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The Role of Business Students' Entrepreneurial Intention and Technology Preparedness in the Digital Age

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Abstract: Innovative digital technologies, together with new sustainable practices, push for new business models and skillsets, pressuring companies to adapt to external change in order to gain competitive advantage. Higher education institutions could offer support. More than 20% of university graduates in the European Union study "business, administration or law", with some of them being future top-level managers and entrepreneurs. This paper aims to provide an understanding of the factors shaping business students' perspectives and decisions in the modern business landscape. It reunites their career preferences, personality characteristics and knowledge regarding technology's utility for business and compares them between two cohorts (i.e., first year bachelor students and second year master students). The results of an online survey with a sample of 154 respondents show that business students' entrepreneurial intention is influenced by their entrepreneurial confidence, their boldness when considering risks, as well as by being further along their educational journey. While almost 80% of business students are daring, oriented toward results and confident in their entrepreneurial abilities, and around 50% would feel most comfortable having their own business, approximately half of first year bachelor students and 14% of second year master students tend to be "not sure" regarding how eight out of ten modern technologies mentioned in this paper (i.e., robotic process automation, big data, artificial intelligence, computer vision, industrial robots, internet of things, virtual reality, enterprise resource planning) could improve a company's innovation and performance.

Keywords: Industry 4.0; entrepreneur; student; university; education; skill; personality; business; digital; technology

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1. Introduction

Modern technology supports companies' efficiency, productivity, sustainability, data availability and innovation strategies (Aftab et al. 2022; Farida and Setiawan 2022). Consequently, there is a growing imperative to foster greater awareness and understanding of the utility of adopting technology in business. According to a report published by the World Economic Forum (2020), technology use, monitoring and control, and technology design and programming are among the top 15 skills the workforce needs. Even for non-technical employees or entrepreneurs, digital skills are critical for professional success. An analysis performed by McKinsey showed that digital literacy is one of the talent elements, which are strongly correlated with the level of education (Dondi et al. 2021). Higher education institutions (HEIs) could offer support in developing the right skills for the future of work (e.g., digital, problem solving, adaptability, critical thinking, creativity, collaboration, etc.) and an understanding of technology uses in business. Various studies have indicated that students express a sense of technology unpreparedness when it comes to entering the workforce, highlighting the need for HEIs to intensify their endeavors in effectively preparing students to meet the dynamic and ever changing demands of the digital age

(Tinmaz and Lee 2019; Ismail et al. 2020). In order to thrive as decision makers, it is essential for business students to actively engage with and comprehend the myriad of ways in which emerging technologies can drive transformative value for companies. However, limited research has been conducted on this population regarding this specific issue (VanDerSchaaf et al. 2021).

In view of the business environment changes and educational requirements brought about by modern technology, this paper aims to provide an understanding of the factors shaping business students' perspectives and decisions in the modern business landscape. It analyzes their career preferences (particularly their interest in being top-level decision makers in existing businesses or their own), personality characteristics (as determinants of their interest in entrepreneurship) and knowledge of digital technologies' utility for companies and compares them between two cohorts (i.e., first year bachelor students and second year master students). To the best of our knowledge, this is the first study considering all these aspects together in this context. For this purpose—and based on the analysis of the extant literature—this paper seeks to answer three research questions (Q_1–Q_3):

Q_1: What are the career preferences of business students?

Q_2: What personality characteristic(s) previously linked with entrepreneurship impact(s) the entrepreneurial confidence of business students the most?

Q_3: How knowledgeable are business students on digital technologies' utility for companies, and what is the source of their knowledge?

This paper is structured as follows. The next section provides an overview of the literature in the research field to obtain a clear understanding of the study context and ensure that our research questions are well grounded and aligned with the current state of knowledge in the field. Then, the research methodology is explained, followed by data analysis. The last section discusses the research findings and contributions.

