

The Relationship between Factors Influencing Technopreneurs and Technopreneur Intention among Bachelor of Technology Students at FPTV

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Abstract

In the digital and technology age, technopreneurship is a strategic approach to the country's economic development that places a strong premium on technological innovation. However, a worrying trend in the realm of technopreneurship is a lack of student involvement. This study was therefore carried out to determine the relationship between technopreneur intention and factors that influence technopreneurship, specifically computer and internet skills, entrepreneurial orientation, entrepreneurial experience, and access to capital, among Bachelor of Technology (BTECH) students at the Faculty of Technical and Vocational Education (FPTV), Universiti Tun Hussein Onn Malaysia (UTHM). Through a complete sample strategy, 146 BTECH students from Cohort 4, representing seven academic programs, participated in this study's quantitative survey methodology. Both descriptive analysis, such as mean scores and standard deviations, and inferential analysis, such as Spearman's rho correlation, were used to analyze the data using the Statistical Package for the Social Sciences (SPSS) version 27. According to the results of the descriptive analysis, students had moderate levels of entrepreneurial orientation, capital availability, and technopreneur ambition, but high levels of computer proficiency, internet proficiency, and entrepreneurial experience. All five of the characteristics impacting technopreneurship and technopreneur intention were found to be significantly correlated by inferential analysis. According to this study, all of the contributing elements are essential in motivating students to pursue careers as technopreneurs.

1. Introduction

In today's digital and technological era, technopreneurship has become a key element in the rapidly expanding field of entrepreneurship. According to Mulyany et al. (2023), technopreneurs are able to create their own employment opportunities, thereby contributing to the country's economic growth. However, the number of technopreneurs among youth in Malaysia remains relatively low (Madli et al., 2023). The increasing use of technologies such as automation and artificial intelligence has also reduced the demand for human labour, leading to unemployment issues (Charisteas et al., 2023). Therefore, technopreneurship is seen as a strategic alternative to address this issue. Rafiana (2024) stated that technopreneurship helps to reduce unemployment rates and acts as a catalyst for technology-based national economic development.

According to Mok (2022), technopreneurship refers to the integration of technological innovation with entrepreneurial practices to develop new products or services. Technopreneur intention is seen as a driving element that motivates individuals to venture into the field of technopreneurship (Nurhayati, Machmud & Waspada, 2020). Salhieh and Al-Abdallat (2021) defined technopreneur intention as an individual's desire or aspiration to start and develop a technology-based business. Based on Theory of Planned Behavior (TPB) by Ajzen (1991), an individual's intention to perform a behaviour is influenced by three main elements: attitude towards the behaviour, subjective norms, and perceived behavioural control. Figure 1 illustrates the conceptual framework of the study. The conceptual framework of this study was developed based on the research by Belmonte et al. (2022).

