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Management & Sustainability: An Arab Review

# Navigating the technopreneurial odyssey: determining how technopreneurial self-efficacy, technopreneurial education and technological optimism cultivate tech-driven entrepreneurial intentions

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## Abstract

**Purpose** – This study aims to assess the impact of technopreneurial self-efficacy, technopreneurial education and technological optimism on Generation Z students' intentions to engage in technopreneurship in South Africa.
**Design/methodology/approach** – The research employed a quantitative approach with a cross-sectional survey design. Data from 304 university students are analysed using partial least squares structural equation modelling (PLS-SEM).
**Findings** – The findings confirm significant positive effects: technopreneurial self-efficacy has a direct impact on technopreneurship intention, and technopreneurship education mediates this relationship. Moreover, technological optimism moderates the relationships between technopreneurial self-efficacy and intention, as well as between technopreneurial education and intention.
**Research limitations/implications** – The study contributes to existing bodies of knowledge by expanding the tenets of the theory of planned behaviour, the generation cohort theory and the technology acceptance model by exploring how technopreneurs' self-efficacy, technopreneurship education and technological optimism influence Generation Z students' intentions to engage in technopreneurship in South Africa.
**Practical implications** – The study findings can benefit educational institutions and policymakers by improving the efficiency and effectiveness of fostering technopreneurship, which will ultimately drive economic growth and innovation.

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**Originality/value** – This study closes the gaps in the technopreneurship literature in emerging economies and underscores the importance of cultivating a technopreneurial mindset among youth to drive sustainable economic development.

**Keywords** Technopreneurship, Technopreneurship intention, Technopreneurial education, Technological optimism, Technopreneurial self-efficacy

**Paper type** Research paper

## 1. Introduction

Given the global popularity of the Fourth Industrial Revolution (4IR) and the rise of artificial intelligence and a knowledge-based society over the past decade, the concept of technopreneurship has become increasingly widespread (Yingi *et al.*, 2022; Bui and Lo, 2022). The Fourth Industrial Revolution (4IR) can be viewed as the transformation of industries through the integration of new technologies, which has led to the development of innovations such as Artificial Intelligence (AI), robotics, Internet of Things (IoT), and Quantum Computing among others (Nyagadza *et al.*, 2022). The COVID-19 pandemic has significantly accelerated the technology industry's remarkable growth from 2020 to 2022, driven by the adoption of social distancing and stay-at-home measures. This has led to significant developments in metaverse marketing, where consumers are increasingly drawn to virtual shopping experiences (Cheung *et al.*, 2024a, b; Ligaraba *et al.*, 2023). Virtual Reality (AR), Blockchain, and Artificial Intelligence (AI) enhanced technologies have been very instrumental during the COVID-19 era through various platforms such as social media and corporate websites, as they engaged made users of products to be more engaged and/or connected with specific brands for goods and services (Wasiq *et al.*, 2024a, b; Bashar *et al.*, 2024a, b). The security and integrity of these transactions were improved due to the developments, resulting in memorable brand experiences that brought delight through associated entertainment, which in turn enhanced digital tech-driven entrepreneurship (Cheung *et al.*, 2024a, b; Leung *et al.*, 2023). Therefore, it is impossible to underestimate the importance of technopreneurship in terms of economic development and modernisation. In this regard, there is a consensus that technological advancements support both economic growth and development (Bomani *et al.*, 2021). It is evident that technology-based industries are supplanting traditional sectors due to technopreneurship (Nikraftar *et al.*, 2022). This implies that, particularly in developing nations, it is pivotal to support technopreneurs who can create innovative technological solutions. Technopreneurship, as defined by Soomro and Shah (2021), is the convergence of high technology, innovation, and entrepreneurship. It encompasses tech-savvy individuals who exhibit creativity and innovation and are willing to take calculated risks. The developing world is lagging behind in advancing cutting-edge technology across all fields, a situation that hinders swift progress in economic development. In line with this, in the current study, technopreneurship self-efficacy can be seen as one's belief in successfully performing the tasks and roles necessary to start and manage a tech-based business (Maziriri *et al.*, 2024a, b).

Despite the current digital age, Africa is only at the initial stages of technology development and implementation. Given this context, nurturing a technopreneurship culture emerges as a holistic strategy to address the sluggish pace of technological growth and integration in African nations. It is widely recognised that technopreneurship offers diverse benefits, encompassing the capacity to generate income, alleviate poverty and generate employment opportunities (Nikraftar *et al.*, 2022). Numerous governments are instituting various programs to promote commercialisation, knowledge transfer, and the creation of new products to capitalise on these advantages. Greater emphasis must be placed on technopreneurship within this governmental context, particularly among university students. Nonetheless, technopreneurship is a multifaceted and intricate concept (Linton and Xu, 2021). It is evident that technology-based industries are experiencing exponential growth, unveiling fresh prospects. Consequently, it seems imperative to foster the development of technopreneurship (Groen *et al.*, 2015; Nyagadza, 2021). Technopreneurship, which combines technology and entrepreneurship, provides a sustainable competitive advantage by developing and advancing information communication tools and technologies to meet consumer needs in this digital era (Soomro and Shar, 2021).