2. Context

In 2015, and again in 2016, the Industry 4.0 (I4.0) concept was introduced to a wider audience by the World Economic Forum (Schwab 2015, 2016), referring to the employment of several technologies (e.g., big data, artificial intelligence, 3D printing, virtual reality, augmented reality, robotics, cloud computing, the internet of things, computer vision, cyber security, etc.) by manufacturing companies with the aim of driving operational efficiencies, connecting production agents (robots, machines, humans) to each other and to information management systems (Ardito et al. 2019; Oztemel and Gursev 2020; Alcácer and Cruz-Machado 2019). However, modern technology is not limited to the manufacturing industry. Organizations across all industries have increasingly realized the utility of integrating cutting-edge technologies into their operations (Quattrociocchi et al. 2022; Ciasullo et al. 2022). This strategic move not only enhances efficiency and productivity but also contributes to the broader objective of sustainability. Moreover, coupled with the pervasive reach of online platforms, an expansion of entrepreneurial endeavors is facilitated, enabling entrepreneurs to swiftly launch innovative ventures with relatively fewer resources and infrastructure requirements on national and international markets (Ojala et al. 2023; Ruggieri et al. 2018). Thus, digital businesses are perceived to possess a distinct advantage in terms of establishment ease compared to their traditional counterparts (Biclesanu et al. 2021).

Despite the advantages technology brings, it can have barriers to its implementation, such as resistance to change, the lack of a clear direction from leadership, the scarcity of qualified workforce and the need for training and reliable educational programs (Jain et al. 2021; Bakhtari et al. 2021). Previous research has shown that companies are affected by the lack of information on how to keep pace with modern technology (Cazeri et al. 2022), and the business environment is in need of digital skills, with a proactive approach in training the existing and future employees (Flores et al. 2018; Hamada 2019; Mahlmann Kipper et al. 2021; Saniuk et al. 2021), as well as involving customers in the design and planning of new

technological products, services or environments (Amendola et al. 2018). HEIs could support this endeavor. However, some authors have shown that students are not well aware of modern technology's impact on business processes and jobs, therefore arguing that HEIs should adapt by revising the educational content (e.g., integrating and/or improving the material on technical topics), increasing awareness and enabling students to be prepared protagonists in the future of work (Tinmaz and Lee 2019; Motyl et al. 2017; Bilotta et al. 2021; Rampasso et al. 2021; Li 2020; Puriwat and Tripopsakul 2020; Muhamad et al. 2019; Sudibjo et al. 2019; García and de los Ríos 2021; Ellahi et al. 2019). Inspired by I4.0, some authors have explored the "University 4.0" and "Education 4.0" concepts, recommending a continual innovation of the educational process and integration of technology into teaching (Gueye and Exposito 2020; Das et al. 2020; Qureshi et al. 2021; González-Pérez and Ramírez-Montoya 2022). For instance, Paszkiewicz et al. (2021) propose a methodology for developing courses using the virtual reality (VR) environment. Additionally, the adoption of online technologies by universities rapidly increased during the COVID-19 pandemic, driven by the need for innovative teaching tools as an emergency measure, together with the requirements in terms of digital skills and capabilities for teachers (Lee et al. 2022). Moreover, universities can empower students through industrial partnerships, specific industrial courses or doctorate programs, instructional media upgrades and by ensuring adequate staff skills, to name a few (Mian et al. 2020).

In the European Union (EU), over 40% of the 25–34 year olds have completed tertiary education (Eurostat 2021), with more than a fifth studying "business, administration or law" (Eurostat 2020) and part of them being current and/or future top-level managers and entrepreneurs. Išoraitė et al. (2022) are among the few authors focusing on business students' technology knowledge. Analyzing the case of a Lithuanian university, they identified issues related to I4.0 which can be integrated into the business curriculum.

In addition to technology and business innovation strategy awareness, when considering the entrepreneurial dimension, higher education in the fields of entrepreneurship and technology entrepreneurship manifests inefficiencies, requiring novel approaches (Biclesanu and Dima 2021). For example, based on the Souitaris et al. (2007) entrepreneurial learning scale and Béchard and Grégoire's (2006) teaching models, a link was found between the way entrepreneurship is taught and entrepreneurial learning outcomes, with teaching models that include experiential-based learning (e.g., labs, simulations) being superior to traditional knowledge transmission models (Cascavilla et al. 2022). However, the entrepreneurial intention (i.e., the willingness to start a business) is modulated by other factors outside of education (GEM 2022). For example, most entrepreneurs have role models among their close relationships (FreshBooks, as cited by Baker 2018), and some authors are suggesting links with personality characteristics, such as independence/autonomy (Viraelli 1991; Brandstatter 1997; Rauch and Frese 2007), ideation/innovativeness/creativity and stress tolerance (Rauch and Frese 2007; Zampetakis 2008), diligence/conscientiousness (Wang et al. 2016; Saptadjaya and Gunawan 2020), openness/curiosity (Wang et al. 2016), sociability (Wang et al. 2016), boldness when considering risks (Gürol and Atsan 2006; Zhao and Seibert 2006; Åstebro et al. 2014), the need for achievement (Rauch and Frese 2007; Begley and Boyd 1987; Gürol and Atsan 2006) and proactiveness, self-efficacy, problem solving (Zampetakis 2008; Saptadjaya and Gunawan 2020). Furthermore, Şahin et al. (2019) have shown that multiple configurations of the five factor model personality traits (i.e., openness, conscientiousness, agreeableness, extraversion, neuroticism) can produce high levels of entrepreneurial intention. Still, the personality approach to entrepreneurship has been criticized by a number of authors (Gartner 1988; Low and MacMillan 1988), and there is ongoing debate and limited consensus among researchers regarding the specific personality characteristics, which are most relevant to entrepreneurial confidence.