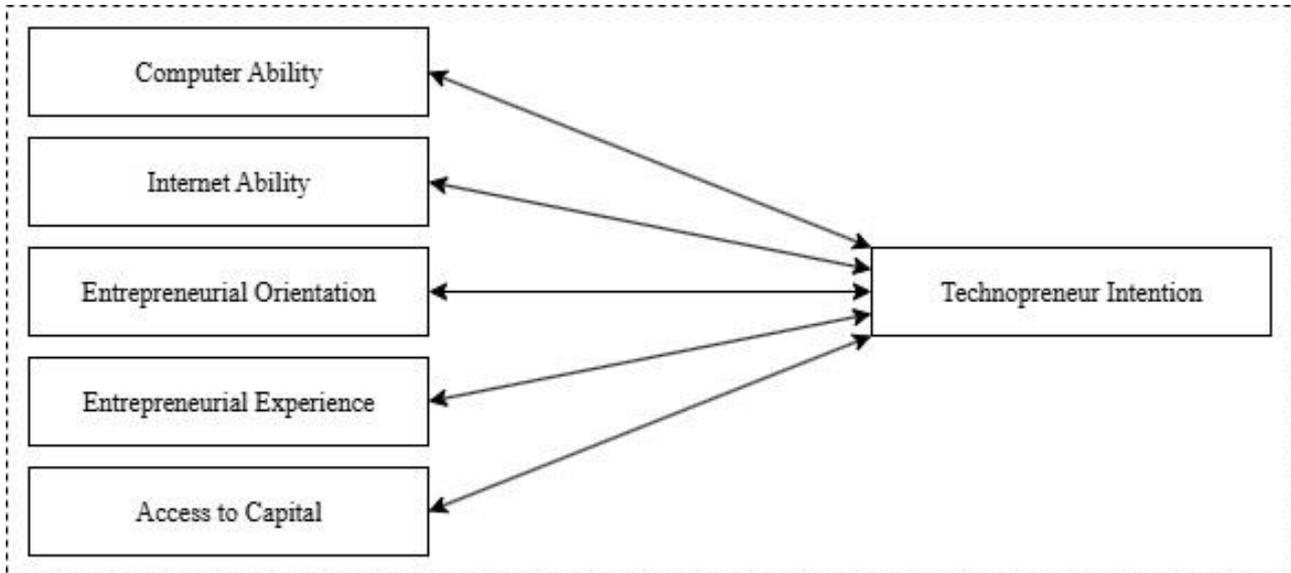


Fig. 1 Conceptual framework (Belmonte et al., 2022)

This conceptual framework involves five independent variables encompassing the factors influencing technopreneurs, namely computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience, and access to capital, along with one dependent variable, which is technopreneur intention. All independent variables are individual factors that influence students' intention to become technopreneurs, in line with TPB's emphasis on self-capability in predicting technopreneur intention. Therefore, this study aims to investigate the relationship between the factors influencing technopreneurs and technopreneur intention among BTECH students at FPTV, UTHM.

1.1 Computer Ability

According to Shegekar et al. (2023), computer ability refers to an individual's level of skill in handling computers to perform various tasks such as data processing and software usage. A study by Kavitha (2023) found that computer self-efficacy has a positive and significant effect on technopreneur intention. This indicates that students tend to have a higher intention to start a technology business when they are confident in their computer skills.

1.2 Internet Ability

According to Shashikala (2023), internet ability refers to an individual's competence in accessing, evaluating, and using online information for various purposes such as communication and learning. Research by Koe, Mohd Nordin and Marmaya (2022) demonstrated that internet self-efficacy plays a contributing role in the technopreneur intention model. This shows that internet self-efficacy not only builds technical capability but also instills confidence in students, making them more inclined to take risks and innovate.

1.3 Entrepreneurial Orientation

According to Iherobiem et al. (2023), entrepreneurial orientation refers to an individual's attitude and internal traits towards entrepreneurship, such as the tendency to explore new opportunities, willingness to take risks, proactive behaviour in facing competition, and innovation in creating value and solutions. A study by Kumar, Paray and Dwivedi (2021) showed that entrepreneurial orientation, including innovation, risk-taking, and proactiveness, is a positive predictor of technopreneur intention. Therefore, a strong attitude towards

innovation, risk-taking, and acting independently on opportunities are factors that increase technopreneur intention.

1.4 Entrepreneurial Experience

According to Bozward and Rogers-Draycott (2024), entrepreneurial experience refers to direct involvement in entrepreneurship through work experience, industrial training, and formal or informal entrepreneurship-related education. A study by Plessis and Pache (2023) found that early exposure to entrepreneurship, including direct experience, family background, and entrepreneurship education, influences technopreneur intention. Entrepreneurial experience, whether direct or indirect, plays a significant role in shaping technopreneur intention among students.

1.5 Access to Capital

According to Judijanto and Lisnawaty (2024), access to capital refers to an individual's ability to obtain economic, personal, and material support, which is seen as a factor influencing the decision to establish and grow a business. Shahriar (2023) emphasised that access to capital has a positive and significant effect on students' technopreneur intention. Thus, a positive attitude towards the use of capital can strengthen perceived behavioural control, which ultimately increases technopreneur intention.

2. Methodology

This section describes all the necessary information that is required to obtain the research findings. This study adopts a systematic methodology to ensure the reliability and validity of its findings. The methodology outlines the overall research design, the population and sample, the research instrument, and the data analysis procedures. Each component has been carefully structured to align with the research objectives and to provide a comprehensive framework for collecting, measuring, and interpreting the data.

