected data were encrypted and stored anonymously, with no personal identifying information linked to their responses.

Conflict of interest

The authors declare no conflicts of interest. All analyses and conclusions were conducted independently without any external influence.

Funding

The authors entirely funded this research. This research did not receive any financial support.

References

- ADD. (2020). *Notre d'orientations générales pour le développement du digital au Maroc à horizon 2025*. Mars 2020 - Maroc: Agence de développement du digital.
- Ajzen, I. (1991). The theory of planned behaviour: Reactions and reflections. *Organizational Behaviour and Human Decision Processes*.
- Akanbi, S. T., & Akanbi, G. (2013). Familial factors, Personality traits and self efficacy as detremnants of entrepreneurial intenions among vocational based college of education students in Oyo state, Nigeria. *Education, Business, Psychology*.
- Alkhalailah, M. Y. (2021). Systematic Review: Digital Entrepreneurship Intention. *Network Intelligence Studies Volume IX, Issue 17 (1/2021)*, 25.
- Badarudin, M., Mohamad, Z., Awee, A., Mohsin, F., & Kadir, S. (2015). Cyber entrepreneurship ecosystem: proposed concept paper. *Proceeding of 2nd International Conference on Information Technology & Society (IC-ITS 2015), Kuala Lumpur, Malaysia*, 485-492.
- Bamarouf, N., & Laiachi, M. (2024). The digital transformation of Moroccan universities: Issues and perspectives. *International Journal of Accounting, Finance, Auditing, Management and Economics - IJAFAME*, 5(11).
- Bandera, C., & Passerini, C. (2020). Personality traits and the digital entrepreneur: Much of the same thing or a new breed? *Journal of the international council for small business*.
- Bandura, A. (1982). Self-efficacy mechanism in human agency. *American Psychologist*.
- Boudabbous, S. (2011). L'intention entrepreneuriale des jeunes diplômés. *Revue Libanaise de gestion et d'economie, Volume 4, Issue 6, 2011*, Pages 1-20.
- F.Hair.J, M.Hult.G.T, M.Ringle.C, M.Sarstedt, & O.Thiele.K. (2017). Mirror, mirror on the wall: a comparative evaluation. *Journal of the Academy of Marketing Science*.
- Fornell, C., & Cha, J. (1994). Partial Least Squares. *Advanced Methods of Marketing Research*. 407,52-78.
- Fragoso, R., Rocha, W., & Xavier, A. (2019, January). Determinant factors of entrepreneurial intention among university students in Brazil and Portugal. *Journal of Small Business & Entrepreneurship*, 32(2):1-25.
- Guthrie, C. (2014). The Digital Factory: A Hands-On Learning Project In Digital Entrepreneurship. *Journal of Entrepreneurship Education*.
- Hair Jr, J., Hult, G., Ringle, M., Sarstedt, M., Danks, N., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R, A workbook*. Springer.
- Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: A global perspective*. Upper Saddle River: . Pearson Education, Inc.
- Harris, M., & Gibson, S. (2008). Examining the entrepreneurial attitudes of US business students. *Education & Training. Vol.50 No.7*, 568-581.
- Hmaidouch, I., Jafari, A., El-Khaddar, H., Elmeskine, L., & Chakir, A. (2023). Predicting Students' Digital Entrepreneurial intention. *Revue de l'Entrepreneuriat et de l'Innovation, Volume 5, N°19 (2023)*.
- Hockerts, K. (January 2017). Determinants of Social Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, 2017(1):105-130.
- Hsu, C. Y., & Wang, S. M. (2018). Social entrepreneurial intentions and its influential factors: A comparison of students in Taiwan and Hong Kong. *Innovations in Education and Teaching International*, 385-395.
- Hull, C. E., Hung, Y., Hair, N., Perotti, V., & Demartino, R. (2007). Taking advantage of digital opportunities: A typology of digital entrepreneurship. *International Journal of Networking and Virtual Organisations*, 4(3), 290-303.
- Ip, C. Y. (2018). Social entrepreneurial intentions of students from HongKong. *The Journal of Entrepreneurship*, 27(1), 47-64.
- Kerrouch, H., & Bouazizi, A. (2023). Vers la digitalisation de l'enseignement supérieur au Maroc : approches théoriques et perspectives. *International Journal of Accounting, Finance, Auditing, Management and Economics*, 4(4-1), 61-80.
- Kluckhohn, F. S. (1961). *Variations in Value Orientations*. Westport, CT: Greenwood Press. .
- Kolvereid, L. (1996). Prediction of employment status choice intentions. *Entrepreneurship Theory and Practice*, 47-57.
- Koubaa, S., & Sahib Eddine, A. (2012). L'intention entrepreneuriale des étudiants au Maroc : une analyse PLS de la méthode des équations structurelles. *11ème CIFEPM, Congrès international francophone de l'entrepreneuriat et PME*, 15-17.
- Kraus, S., Palmer, C., Kailer, N., Kallinger, F., & Spitzer, J. (2018). Digital entrepreneurship: A research agenda on new business models for the twenty-first century. *International Journal of Entrepreneurial Behavior & Research ISSN: 1355-2554*.