3. Methodology

Through a self-administered online survey, the authors collected 154 valid answers from (i) 104 first year students following a bachelor's program in business administration in

Bucharest (3-year program) and (ii) 50 second year students following a master's program in business administrationin Bucharest (2-year program) who have a bachelor degree in the business domain (business administration, management, entrepreneurship, etc.) from different universities. Data collection took place at the end of the 2021–2022 academic year. Therefore, the data cover students in the early stages of their business studies and students who have progressed five years into this academic journey.

The survey is organized into four sections: (1) demographic information and career preference, (2) personality characteristics and entrepreneurial confidence, (3) knowledge of selected modern technologies' utility for companies and (4) source of the aforementioned knowledge (this last section was only addressed to second year master students). More specifically, the first section of the survey concerns their interest in becoming top-level decision makers in existing companies or their own, whether they already have a business and whether they have entrepreneurs in their close circle. For the second section, prior research, although inconsistent, suggests links between personality and entrepreneurship, as presented in the Context section, inspiring the selection of nine personality characteristics in our survey. These characteristics are presented as a list of statements developed by the authors, alongside an item referring to their entrepreneurial confidence, with students being asked to rate each one on a six-point Likert scale. The third section of the survey asks the participants if they would be able to give an example of a situation in which each digital technology on a list of ten could improve a company's results. The final section of the survey required the master students to assess the contribution of their bachelor's studies, master's studies, work experience and personal research as sources of their knowledge regarding the utility of technology for companies.

Data analysis was performed in SPSS. Ordinal logit regression models were used to assess the impact of the personality characteristics over entrepreneurial confidence. Cluster analysis was performed based on the personality and technology items. Tests of association, correlation and difference of means were used where appropriate to analyze the cohorts, the clusters and the involved variables. The sample size (N = 154) concerns a confidence level of 95% with a 7–8% margin of error. For tests pertaining to master students only (N = 50), the margin of error increases to ~14% for the same confidence level of 95%. The data were examined for outliers to maintain consistency of the results. Reliability was assessed using Cronbach's alpha, with a threshold of 0.7 or higher indicating acceptable internal consistency.

4. Findings

4.1. Career Preferences

Based on the analysis of data collected through the online survey, no first year bachelor students reported having their own business; however, 88.5% said they have at least one close friend or family member who has a company, and 42.3% want to start their own business at some point in the future, while the others would feel most comfortable being top-level managers in existing companies (48.1%) or low/mid-level employees (9.6%).

Among second year master students, six (12%) reported they have their own business, with 88% having at least one close friend or family member who is an entrepreneur. Based on the data collected, 60% of master students would feel most comfortable having their own business, 32% want to be top-level managers in existing companies, while 8% would prefer being low/mid-level employees. With one exception, all students who have their own business have a close friend or family member who is an entrepreneur. Two students reported they would feel more comfortable being top-level managers in existing businesses despite already having their own company.

Master students were more interested in having their own business compared to bachelor students ($t(152) = -2.073$, $p < 0.05$, $X^2(1, N = 154) = 4.234$, $p < 0.05$, Phi = 0.166, $p < 0.05$) but not significantly less likely to want to be low/mid-level employees ($p > 0.05$), as presented in Figure 1.