The imperative to cultivate technopreneurs within university students is a focal point for numerous universities. Business opportunities have now permeated all academic disciplines, including information technology, computer science, chemistry, nursing, engineering, pharmacy and agriculture. This transformation has been observed in numerous African nations, where a paradigm shift toward science, technology, engineering, and mathematics (STEM) is evident in various governmental strategies (Bomani *et al.*, 2021). This underscores the notion that comparative advantage among nations is now entrenched in knowledge-driven policies rather than resource-centric approaches. Consequently, establishing innovation hubs for high-growth start-ups has become a strategic direction that many countries adopt in nurturing technopreneurs (Amante and Ronquillo, 2017).

However, the technological and entrepreneurial intentions of South Africans have not yet received a comprehensive investigation, despite technopreneurship currently propelling the advancement of progressive nations worldwide. It is indisputable that South Africans confront an array of economic and social challenges, including the contraction of the manufacturing sector, which correlates with elevated poverty and unemployment rates. Considering these difficulties, it is disheartening to note that the inclination towards technopreneurship among South Africans remains notably low.

It is documented that there is an increasing media focus on technopreneurship within the Middle East and North Africa (MENA) region as a strategy for fostering technological advancement and industrialisation (Nyagadza *et al*., 2022). Despite the burgeoning global interest in technopreneurship, limited research in this field is evident due to its relatively recent emergence (Najjari *et al*., 2021; Nikraftar *et al*., 2022). Alarmingly, most previous investigations into entrepreneurial intentions among university students have been confined to business students (Shah and Soomro, 2017). To exacerbate the situation, among non-business university students in South Africa, the inclination towards technopreneurship is still nascent. Notably, the government has encapsulated the significance of technology and innovation. Technopreneurship contributes to SDG 9 by fostering technological innovation, enhancing productivity, and promoting sustainable development through the creation of new products, services, and business models. However, there is an absence of a distinct roadmap for instilling a technopreneurship ethos within the country.

In light of limited knowledge on technopreneurship, this study aims to investigate how technopreneurial self-efficacy, technopreneurial education, and technological optimism influence technopreneurial intention among Generation Z students in South Africa. Furthermore, there is little research on the role of technopreneurial education and technological optimism as moderators between technopreneurial self-efficacy and technopreneurship intention. As a result, this study will significantly contribute to closing this gap. A critical literature review methodological approach will be used to gather and organise the literature. The aim of this approach is to achieve a thorough degree of analysis focused on hypothesis development, conceptual model formulation, and subsequent testing (Grant and Booth, 2009). The research will adopt a quantitative methodology, using a cross-sectional survey method to collect data from Generation Z sampled university students. Due to the paucity of convincing technopreneurship studies in Africa's emerging economies, this study contributes to bridging the knowledge gap as it investigates to determine how technopreneurial self-efficacy, technopreneurial education, and technological optimism would stimulate technopreneurship intention among generation Z students, with technopreneurial education and technological optimism as the moderators, as a pioneering study in South Africa. In connection to the above, what motivated the study is to answer the main research question (RQ):

*RQ*. How would technopreneurial self-efficacy, technopreneurship education, and technological optimism stimulate technopreneurship intention among Generation Z students in South Africa?

The research paper is organised as follows: First, the research context is provided, and then a theoretical basis for the analysis is presented. Thereafter, a theoretical model is presented, and

the hypothesis is established. The study design and methodology are then discussed, followed by the presentation of the findings and their discussion. The article concludes with a discussion of the implications, limitations, and future research directions.