2.1 Research Design

The research design is a survey aimed at obtaining respondent feedback using a quantitative approach to collect and analyse data.

2.2 Population and Sample

This study involves all BTECH students from Cohort 4 across seven academic programmes: Bachelor of Technology in Electrical System Maintenance (BBJ), Bachelor of Technology in Industrial Electronic Automation (BBN), Bachelor of Technology in Industrial Machining (BBO), Bachelor of Technology in Food Service (BBS), Bachelor of Technology in Welding (BBX), Bachelor of Technology in Building Construction (BBY), and Bachelor of Technology in Refrigeration and Air Conditioning (BBZ). These students were selected as the study's population and sample due to their programmes sharing similar Programme Educational Objectives (PEOs) and Programme Learning Outcomes (PLOs) within their respective fields. A full sampling method was employed, involving the entire population of 146 students. This method is suitable for controlled and manageable populations, enabling comprehensive data collection from all respondents (Ajithakumari, 2024).

2.3 Research Instrument

The study used a questionnaire to collect data from the sample, incorporating a five-point Likert scale adapted from Aslan (2018) to measure respondents' level of agreement based on their observations and perceptions (5=Strongly Agree, 4=Agree, 3=Moderately Agree, 2=Disagree, 1=Strongly Disagree). The questionnaire is divided into seven sections: A, B, C, D, E, F, and G, based on the aspects being measured. The items included were adapted from previous studies.

Section A contains 7 items gathering demographic information about the respondents was developed by the researcher and refined with input by an expert panel for content validity. Section B includes 10 items measuring computer ability (Kay, 1993; Li et al., 2023). Section C has 10 items measuring internet ability (Tsai, 2004; Musharraf et al., 2018). Section D consists of 8 items measuring entrepreneurial orientation (Liñán & Chen, 2006; Bolton & Lane, 2012).

Section E includes 7 items measuring entrepreneurial experience (Miralles, Giones & Riverola, 2015; Darajah & Kassim, 2019). Section F contains 6 items assessing access to capital (Kim, Aldrich & Keister, 2006; Aragon-Sanchez, Baixauli-Soler & Carrasco-Hernandez, 2017). Section G includes 6 items evaluating technopreneur intention (Liñán & Chen, 2009; Belmonte et al., 2022). The total number of items in the questionnaire is 54.

2.4 Data Analysis Method

Data analysis was conducted using SPSS version 27. Two types of analyses were performed: descriptive analysis, to identify the level of each variable through mean scores (M), adapted from Rasidi, Mydin and Ismail (2020) (1.00–2.33=Low, 2.34–3.67=Moderate, 3.68–5.00=High) with standard deviation (SD) values were also calculated, and inferential analysis, to examine the relationship between variables using Spearman's rho correlation test, as the data distribution was not normal based on the normality test, was adapted from Snyman and Vuuren (2024), which assesses the strength of correlation based on the coefficient value (ρ) ($\rho < .20$ =Very Weak, $.20-.40$ =Weak, $.40-.60$ =Moderate, $.60-.80$ =Strong, $\rho > .80$ =Very Strong) with significance value of $p < .05$ indicates a statistically significant relationship between the variables (Kumar & Reddi, 2023).

3. Findings and Discussion

This section presents the research data and analysis. The findings are organized into three main parts. First, the demographic profile of respondents is described to provide an overview of their background characteristics. Second, the levels of computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience, access to capital, and technopreneur intention are examined to understand students' capabilities and readiness for technopreneurship. Finally, the relationships between these factors and technopreneur intention are analyzed to identify significant predictors and their implications.

3.1 Respondents' Demographics

The demographic analysis was conducted to identify the background of BTECH students at FPTV, using frequency (f) and percentage (%). The majority of respondents were male, totalling 99 students (67.8%), while female respondents accounted for 47 students (32.2%). Specifically, BBS recorded the highest number of respondents in terms of programme of study, with 32 students (21.9%), followed by BBJ with 26 students (17.8%), BBY with 25 students (17.1%), BBZ with 22 students (15.1%), BBN with 19 students (13.0%), and BBO with 13 students (8.9%). The programme with the lowest number of respondents was BBX, with 9 students (6.2%).