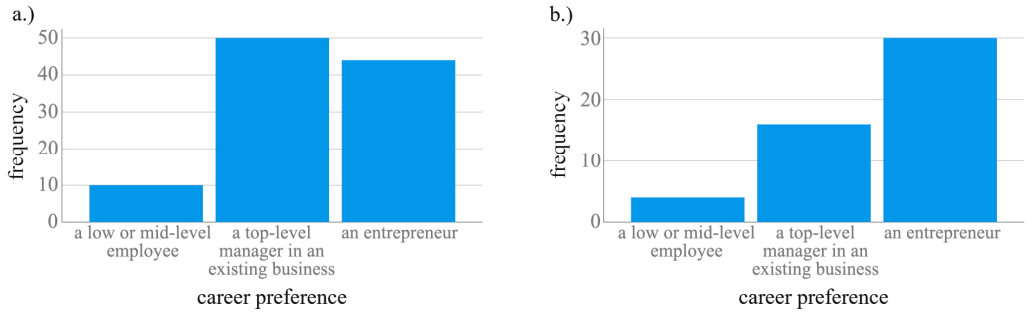

Figure 1. Career preferences of (**a**) first year bachelor students and (**b**) second year master students based on completing the statement: "I would feel most comfortable being. . .". Source: dataset analysis.

4.2. Personality Profile

Students were asked to rate ten items on a scale from 1 to 6 (1 = "strongly disagree", 6 = "strongly agree"). The first nine items refer to characteristics prevalent in entrepreneurs, as resulting from the literature review. The last item measures their self-assessed *entrepreneurial confidence*. All ten items were developed by the authors. Table 1 presents the correlations between the first nine items and the *entrepreneurial confidence* item. The Cronbach's alpha reliability coefficient of this section is 0.793 > 0.7 considering all answers, 0.770 for bachelor students and 0.824 for master students.

Table 1. Personality characteristics' correlation with business students' entrepreneurial confidence considering the full dataset.

Variable	Item	Corr. with (1)
ideator	It is easy for me to come up with ideas	0.167 *
independent	I dislike being told what to do	0.242 **
status seeker	I strive to gain status, respect and power	0.105
sociable	I am a sociable person and love to associate	0.233 **
problem solver	I can easily see problems and come up with solutions for them	0.389 **
diligent	I strive to do my work/duty well and thoroughly	0.329 **
curious	I like learning, doing and discovering new things	0.392 **
achiever	I always finalize what I plan/intend to do	0.485 **
bold	I like challenges that many think are risky	0.621 **
entrepreneurial confidence (1)	I am confident I have what it takes to be an entrepreneur	1

** $p < 0.01$; * $p < 0.05$. Source: own dataset analysis in SPSS.

With the exception of *status seeker*, all characteristics have significant positive correlations with *entrepreneurial confidence*. The *bold* variable has the strongest tendency to vary in the same direction with *entrepreneurial confidence* (i.e., $r_s = 0.621$, $p < 0.01$).

An ordinal logit regression model (Table 2) shows that 47% (Nagelkerke R^2) of the variance in *entrepreneurial confidence* is explained by *bold*, considering the whole dataset (i.e., N = 154). The model represents a significant improvement in fit over an unconditional model with no predictors ($p < 0.05$). The observed data are consistent with the fitted model ($X^2(20, 154) = 25.29$, $p > 0.05$). The slope coefficients are the same across response categories ($X^2(20, 154) = 27.2$, $p > 0.05$).

Table 2. Ordinal logit regression model for *bold* predicting *entrepreneurial confidence*.

	Variable	Estimate	Std. Error	Wald	df	Sig.	95% Confidence Interval	
							Lower Bound	Upper Bound
Threshold	[*entrep. confidence* = 1]	−7.315	0.859	72.599	1	0.000	−8.998	−5.633
	[*entrep. confidence* = 2]	−5.095	0.537	90.088	1	0.000	−6.147	−4.043
	[*entrep. confidence* = 3]	−3.829	0.456	70.587	1	0.000	−4.722	−2.936
	[*entrep. confidence* = 4]	−2.236	0.396	31.888	1	0.000	−3.012	−1.460
	[*entrep. confidence* = 5]	−0.770	0.349	4.869	1	0.027	−1.454	−0.086
Location	[*bold* = 1]	−7.824	1.219	41.217	1	0.000	−10.213	−5.435
	[*bold* = 2]	−4.793	0.682	49.431	1	0.000	−6.129	−3.457
	[*bold* = 3]	−3.163	0.588	28.970	1	0.000	−4.315	−2.011
	[*bold* = 4]	−2.217	0.465	22.739	1	0.000	−3.129	−1.306
	[*bold* = 5]	−1.738	0.469	13.737	1	0.000	−2.658	−0.819
	[*bold* = 6]	0 [a]	.	.	0	.	.	.

Link function: Logit. [a]: This parameter is set to zero because it is redundant. Source: own dataset analysis in SPSS.