## 2. Research contextualisation

### *2.1 The relevance and significance of choosing generation Z students*

Based on the rationale that the adoption of technopreneurship by Generation Z students presents a distinct way of contributing to the job market, the present research employs a sample from this age group. Under normal circumstances, Generation Z faces challenges related to independence, self-actualisation, and self-employment (Soomro and Shah, 2021). As a consequence, the domain available literature (Abdulgani *et al*., 2016; Yordanova *et al*., 2020; Sharma, 2018; Shah and Soomoro, 2017) and/or bodies of knowledge mainly show empirical enquiries on the antecedents impacting technopreneurship (Abdulgani *et al*., 2016), whereas among Generation Z students (in countries such as South Africa), the determination of factors such as how technopreneurial self-efficacy, technopreneurial education, and technological optimism in cultivating tech-driven entrepreneurial intentions is still at its emerging levels. The rapid global technological developments have pushed the agenda for innovation development and signalled competitiveness of the business incubation through technopreneurship among Generation Z students in knowledge-driven economies. Generation Z students are often referred to as "digital natives," having experienced the dynamic technological and economic developments brought about by the Fourth Industrial Revolution (4IR), which has led to a significant reliance on social connections (Kumar and Kaushik, 2020). The embarkation of Generation Z on technological activities is worth investigating, as this, in turn, would develop strengthening strategies aimed at reducing the government's burden on public sector job opportunities (Singhry, 2015), especially in economic situations following the pandemic outbreak (Koe *et al*., 2021). This has been well articulated in the Generation Cohort Theory (GCT), which discusses the different values and beliefs systems among various generations (Srivastava *et al*., 2022; Cheung *et al*., 2021). Within this context, Ernst and Young (2021) observed that 53% of survey respondents expressed a desire to run their own businesses, focusing on technology. Moreover, the proportion increased for Generation Z respondents who were currently in the workforce, with 65% optimistic that they will be running their own businesses in 2030. Notably, Generation Z students demonstrated a high level of entrepreneurial aspiration, aiming to utilise opportunities to address complex problems (Ernst and Young, 2021). This implies that Generation Z students possess entrepreneurial traits essential for technopreneurship (Schwieger and Ladwig, 2018).

## 3. Theoretical lens

Various models and theories exist to predict and explain human behaviour. This study will be based on the Theory of Planned Behaviour, the Generation Cohort Theory (GCT), and the Technology Acceptance Model (TAM). The theories are discussed in the following sections section.

### *3.1 The theory of planned behaviour (TPB)*

Ajzen (2002) proposed the Theory of Planned Behaviour. The TPB model has been one of the most widely utilised frameworks for studying environmental behaviours (Fielding *et al*., 2008). Many researchers assert that the TPB model effectively explains behavioural intentions and predicts future behaviours (Mannetti *et al*., 2004). The TPB model illustrates that three predictors influence human intention: attitude towards behaviour, subjective norm, and perceived behavioural control. However, despite the extensive application of the TPB model in examining the motivation behind behavioural intentions, researchers have observed that domain-specific factors have not been included in the model (Armitage and Conner, 2001; Donald *et al*., 2014). Numerous studies have built upon the TPB model by incorporating new

constructs (Jang *et al*., 2015; Maichum *et al*., 2016; Read *et al*., 2013). This study expands the TPB by integrating technopreneurial self-efficacy, technopreneurial education, and technological optimism to enhance technopreneurship intention (behavioural intention according to the TPB). The application of this model in this study is that the TPB can clarify how technopreneurial self-efficacy, education, and technological optimism collectively influence individuals' intentions to engage in tech-driven entrepreneurship.

### *3.2 Generation cohort theory (GCT)*

The Generation Cohort Theory (GCT) demonstrates the different values and beliefs systems amongst various generations (Kumar and Kaushik, 2020; Nayak *et al*., 2022), with homogenous memories and experiences during their formative years. Application of Generation Cohort Theory (GCT) to this study assists in explaining the ways in which technopreneurs self-efficacy, education, and technological optimism have an influence on individuals' intentions to engage in tech-driven entrepreneurship. While some studies have investigated the moderating role of general entrepreneurial education (Rauch and Hulsink, 2015; Obschonka *et al.*, 2019), they have not specifically delved into the specialised aspects of entrepreneurship education relevant to technology ventures in line with Generation Z in South Africa. Commonly known for their techno-savvy attitudes as digital natives, the development of the Generation Cohort Theory (GCT) assists in accounting for such relationships between ages and general experiences as well as value systems. The prediction of historical events and social changes in a society because of individuals' values, beliefs, attitudes and inclinations assists in explaining how people tend to share similar life paths because of broad values and traits. Each generation has its own special spending patterns, consuming behavioural patterns, and purchase behaviours, like the current study, which focuses on how technopreneurial self-efficacy, education, and technological optimism collectively affect Generation Z in South Africa's intentions to engage in technology-driven entrepreneurship.

### *3.3 Technology acceptance model (TAM)*

The technology acceptance model (TAM) was initially introduced by Davis (1989). This theory provides a comprehensive foundation for demonstrating that specific beliefs, particularly perceived ease of use (PEOU) and perceived usefulness (PU), determine an individual's behavioural intention to utilise technology (Davis *et al*., 1989; Surendran, 2012; Partala and Saari, 2015; Dwivedi *et al*., 2019). In a technopreneurial context, these dimensions (PEOU and PU) are essential for understanding how aspiring Generation Z entrepreneurs may adopt technology as a fundamental tool for innovation and business creation. Furthermore, technological optimism and technopreneurial education enhance Generation Z's positive perception of technology, aligning with TAM's assertion that attitudes towards technology are critical for its acceptance. The researchers contend that technological optimism can amplify Generation Z's intention to employ technology in entrepreneurial ventures. Lastly, TAM's flexibility across various disciplines establishes it as a robust theoretical foundation for integrating psychological, educational, and entrepreneurial constructs. Thus, evidence from previous studies indicates that this is a valid model for justifying the use of technology in diverse environments and has a close relationship with technological innovation (Almaiah *et al*., 2022; Kamal *et al*., 2020). The predictive power of this model arises from its ability to facilitate the relationship between various context-specific factors that could influence the acceptance of a particular technology, including technopreneurial self-efficacy, technopreneurial education, and technological optimism (Lutfi *et al*., 2022; Almaiah and Al-Khasawneh, 2020).