In addition, most respondents had prior entrepreneurial experience, with 103 students (70.5%), while 43 students (29.5%) had no such experience. All 146 respondents (100.0%) had taken an entrepreneurship-related subject. The majority, 120 students (82.2%), did not have a business registered with the SSM, while only 26 students (17.8%) had a registered business. Furthermore, most respondents, 135 students (92.5%), had not registered a business with the PTU, while just 11 students (7.5%) had. Finally, 109 students (74.7%) were unaware of the functions or advisory services offered by PTU, while only 37 students (25.3%) were aware of PTU's role.

3.2 Levels of Computer Ability, Internet Ability, Entrepreneurial Orientation, Entrepreneurial Experience, Access to Capital and Technopreneur Intention among BTECH Students at FPTV

Descriptive analysis was carried out to determine the levels of computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience, access to capital and technopreneur intention among BTECH students at FPTV. Table 1 presents the descriptive analysis using mean scores and standard deviations.

Table 1 Levels of computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience, access to capital and technopreneur intention

Aspect	Item	Item Statement	M	SD	Level
Computer Ability	B1	I can use word processing software (e.g., Microsoft Word, Google Docs, and others) to create documents.	4.65	.48	High
	B2	I can learn to use new software that I have never used before.	4.39	.49	High
	B3	I can identify the basic components of a computer and their functions.	4.14	.71	High
	B4	I can operate Microsoft applications or other computer-aided software.	4.24	.63	High
	B5	I can identify the differences in features between various types of software.	3.92	.85	High
	B6	I have a basic understanding of computer programming	3.35	1.00	Moderate

languages (e.g., C++, Java, etc.).

	B7	I can write basic computer code (e.g., displaying characters, performing calculations, etc.).	3.10	1.11	Moderate
	B8	I can debug errors in segments of computer programs that I have written.	2.82	1.17	Moderate
	B9	I can solve problems that occur while using a computer.	3.49	.99	Moderate
	B10	I can use a computer independently without assistance from others.	4.07	.79	High
Average			3.82		High
Internet Ability	C1	I can use web browsers (e.g., Microsoft Edge, Google Chrome, and others) to search for information.	4.47	.69	High
	C2	I can search for information using keywords in search engines.	4.05	.80	High
	C3	I can search for information using images in search engines.	3.92	.85	High
	C4	I can identify the features or functions of a website after browsing it.	4.14	.80	High
	C5	I can determine whether the information on a website is true or false.	3.84	.72	High
	C6	I can combine information from various sources to generate new ideas.	3.95	.75	High
	C7	I can use email effectively for communication.	4.08	.67	High
	C8	I can recover my email or social media account if I forget my password.	4.11	.71	High
	C9	I can manage the privacy settings of the social networking sites I frequently use.	4.06	.74	High
	C10	I can communicate with others online using various platforms.	4.40	.67	High
Average			4.10		High
Entrepreneurial Orientation	D1	I am willing to explore challenging business opportunities.	3.64	.77	Moderate
	D2	I am prepared to spend a lot of time on business projects that have the potential for high returns.	3.67	.80	Moderate
	D3	I am willing to invest a significant amount of money in entrepreneurial projects that have the potential for high profits.	3.34	1.01	Moderate
	D4	I am willing to take risks in starting or expanding my business.	3.66	.76	Moderate
	D5	I am open to exploring new ideas using unique approaches in business.	3.87	.78	High
	D6	I can solve business problems using my own methods.	3.58	.70	Moderate
	D7	I can plan or strategise business activities while taking potential challenges into account.	3.64	.89	Moderate
	D8	I am ready to take my own initiative in starting a business venture.	3.60	.73	Moderate
Average			3.63		Moderate
Entrepreneurial Experience	E1	I have sufficient knowledge to start a business.	3.68	.67	High
	E2	I have experience in developing a business.	3.22	.99	Moderate
	E3	I can identify customer needs through enquiries or feedback provided.	3.75	.69	High