Based on the abovementioned results, an index variable for personality (*personalityINDEX*) was created through the arithmetic mean of all personality items, with the exception of *entrepreneurial confidence* and *status seeker*. The *PersonalityINDEX* has a moderate tendency to vary in the same direction with *entrepreneurial confidence* ($r_s = 0.584$, $p < 0.01$). An ordinal logit regression model was used to assess the impact of the *personalityINDEX* over *entrepreneurial confidence* (considering the whole dataset, N = 154). The model represents a significant improvement in fit over an unconditional model with no predictors ($p < 0.05$). The observed data are consistent with the fitted model ($X^2(119, 154) = 107.1$, $p > 0.05$), and the slope coefficients are the same across response categories ($X^2(4, 154) = 27.2$, $p > 0.05$). However, with higher standard errors and Nagelkerke $R^2 = 41.2\%$, this model explains less of the variance in *entrepreneurial confidence* than the previous model considering the *bold* variable by itself.

Statistically significant differences were found between the way first year bachelor students and second year master students rated the *ideator*, *independent*, *problem solver*, *bold* and *entrepreneurial confidence* variables (Kruskal–Wallis H $p < 0.05$), with master students having more entrepreneurial confidence, more ease in generating ideas, greater independence and problem-solving abilities and more boldness when considering risks. Overall, students who reported higher *entrepreneurial confidence* were less interested in being low/mid-level employees ($H(1) = 24.46$, $p < 0.001$) and more interested in being entrepreneurs ($H(1) = 29.22$, $p < 0.001$).

As a result of hierarchical cluster analysis using the Ward method, followed by k-means cluster analysis, the 154 business students are split into two clusters based on the personality variables (with the exception of *ideator*, which is not significant for clustering), as presented in Figure 2.

Personality_cluster1 has 119 cases and comprises students who rated the selected personality variables higher. Personality_cluster2 has 35 cases and is represented by respondents who are more prudent, less sociable, less confident in their entrepreneurial abilities and less oriented toward results. The distribution of bachelor students between personality_cluster1 and personality_cluster2 is 80:24, and for the master students it is 39:11.

Students in personality_cluster1 are less interested in being low/mid-level employees compared with students in personality_cluster2 ($X^2(1, N = 154) = 15.145$, $p < 0.001$, Phi = −0.314, $p < 0.001$). However, no statistically significant difference was found between the clusters when considering other career options (i.e., being a top-level manager in an existing business or an entrepreneur) ($p > 0.05$).

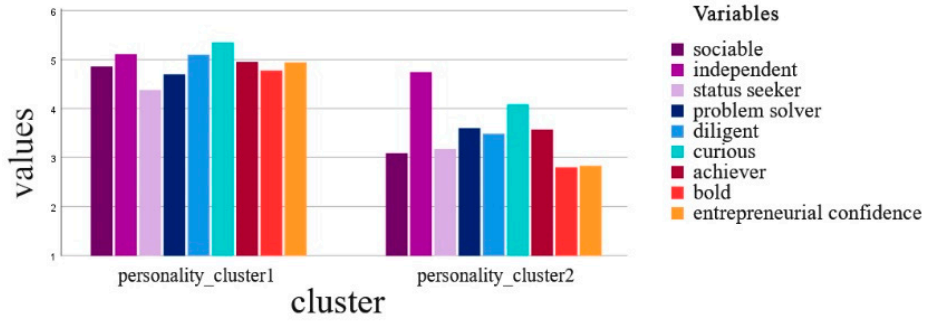

Figure 2. Personality clusters: Full dataset (N = 154) clustering based on selected variables, as represented by the cluster center values. Source: own dataset analysis.

4.3. Technology Knowledge

The 154 students were asked if they would be able to give an example of a situation in which each of the following ten technologies could improve a company's results, without having to look them up: (1) a website, (2) social media presence, (3) software automation (robotic process automation software—RPA), (4) big data, (5) artificial intelligence (AI), (6) computer vision, (7) industrial robots, (8) internet of things (IoT), (9) virtual reality (VR), (10) enterprise resource planning (ERP). The possible answers to this question are either "yes" or "not sure". The reliability score of this section is 0.754 > 0.7 considering all answers, 0.723 for bachelor students and 0.736 for master students.

All students said they are able to give an example on the subject of websites. Based on the results, 97.1% of first year bachelor students and all second year master students see the utility of social media in improving a company's performance. However, lower ratings were noted for the other technologies, as presented in Figure 3.