## 4. Theoretical model and hypotheses formulation

The research model for the study is illustrated (see Figure 1). The theoretical model showcases the proposed relationships between the study's four constructs.

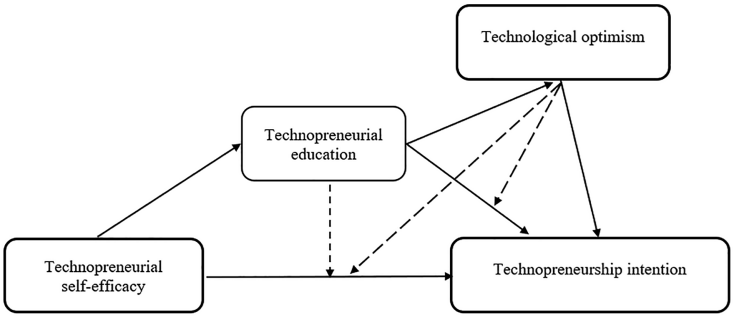


**Figure 1.** Conceptual model. Source(s): Authors' own creation

*4.1 Technopreneurial self-efficacy and technopreneurship intention*

Technopreneurial self-efficacy reflects individuals' beliefs in terms of whether they possess the required technological and entrepreneurial skills needed to start a technology-based venture (Salheieh and Al-Abdallat, 2022). On the hand, technopreneurship intention is state of mind which directs and guides the actions of the individual toward the development and the implementation of new technology business concepts (Hoque *et al.*, 2017). The relationship between technopreneurial self-efficacy and technopreneurship intention is an important area of study that sheds light on the motivations and behaviours of individuals involved technopreneurship. Recent studies on technopreneurship investigated the influence of technopreneurial self-efficacy on technopreneurship intention. For instance, Koe *et al*. (2021) found out that ICT self-efficacy positively and significantly influenced technopreneurial intention. In addition, Salhieh and Al-Abdallat (2022) discovered that technopreneurial self-efficacy has a positive and significant effect on technopreneurial intentions. Moreover, Hoque *et al.* (2017) also found out that technopreneurial self-efficacy has a positive and significant effect on technopreneurial intention. Therefore, it is hypothesised that:

*H1*. Technopreneurial self-efficacy has a positive and a significant impact on technopreneurship intention.

*4.2 Technopreneurial self-efficacy and technopreneurial education*

Technopreneurship is a learnable discipline, and as noted by Minniti and Bygrave (2001), education serves as the cornerstone of entrepreneurship. According to Kolb's (1984) theory, technopreneurial learning is an experiential process wherein technopreneurs acquire information through four separate learning capabilities: experiencing, reflecting, thinking, and acting. Extant literature posits the importance of technopreneurial self-efficacy in affecting technopreneurial education. Koe *et al.* (2021) noted that as one's self-efficacy or perceived capability can be learned through education, higher learning institutions (HLIs) are important agents in imparting ICT knowledge to future technopreneurs. Entrepreneurship education has been critical in enhancing the development of entrepreneurship skills amongst the Gen Z of the communities (Hasan *et al.*, 2024). This means that there is a positive relationship between entrepreneurship education and entrepreneurial readiness amongst the students and young generations, with the support of relevant materials and equipment. In addition, entrepreneurial education enhances innovation and creativity, and put learnt knowledge into practice (Hasan *et al.*, 2024). According to Baumol and William (2002), technopreneurial self-efficacy (TSE) can be learned from the development of cognitive and social processes as well as skills gained from technical experiences which can be achieved from formal technological education or experiences, and also from practices or training. Although this might be the case, the Theory of Planned Behaviour (TPB) used to support the

current study has been widely used to examine the motivation of behavioural intentions, researchers have noticed that domain-specific factors have not been included in the model (Armitage and Conner, 2001; Donald *et al.*, 2014). Studies in Malaysia and Taiwan showed that students' technopreneurship self-efficacy has a significant effect on technopreneurial education behaviour (Ainul *et al.*, 2016; Chou *et al.*, 2011). Hoque *et al.* (2017) also found out that technopreneurial Self-Efficacy (TSE) has a positive and significant effect on technopreneurial Learning or education. Based on these findings, the following hypothesis is proposed:

*H2*. Technopreneurial self-efficacy has a positive and a significant impact on technopreneurial education.