- Krauss, S. F. (2005). Entrepreneurial orientation: A psychological model of success among southern African small business owners. *European Journal of Work and Organizational Psychology*, 14(3), 315-44.
- Krueger, N. F., Reilly, M., & Carsrud, A. (2000). (2000), Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 411-432.
- Lai, C. (2019). Personality Traits and Stock Investment of Individuals. *Sustainability*.
- Liang, C., Chia, T., & Liang, C. (2015). Effect of Personality Differences in Shaping Entrepreneurial Intention. *International Journal of Business and Social Science*, Vol. 6, No. 4(1).
- Liu, H. C., Liang, C., Chang, C. C., Ip, C. Y., & Liang, C. T. (2020). Optimizing personality traits and entrepreneurial creativity to boost the precursors of social entrepreneurial intentions: Five studies in Taiwan. *Journal of Social Service Research*, 10-32.
- N.Miller, & R.Falk. (1992). *A primer for soft modeling*. Akron: The university of Akron, Ohio 44325-1703.
- Nachit, H., & Belhcen, L. (2020). Digital Transformation in Times of COVID-19 Pandemic: The Case of Morocco. *SSRN Electronic journal*. doi:http://dx.doi.org/10.2139/ssrn.3645084
- Nambisan, S. (2016). Digital Entrepreneurship: Toward a Digital Technology Perspective of Entrepreneurship. *Entrepreneurship: Theory and Practice*, 414, 1-27.
- Pagès, V. (2017). Les névroses: Handicaps et psychopathologies: En 29 notions . Dans V. Pagès, *Les névroses: Handicaps et psychopathologies: En 29 notions* (pp. 113-116). Paris: : Dunod.
- Pandey, D., Uprety, S., & Risal, N. (2023). Personality traits and their impact on the social entrepreneurial intentions of management students: a test of big five personality approach. *Journal of Innovation and Entrepreneurship*, 17-21.
- Pen, C. (2014). Extending the link between entrepreneurial self-efficacy and intention: a moderated mediation model. *international entrepreneurship and management journal*.
- Peng, Z., Lu, G., & Kang, H. (2012). Entrepreneurial intentions and its influencing factors: A survey of the university students in Xi'an China. *Creat. Educ.*, 3, 95-100.
- Piff, P., Kraus, M., Côté, S., Cheng, B., & Keltner, D. (2010). Having Less, Giving More: The Influence of Social Class on Prosocial Behavior. *Journal of Personality and Social Psychology*, Vol. 99, No. 5, 771-784.
- Primahendra, R., Purba, J., Ugut, G., & Budiono, S. (2021). Do Digital Literacy and Digital Entrepreneurship among University Students Contribute to Digital Economy? *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, Volume 4, No 3, 7387-7394.
- Rauch, A., & Frese, M. (2007). Born to be an entrepreneur? Revisiting the personality approach to entrepreneurship. *The psychology of entrepreneurship*, 41-65.
- Rothmann, S., & Coetzer, E. P. (2003). The Big Five personality dimensions and job performance. *Journal of Industrial Psychology*.
- Singh, R., & Dwivedi, A. (2022). Digital Entrepreneurship Competency And Digital Entrepreneurial Intention: Role Of Entrepreneurial Motivation. *Journal of Positive School Psychology*, Vol. 6, No. 6, 2310-2322.
- Solesvik, D. (sd). A Study of Entrepreneurial Intentions among Norwegian students. *Haugesund International School*, 5-10.
- Soumyaja, D., & Alexander, L. (2016). A Study on The Influence of Personality Traits on Entrepreneurial Intention among Working Professionals in the Indian Technical Organizations. *Pacific Business Review International*.
- Spence, R., Owens, M., & Goodyer, I. (2012). Item response theory and validity of the NEO-FFI in adolescents. *Pers. Individ. Differ.* 2012, 56, 801-807.
- Tremblay, M., & Gasse, Y. (2007). L'impact des antécédents sur les perceptions, attitudes et intentions des étudiants collégiaux et universitaires à l'égard de l'entrepreneuriat. *Aims, XVIème Conférence Internationale de Management Stratégique*, Montréal, 6-7 Juin.
- Yáñez-Valdés, C., & Guerrero, M. (2024). Determinants and impacts of digital entrepreneurship: A pre- and post-COVID-19 perspective. *Technovation*, Volume 132, April 2024, 102983.
- Yusuf, B. N. (2015). Relationships of big five personality traits and locus of control on entrepreneurship. *intentions among students in higher learning institutions. Global Journal of Research in Social Sciences*, 65-73.
- Zhao, H. S. (2010). The relationship of personality to entrepreneurial intentions and performance: A meta-analytic review. *Journal of Management*, 381-404.