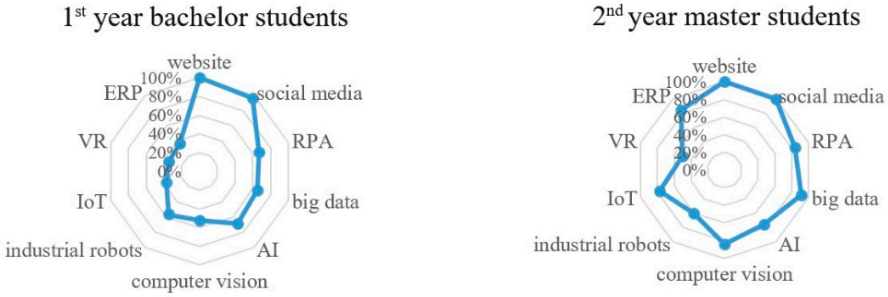

Figure 3. Percentage of business students who reported they are able to give an example of a situation in which each of the mentioned technologies could improve a company's results. Source: own dataset analysis.

Compared with first year bachelor students, second year master students are significantly more familiar with the utility of RPA ($U(N_{master} = 50, N_{bachelor} = 104) = 2166$, $z = -2.171$, $p < 0.05$), big data ($U(N_{master} = 50, N_{bachelor} = 104) = 1908$, $z = -3.516$, $p < 0.001$), computer vision ($U(N_{master} = 50, N_{bachelor} = 104) = 1766$, $z = -3.834$, $p < 0.001$), IoT ($U(N_{master} = 50, N_{bachelor} = 104) = 1547$, $z = -4.692$, $p < 0.001$) and ERP ($U(N_{master} = 50, N_{bachelor} = 104) = 1366$, $z = -5.502$, $p < 0.001$).

An index variable for technology awareness (*technologyINDEX*) was created through the arithmetic mean of all technology items. *Ideator*, *curious*, *bold* and *entrepreneurial confidence* have weak tendencies to vary in the same direction with *technologyINDEX* ($r_s = 0.242$, $r_s = 0.224$, $r_s = 0.194$ and $r_s = 0.225$, $p < 0.01$, respectively).

Moreover, second year master students were asked to rate on a scale from 1 to 6 (1 = "strongly disagree", 6 = "strongly agree") four sources of knowledge on technology's utility for companies, as presented in Figure 4. The four diagrams represent the distribu-

tions of responses connected with as many options offered. The reliability score of this section is 0.734 > 0.7.

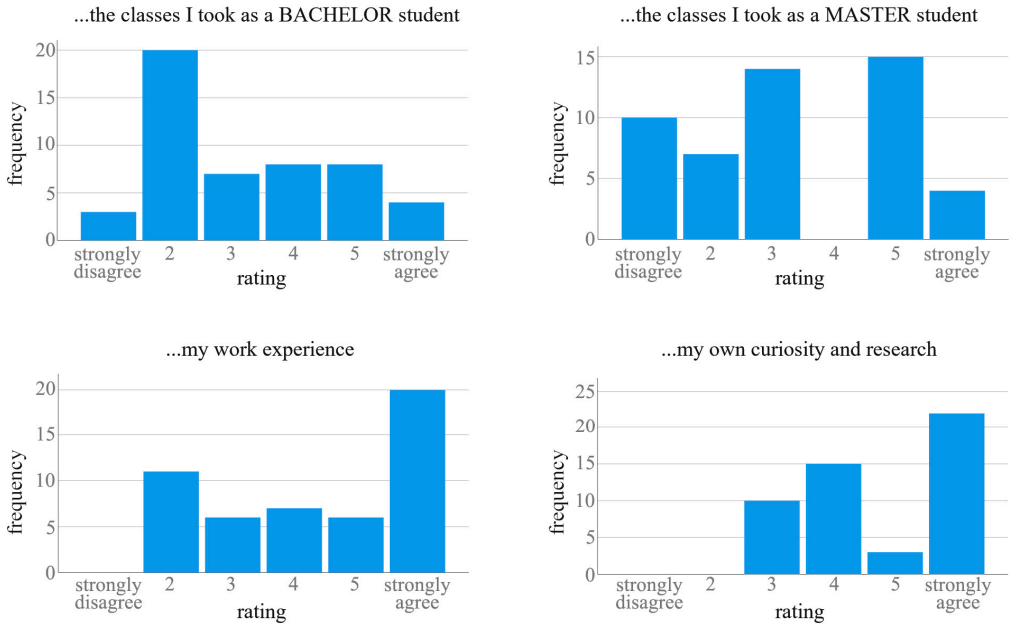

Figure 4. Technology knowledge source as rated by second year master students based on continuing the statement: "Most of what I know about the utility of these ten technologies for companies comes from. . .". Source: own dataset analysis.