*4.3 Technopreneurial education and technopreneurship intention*

It is imperative to elucidate on the association between technopreneurial education and technopreneurship intention. Sudarwati (2022) elucidated that the acquisition of more entrepreneurial knowledge has the ability to change the mindset of students towards having the intention to become technopreneurs. Furthermore, Sudarwati (2022) discovered that when students have a high technopreneurship intention and this means their desire to become technopreneurs has become stronger through their participation in entrepreneurship classes. There is a need to have the ability to combine entrepreneurial knowledge with technology to become a technopreneur (Blanka *et al*., 2019; Wardana *et al*., 2020). Also, it was found out that technopreneurship education significantly affected students' career intention to be technopreneurs (Harsono, 2013). The Technology Acceptance Model (TAM) provides an extensive foundation for demonstrating that specific beliefs; perceived ease of use (PEOU) and perceived usefulness (PU) determine one's behavioural intention to use a technology (Davis *et al.*, 1989; Surendran, 2012; Partala and Saari, 2015; Dwivedi *et al.*, 2019). Grounded in the literature and empirical findings outlined earlier, the ensuing hypothesis is posited:

*H3*. Technopreneurial education has a positive and a significant impact on technopreneurship intention.

*4.4 The mediating role of technopreneurial education*

Technopreneurial education plays a critical role in shaping entrepreneurial intentions within the technology sector by equipping individuals with specialised skills and knowledge pertinent to technology-driven ventures (Linan and Chen, 2009). Specifically, individuals with higher levels of technopreneurial self-efficacy, which reflects their belief in their ability to successfully undertake technopreneurial activities (Baron, 2006; Krueger *et al.*, 2000), are likely to exhibit stronger intentions to engage in technopreneurship when they have undergone comprehensive technopreneurial education. However, existing research has underscored the need to explore technopreneurial education not merely as a direct influencer but also as a potential mediator in the relationship between technopreneurial self-efficacy and entrepreneurial intentions. The application of the models to this study is that TPB and TAM can help elucidate how technopreneurial self-efficacy, education, and technological optimism collectively affect individuals' intentions to engage in tech-driven entrepreneurship. While some studies have investigated the moderating role of general entrepreneurial education (Rauch and Hulsink, 2015; Obschonka *et al.*, 2019), they have not specifically delved into the specialised aspects of entrepreneurship education relevant to technology ventures, which are fully supported by the Theory of Planned Behaviour (TPB) in close link to the Technology Acceptance Model (TAM). While studies have examined general entrepreneurship education as a mediator (Liñán *et al.*, 2011; Zhao *et al.*, 2005), there remains a gap in understanding how the techno-specific aspects of education facilitate the translation of self-belief into concrete entrepreneurial actions within technology contexts. Therefore, it is hypothesised that:

*H4.* Technopreneurial education positively and significantly mediates the relationship between technopreneurial self-efficacy and technopreneurship intention.

*4.5 The moderating role of technopreneurial education*

Technopreneurial education refers to structured learning experiences aimed at developing entrepreneurial skills tailored for technology-driven ventures (Linan and Chen, 2009). Individuals with higher levels of technopreneurial self-efficacy are likely to exhibit stronger intentions to pursue technopreneurship when they have received sufficient technopreneurial education, compared to those with lower levels of self-efficacy or education. However, it is crucial to note the lack of exploration regarding technopreneurial education as a moderator variable in the context of technopreneurship. Addressing this research lacuna by examining how technopreneurial education moderates the relationship between technopreneurial self-efficacy and intention to engage in technopreneurship can provide deeper insights into the factors shaping entrepreneurial ambitions within the technology sector. Hence, it can be hypothesised that:

*H5.* Technopreneurial education positively and significantly moderates the relationship between technopreneurial self-efficacy and technopreneurship intention.

*4.6 Technological optimism and technopreneurship intention*

Technological optimism, specifically, reflects a positive outlook on technology, encompassing perceptions of control and agency (Cadenas *et al.*, 2020). Similarly, Danaher (2022) defines technological optimism as the stance that holds that technology plays a key role in ensuring that good does or will prevail over the bad. Optimism, is often likened to an Archimedean point, not only shapes individual entrepreneurial decisions but also contributes to societal well-being and national development (Seligman, 1991). Technological optimism has been found to significantly influence technopreneurship intention in different contexts. For instance, Puga and Garcia (2010), discovered that technological optimism significantly influences the intention to engage in technopreneurship. Moreover, students nowadays are considered digital natives, and most of them have positive opinions towards technology usage (Lewis and Mayes, 2014; Musah *et al.*, 2015). This notion is echoed by Adeoti (2019), who emphasises the importance of a technology-savvy approach in technopreneur development. Furthermore, it is crucial to recognise that the relationship between technology optimism and intention for technopreneurship among Generation Z students requires a nuanced understanding of the contemporary entrepreneurial landscape. In an era marked by rapid technological advancement and digital innovation, the mindset of Generation Z—characterised by their inherent comfort and optimism towards technology—plays a pivotal role in shaping their aspirations for technopreneurship. Therefore, it is plausible to hypothesise that:

*H6.* Technological optimism has a positive and a significant impact on technopreneurship intention.