	E4	I am able to identify business opportunities in the field of technopreneurship.	3.69	.70	High
	E5	I find that my skills, knowledge, and interest in entrepreneurship have increased as a result of technopreneurship education.	3.77	.63	High
	E6	I see technopreneurship as a career that can enhance self-reliance.	3.95	.60	High
	E7	I believe that technopreneurship plays an important role in economic development.	4.10	.69	High
Average			3.74		High
Access to Capital	F1	I see my successful family members in business as motivation for me to start a business.	3.82	.78	High
	F2	I have sufficient capital to start a business.	3.24	1.09	Moderate
	F3	My family is willing to assist financially or in terms of management if I want to start a business.	3.42	.89	Moderate
	F4	My acquaintances (friends or relatives) are willing to provide financial support or entrepreneurial advice if I want to start a business.	3.38	.93	Moderate
	F5	I can deal with institutions or agencies that offer capital assistance or guidance to start a business.	3.75	.77	High
	F6	I am confident that I can obtain a loan or investors to start a business.	3.38	.75	Moderate
Average			3.50		Moderate
Technopreneur Intention	G1	I am interested in starting a technology-based business.	3.69	.88	High
	G2	I intend to venture into the field of technopreneurship after completing my studies.	3.71	.75	High
	G3	I see a technopreneur career as an opportunity to achieve personal satisfaction and benefits.	3.74	.79	High
	G4	I view technopreneurship as my primary career choice.	3.58	.79	Moderate
	G5	I am willing to work hard to become a successful technopreneur.	3.38	.84	Moderate
	G6	I have a long-term goal of establishing a technology-based company.	3.49	.86	Moderate
Average			3.60		Moderate

The level of computer ability was high (M=3.82), with item B1 recording the highest mean (M=4.65, SD=0.48), while item B8 had the lowest (M=2.82, SD=1.17). According to Shegekar et al. (2023), skills in operating computers, including software use and data processing, are fundamental in the field of technopreneurship. The availability of adequate facilities and computer labs enhances practical learning and contributes to improved computer skills.

The level of internet ability was also high (M=4.10), with item C1 having the highest mean (M=4.47, SD=0.69) and item C5 the lowest (M=3.84, SD=0.72). Shashikala (2023) emphasised that the ability to access and effectively use the internet is a crucial component in building high digital self-efficacy among students, especially in technopreneurship. Thus, a learning environment that supports internet literacy helps establish a strong foundation for students.

However, the level of entrepreneurial orientation was moderate (M=3.63), with item D5 scoring the highest mean (M=3.87, SD=0.78) and item D3 the lowest (M=3.34, SD=1.01). According to Nurhayati, Machmud and Waspada (2020), entrepreneurial orientation is closely linked to exposure to success stories, training opportunities, and both internal and external motivation. Therefore, without a supportive environment that fosters entrepreneurial attitudes, students may struggle to fully develop their entrepreneurial orientation.

The level of entrepreneurial experience was high (M=3.74), with item E7 having the highest mean (M=4.10, SD=0.69) and item E2 the lowest (M=3.22, SD=0.99). Koe et al. (2021) noted that students with strong entrepreneurial experience are more prepared and confident to enter the technopreneurship field after

graduation. Systematic early exposure provides a significant advantage for students aiming to build a career as technopreneurs.

The level of access to capital was moderate ($M=3.50$), with item F1 recording the highest mean ($M=3.82$, $SD=0.78$) and item F2 the lowest ($M=3.24$, $SD=1.09$). According to Konstantinou and Miller (2021), many students interested in technopreneurship fail to secure financial support due to a lack of financial literacy and planning skills. This shows that constraints arise not only from the absence of funding but also from weaknesses in knowledge and technical ability to access it.

Finally, the level of technopreneur intention was moderate ($M=3.60$), with item G3 recording the highest mean ($M=3.74$, $SD=0.79$) and item G5 the lowest ($M=3.38$, $SD=0.84$). According to Iherobiem et al. (2023), students' level of intention can be directly influenced by their perception of risk and ability to control a business. In conclusion, technopreneur intention is not just a matter of interest but is closely tied to confidence and a supportive environment.