There is no statistically significant difference between rating the bachelor and master degrees as a source of knowledge on technology's utility for business (Wilcoxon signed-rank test $p > 0.05$) or between work experience and students' own curiosity ($p > 0.05$). Second year master students neither agree nor disagree with their university studies being the prevalent source of knowledge on technology utility for business, no statistically significant difference being found between rating the bachelor and master courses and the scale median of 3.5 ($p > 0.05$). Still, students rated their work experience and curiosity significantly higher compared with the scale median of 3.5 ($p < 0.001$), seeing them as leading sources of knowledge on the utility the ten technologies mentioned in this paper have for companies' innovation and performance, and rating them higher compared to their bachelor and master studies ($p < 0.001$).

Students who reported higher *entrepreneurial confidence* had a moderate tendency to rate their work experience and curiosity higher ($r_s = 0.584$, $p < 0.01$ and $r_s = 0.527$, $p < 0.01$, respectively) but not their university studies ($p > 0.05$).

The 154 students were split into two clusters considering their knowledge on technology's utility for business (excluding the "having a website" and "social media presence" variables, which were not deemed relevant for clustering), as presented in Figure 5.

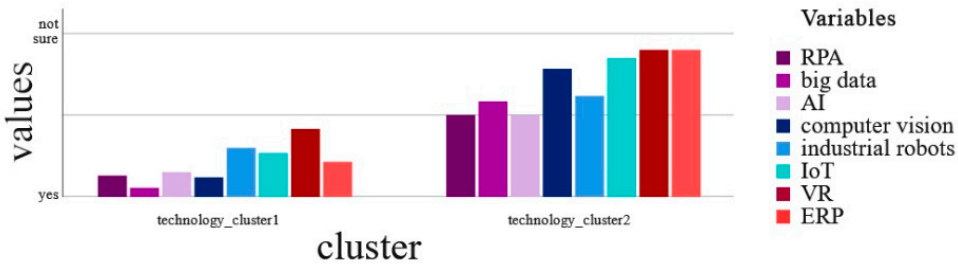

Figure 5. Technology clusters: Full dataset (N = 154) clustering based on selected variables, as represented by the cluster center values. Source: own dataset analysis.

Technology_cluster1 has 94 cases, comprising students who tended to report they are able to give an example of a situation in which each of the ten technologies mentioned in this paper could improve a company's results, without having to first search for information about them. Technology_cluster2 has 60 cases, comprising students who tend to be "not sure" about how eight of these technologies can help businesses. The distribution of bachelor students between technology_cluster1 and technology_cluster2 is 51:53, and for the master students it is 43:7.

Students in technology_cluster1 are less interested in being low/mid-level employees compared with students in technology_cluster2 ($X^2(1, N = 154) = 6.826$, $p < 0.05$, Phi = −0.211, $p < 0.05$). However, no statistically significant difference was found between clusters when considering other career options (i.e., being a top-level manager in an existing business or an entrepreneur) ($p > 0.05$). Technology_cluster1 manifests higher entrepreneurial confidence compared with technology_cluster2 ($U(N_{technology_cluster1} = 94, N_{technology_cluster2} = 60) = 2173$, $z = -2.464$, $p < 0.05$).

5. Discussion

According to our evidence, around 50% of business students would feel most comfortable having their own company, with second year master students being more interested in entrepreneurship compared with first year bachelor students but not significantly less likely to want to be low/mid-level employees in existing companies. This evidence answers Q_1.

Almost 80% of business students are daring, oriented toward results and confident in their entrepreneurial abilities. Overall, business students who reported higher entrepreneurial confidence were less interested in being low/mid-level employees and more interested in being entrepreneurs. Similarly, Lee and Wong (2003) found a positive relationship between new venture founding and attitude toward entrepreneurial education through an empirical study carried out on a large sample of tertiary students in Singapore. Business students' entrepreneurial confidence is primarily influenced by their boldness when considering risks.

Master students are more confident in their entrepreneurial abilities, having more ease in generating ideas, greater independence and problem-solving propensity and more boldness when considering risks. Five of the six master students with their own business mentioned they have a close friend or family member who is an entrepreneur, which aligns with the idea that entrepreneurs have role models among their close relationships (FreshBooks, as cited by Baker 2018). Overall, the abovementioned results obtained through this study and the discussed literature answer Q_2.