*4.7 The moderating role of technological optimism*

Technology optimism suggests that technology enhances control, flexibility, and efficiency (Borrero *et al.*, 2014). Today's students, often called digital natives, generally maintain positive views on technology (Lewis and Mayes, 2014; Musah *et al.*, 2015). However, there is a gap in research regarding how technology optimism influences the relationship between technopreneurship education and intentions for technopreneurship, as well as technopreneurial self-efficacy and intentions for technopreneurship. While some studies have explored how technology optimism moderates relationships in various contexts, such as Gardezi and Arbuckle (2020) on the link between risk perception and support for adaptation,

Chao and Yu (2019) on the relationship between perceived behavioural control and behavioural intention, and Rachman and Hendayani (2023) on the connection between e-service quality and customer satisfaction, further investigation is required to understand its specific role in the context of technopreneurship. Therefore, drawing from the aforementioned studies, the following hypothesis can be proposed:

*H7.* Technological optimism positively and significantly moderates the relationship between technopreneurial education and technopreneurship intention.

*H8.* Technological optimism positively and significantly moderates the relationship between technopreneurial self-efficacy and technopreneurship intention.

## 5. Methodological aspects

This research was grounded in positivist philosophy, which asserts that phenomena can be understood by collecting and analysing quantitative data, resulting in verifiable outcomes (Dzomonda and Neneh, 2023; Saunders *et al*., 2019). Positivism promotes objectivity and the generalisability of findings (Bell *et al*., 2022; Saunders *et al*., 2019). A quantitative research approach was adopted, emphasising collecting and analysing numerical data to gain insights into the research problem (Bell *et al*., 2022). A causal research design was employed to examine the relationships between technopreneurial self-efficacy, technopreneurship education, and technopreneurship intention, with technological optimism acting as a moderating variable. This design is appropriate as it prioritises objectivity and allows for extracting insights from a structured survey through comprehensive statistical analysis (Taherdoost, 2022).

### *5.1 Sample and data collection*

This research focused on Generation Z (Gen Z) students enrolled at the University of the Western Cape in Bellville within South Africa's Western Cape Province. The University of the Western Cape aims to establish itself as an entrepreneurial university, offering entrepreneurial education through its Department of Management and Entrepreneurship. Students can study entrepreneurship modules, such as Technopreneurship, encompassing topics like innovation management, business model development, digital technologies, and drop shipping, including variations such as formal academic instruction, practical training through incubators, and experiential learning through industry collaborations. Focusing on students aligns with the prevalent use of student samples in entrepreneurial research across various contexts (Neneh and Dzomonda, 2024; Gieure *et al*., 2020; Kong *et al*., 2020; Syed *et al*., 2020). In line with previous studies, university students were selected for this research as they are more inclined to demonstrate interest and participation in entrepreneurial activities (Neneh and Dzomonda, 2024; Cui and Bell, 2022; Maheshwari and Kha, 2023).

Data collection was done using a self-administered survey questionnaire. To participate, students needed to be actively registered at the university during the data collection period, with their student cards—displaying their name and year of enrolment—used for verification. The university's database, which contained the complete list of registered students, served as the sampling frame. A probability sampling approach was adopted to ensure the findings could be generalised. Specifically, a simple random sampling method was employed, guaranteeing that each student had an equal chance of selection. Quota sampling was also implemented to achieve a balanced distribution of characteristics within the sample, given the study's focus on Gen Z.

The respondents' socio-economic background reveals that Generation Z students reside in private or university accommodation. They hail from various provinces, as detailed in Table 2, which presents the sample's demographic characteristics. The sole screening criterion was

employment status, as the study specifically targeted respondents who were not in full-time permanent employment. Economically, these students depend on bursaries, scholarships, and parental allowances. They perceive technopreneurship as a route to success, exploring opportunities in technological ventures such as metaverse-enabled entrepreneurship and drop shipping.

Goh and Lee (2018) defined Generation Z as individuals born between 1995 and 2009, thus limiting the study's age range to 18–29 years. The sampling frame comprised the university's database of registered students, and simple random sampling ensured fair representation. The questionnaires emphasised respondent anonymity and outlined the educational purpose of the research. The required sample size was calculated using the Raosoft calculator (Raosoft Inc., 2004), based on the total student population of approximately 23,000. Assuming a 5% margin of error, a 90% confidence level, and a 50% response distribution, the minimum sample size was determined to be 378 participants. Of the 378 questionnaires distributed, 304 usable responses were received, resulting in a response rate of 80.4% for usable data.