3.3 The Relationship Between Computer Ability, Internet Ability, Entrepreneurial Orientation, Entrepreneurial Experience and Access to Capital, and Technopreneur Intention among BTECH Students at FPTV

Inferential analysis was conducted to determine the relationship between computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience and access to capital, and technopreneur intention among BTECH students at FPTV. Table 2 presents the inferential analysis using Spearman's rho correlation.

Table 2 *The relationship between computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience and access to capital, and technopreneur intention*

	Spearman's rho Correlation	Technopreneur Intention
Computer Ability	Coefficient value (ρ)	.19
	Significance value (p)	.03
Internet Ability	Coefficient value (ρ)	.34
	Significance value (p)	<.001
Entrepreneurial Orientation	Coefficient value (ρ)	.35
	Significance value (p)	<.001
Entrepreneurial Experience	Coefficient value (ρ)	.61
	Significance value (p)	<.001
Access to Capital	Coefficient value (ρ)	.51
	Significance value (p)	<.001

There was a significant relationship between computer ability and technopreneur intention, with a very weak strength of association ($\rho=.19$, $p<.05$). Li (2024) found that students with higher computer skills showed greater interest in technopreneurship compared to those with weaker skills. This highlights that technology is not just a tool, but a key driver in shaping students' readiness to become technopreneurs. Next, there was a significant relationship between internet ability and technopreneur intention, with a weak association ($\rho=.34$, $p<.05$). Podeschi (2020) found that students with strong internet abilities were more inclined to engage in technopreneurship. Therefore, structured learning systems that support internet competency have a direct impact on students' intention to become technopreneurs. There was also a significant relationship between entrepreneurial orientation and technopreneur intention, with a weak strength of association ($\rho=.35$, $p<.05$). Nurhayati, Machmud and Waspada (2020) reported that students with innovative and proactive attitudes were more successful in implementing technopreneur projects. This confirms that entrepreneurial orientation is not merely supplementary, but a critical prerequisite in shaping technopreneur intention.

In addition, there was a significant relationship between entrepreneurial experience and technopreneur intention, with a strong strength of association ($\rho=.61$, $p<.05$). Solina et al. (2024) reported that students with only theoretical exposure and no practical experience tended to be less interested in becoming technopreneurs. This shows that experience acts as a crucial bridge between knowledge and technopreneur action. Finally, there was a significant relationship between access to capital and technopreneur intention, with a moderate strength of association ($\rho=.51$, $p<.05$). Konstantinou and Miller (2021) found that students who were knowledgeable about and able to obtain funding sources showed a greater tendency to start businesses compared to those who faced financial constraints. This proves that students with financial knowledge and support show higher levels of technopreneur intention.

4. Conclusion

This study found that all five factors, namely computer ability, internet ability, entrepreneurial orientation, entrepreneurial experience, and access to capital, had significant relationships with technopreneur intention. Students' computer and internet ability levels were high, indicating proficiency in basic technological skills. Entrepreneurial orientation and access to capital were at moderate levels, suggesting a need for improvement in attitude and financial support. Entrepreneurial experience was found to be high, showing that students are actively involved in entrepreneurship-related activities. On average, students' technopreneur intention was moderate, indicating that they may not yet be fully prepared to pursue technopreneurship as a primary career path. Overall, this study confirms that technopreneur intention among BTECH students at FPTV is influenced by several key factors that play an important role in shaping students' motivation to become technopreneurs. This study contributes theoretically by extending empirical evidence on curriculum design in TVET and practically by offering insights for policymakers and educators to prepare students for job readiness and self-employment in the technopreneurship sector.

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Conflict of Interest

Author declares that there is no conflict of interest regarding the publication of the paper.

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Nurul Aqilah Muhammad, Norhasyimah Hamzah; **data collection:** Nurul Aqilah Muhammad; **analysis and interpretation of results:** Nurul Aqilah Muhammad, Norhasyimah Hamzah; **draft manuscript preparation:** Nurul Aqilah Muhammad, Norhasyimah Hamzah. All authors reviewed the results and approved the final version of the manuscript.

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