While almost all students could give an example of a situation in which websites and social media could improve a company's performance, second year master students were significantly more familiar with the utility of RPA, big data, computer vision, IoT and ERP compared with first year bachelor students. Second year master students neither agree nor disagree with their university studies being the prevalent source of knowledge on technology's utility for business; however, they regard their work experience and own research as leading sources of such information. Moreover, students who reported higher entrepreneurial confidence had a moderate tendency to rate their work experience and curiosity higher as sources of technology knowledge but not their university studies.

Approximately half of first year bachelor students and 14% of second year master students tend to be "not sure" about how eight of the ten technologies mentioned in this paper (i.e., RPA, big data, AI, computer vision, industrial robots, IoT, VR, ERP) could improve a company's results, without having to look them up. These students also manifest lower entrepreneurial confidence, are more interested in being low/mid-level employees compared to the rest, but not statistically less interested in being top-level managers in existing companies or entrepreneurs. These results provide evidence regarding the level of awareness of business students of the utility of digital technologies for companies, as well as regarding the sources of their knowledge, answering Q_3. Students who are more curious, bolder when considering risks, more confident in their entrepreneurial abilities and

reporting greater ease when producing ideas have weak tendencies to rate their knowledge on technology's utility for business higher. This phenomenon can be attributed to various factors, including a predisposition toward openness to new ideas and a higher level of education and overall life experience among these individuals.

Paper Contribution

This paper contributes to previous studies on entrepreneurship and personality characteristics (e.g., Gürol and Atsan 2006; Zhao and Seibert 2006; Åstebro et al. 2014) and technology preparedness of business students (Išoraitė et al. 2022). It combines these three elements and compares the results from two cohorts (i.e., students in the early stages of their business studies and students who have progressed five years into their academic journey). To the best of our knowledge, this is the first study considering all these aspects together in such context. Since technology pushes for new business models and skillsets—pressuring companies to conform through a structured innovation strategy—and more than a fifth of university students in the EU choose to study "business, administration and law", it is advisable that HEIs take the necessary steps to ensure their graduates become prepared decision makers, with the right skills and knowledge to capitalize on technology. The findings of this study suggest that the current educational value proposition may not adequately address the practical application of technology in business settings. Educational institutions can incorporate more hands-on, technology-focused coursework, projects, industry involvement or internships to increase awareness and knowledge of the applications of technology in business, as well as students' career development (Chen and Shen 2012). Guest lectures, industry panels or networking events can serve as platforms for students to learn from practitioners who have successfully implemented technology solutions in their organizations. Such interactions can broaden students' understanding and inspire them to explore technology's potential in their own entrepreneurial or professional endeavors, as well as increase the value for the job market.

Moreover, recognizing the importance of boldness as a predictor of entrepreneurial confidence, educational institutions can design and implement entrepreneurship programs, which specifically focus on developing and nurturing students' ability to take calculated risks. These programs can incorporate experiential learning opportunities, case studies and simulations, which allow students to practice and develop their risk assessment and risk taking skills. Educational institutions and entrepreneurial ecosystems can provide resources, networks and mentorship programs, which offer guidance and support to students who are willing to explore entrepreneurial opportunities.

6. Conclusions, Limitations and Future Work

Through a survey with two cohorts of HEI business students (i.e., first year bachelor and second year master students), this paper provides an overview of the factors shaping their perspectives and decisions in the technology-driven business landscape. As highlighted in the previous section, the research questions were answered, providing insights into business students' technology preparedness and interest in being top-level decision makers in the digital age. The paper incorporates data on students' career preferences, personality characteristics and knowledge regarding technology's utility for business. The findings contribute to previous research and hold value for HEIs, the business community and other stakeholders. The results have practical implications for enhancing technology-related education and supporting future business leaders.

Despite the insights provided, the paper presents some limitations: (1) the results are based on respondents' self-assessment; (2) only one variable per personality characteristic is considered; and (3) the two cohorts have unequal sample sizes. However, the data have no outlier issues, and the survey sections manifest acceptable reliability. Further research could adopt longitudinal or experimental approaches, advising on best practices for adapting HEIs' business courses. This could involve collaborating closely with industry partners to

ensure the relevance of the recommended adaptations in effectively preparing students for the practical application of technology in their careers.

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