### *5.2 Measurement instrument and questionnaire design*

The variables under investigation were operationalised based on previous studies. The scales were adjusted to reflect the context of technopreneurship among students. Table 1 presents the measurement scales, the items used, their sources, and Cronbach's alpha values for the scales. The scale indicators ranged from strongly disagree (1) to strongly agree (5) on a Likert scale.

### *5.3 Respondent profile*

Table 2 presents an overview of the study participants, who were asked to provide demographic information, including gender, age, year of study, and province of origin. The demographic profile of the sample reflects substantial diversity across several dimensions.

The gender composition reveals a higher proportion of males (61.5%) compared to females (32.6%), alongside a small percentage of respondents who opted not to disclose their gender (5.9%). In terms of age, most participants are young adults from the Generation Z cohort, with significant representation in the 21 to 23 age bracket (31.9%) and the 27 to 29 age range (37.5%). Regarding academic standing, most participants are in their second or third year of study (25.3% and 29.2%, respectively). Additionally, a notable number of postgraduate students are included, spanning Honours (13.4%), Master's (11.0%), and PhD programmes (5.0%).

Geographically, the respondents come from a wide range of provinces, with the Western Cape (20.07%), KwaZulu-Natal (18.42%), and the Free State (12.50%) being the most represented.

This heterogeneous sample, encompassing variations in gender, age, academic level, and geographical origin, ensures a well-rounded and representative perspective. Such diversity enhances the validity of the study by allowing for a more nuanced examination of how technopreneurial self-efficacy, education, and technological optimism influence the technopreneurial intentions of Generation Z students.

## 6. Results of structural equation modelling

In this study, the researchers will employ a two-step approach to data analysis using Partial Least Squares Structural Equation Modelling (PLS-SEM), as outlined by Hair *et al*. (2017). The first step will involve validating the measurement model, where the researchers will assess internal consistency reliability through composite reliability (CR), indicator reliability using outer loadings, and convergent validity via average variance extracted (AVE). Discriminant validity will also be evaluated through the Heterotrait–Monotrait (HTMT) ratio and the Fornell–Larcker criterion. In the second step, the structural model will be examined, focusing on the significance and magnitude of path coefficients, the coefficient of determination ($R^2$) to

**Table 1.** Measures

| Constructs/references | Instruments | Cronbach's alpha |
|---|---|---|
| Technopreneurial self-efficacy as adapted from Salhieh and Al-Abdallat (2022) | • I show great aptitude for creativity and innovation<br>• I show great aptitude for leadership and problem-solving<br>• I can develop and maintain favourable relationships with potential investors interested in new technology-based innovations<br>• I can see new market opportunities for new technology-based products and services<br>• I can develop a working environment that encourages people to try something new | 0.939 |
| Technopreneurship education as adopted from Belmonte *et al*. (2022) | • Technopreneurship contributes to economic development<br>• Technopreneurship can make someone self-independent<br>• Technopreneurship education has enabled me to identify business-related opportunities<br>• Through technopreneurship education, my skills, knowledge, and interest in entrepreneurship have all improved<br>• Technopreneurship education activities have stimulated my interest in technopreneurship | 0.941 |
| Technopreneurship intention as adapted from Salhieh and Al-Abdallat (2022) | • A career as a technopreneur (i.e. developing technology-based ventures) is attractive to me<br>• If I had the opportunity and resources, I would like to start a technology-based business<br>• People I care about would approve of my intentions to become a technopreneur<br>• Most people who are important to me would approve of me becoming a technopreneur<br>• Being a technopreneur gives me satisfaction<br>• Being a technopreneur implies more advantages than disadvantages to me<br>• Amongst various options, I would rather be a technopreneur | 0.935 |
| Technological optimism as adapted from Othman *et al*. (2020) | • Technology makes transaction completion more efficient for me<br>• Technology makes me more efficient in my transaction<br>• I prefer using the most advanced technology that is available<br>• Processes that use the newest technology are much more convenient for me to use<br>• I use technology tailored to fit my needs | 0.928 |

**Source(s):** Researchers' conception (2024)

assess model explanatory power, predictive relevance ($Q^2$) to evaluate the model's ability to predict the endogenous constructs, and effect size ($f^2$) to determine the strength of the relationships between constructs. Additionally, common method bias (CMB) will be tested using variance inflation factor (VIF) values, and model fit will be evaluated using the Standardised Root Mean Square Residual (SRMR) and other fit indices.

**Table 2.** Sample demographic characteristics

| | Frequency | Percentage |
|---|---|---|
| *Gender* | | |
| Male | 187 | 61.5% |
| Female | 99 | 32.6% |
| Prefer not to say | 18 | 5.9% |
| *Total* | *304* | *100%* |
| *Age distribution of the respondents* | | |
| 18–20 years | 37 | 12.2% |
| 21–23 years | 97 | 31.9% |
| 24–26 years | 56 | 18.4% |
| 27–29 years | 114 | 37.5% |
| *Total* | *304* | *100%* |
| *Year of study* | | |
| 1st year | 49 | 16.1% |
| 2nd year | 77 | 25.3% |
| 3rd year | 89 | 29.2% |
| Honours | 41 | 13.4% |
| Masters | 33 | 11.0% |
| PhD | 15 | 5.0% |
| *Total* | *304* | *100%* |
| *Province of origin* | | |
| Gauteng | 28 | 9.21% |
| Limpopo | 15 | 4.93% |
| Mpumalanga | 37 | 12.17% |
| North West | 18 | 5.92% |
| KwaZulu Natal | 56 | 18.42% |
| Free State | 38 | 12.50% |
| Eastern Cape | 18 | 5.92% |
| Northern Cape | 33 | 10.86% |
| Western Cape | *61* | *20.07%* |
| *Total* | *304* | *100%* |

**Source(s):** From the current research analysis

### *6.1 Measurement model validation*

Table 3 presents the measures employed to assess the reliability and validity of the study's constructs. The outer model was initially evaluated using composite reliability (CR) to determine internal consistency, outer loadings for indicator reliability, and average variance extracted (AVE) for convergent validity. CR is preferred for internal consistency reliability as it accounts for the varying outer loadings of indicator variables, unlike Cronbach's alpha, which assumes equal reliability for all indicators (Hair *et al*., 2017). All item loadings for the research constructs were above 0.710, with items scoring below 0.5 being excluded for failing to meet convergent validity thresholds (Anderson and Gerbing, 1988). The remaining item loadings exceeded the recommended value of 0.5 (Anderson and Gerbing, 1988), indicating reliable measurement instruments with satisfactory convergent validity. Cronbach's alpha values ranged from 0.790 to 0.845, surpassing the acceptable threshold of 0.70 for internal consistency reliability (Field, 2013). The lowest CR value was 0.863, above the suggested 0.6 threshold (Hulland, 1999), and the lowest AVE value was 0.603, exceeding the recommended 0.4 (Anderson and Gerbing, 1988), confirming convergent validity and excellent internal consistency and reliability of the measures. The results also demonstrated adequate discriminant validity for all variables, supporting the reliability of the research scale (Chinomona and Chinomona, 2013).

**Table 3.** Accuracy analysis statistics

| Research construct | | | | | | |
|---|---|---|---|---|---|---|
| Code | Code items | Cronbach's alpha value | CR | AVE | Factor loadings | VIF (outer) values |
| TSE | TSE1 | 0.835 | 0.884 | 0.603 | 0.786 | 2.112 |
| | TSE2 | | | | 0.793 | 2.337 |
| | TSE3 | | | | 0.827 | 2.024 |
| | TSE4 | | | | 0.733 | 1.645 |
| | TSE5 | | | | 0.742 | 1.645 |
| TE | TE1 | 0.845 | 0.890 | 0.618 | 0.801 | 2.287 |
| | TE2 | | | | 0.797 | 2.612 |
| | TE3 | | | | 0.851 | 2.552 |
| | TE4 | | | | 0.710 | 1.396 |
| | TE5 | | | | 0.764 | 1.635 |
| TI | TI3 | 0.789 | 0.863 | 0.612 | 0.816 | 1.780 |
| | TI4 | | | | 0.773 | 1.636 |
| | TI5 | | | | 0.802 | 2.027 |
| | TI6 | | | | 0.736 | 1.815 |
| TO | TO1 | 0.790 | 0.863 | 0.613 | 0.789 | 1.671 |
| | TO2 | | | | 0.740 | 1.521 |
| | TO3 | | | | 0.753 | 1.460 |
| | TO4 | | | | 0.844 | 1.705 |

**Note(s):** α, alpha; CR: composite Reliability; AVE, average variance reliability; TSE: Technopreneurial self-efficacy; TE: Technopreneurship education: Technopreneurship intention; TO: Technological optimism
**Source(s):** From the current research analysis

*6.1.1 Discriminant validity.* Field (2013) states that discriminant validity refers to items measuring distinct concepts. Table 4 presents the results of the discriminant validity analysis. Discriminant validity was evaluated using the heterotrait–monotrait (HTMT) ratio (Table 4). From a more conservative standpoint, discriminant validity is considered achieved when the HTMT value is below 0.9 or 0.85 (Abaddi, 2025; Verkijika and De Wet, 2018; Neneh, 2019a, b). Table 4 indicates that the highest HTMT value obtained is 0.819, which is below the conservative threshold of 0.85. Therefore, all constructs meet the criteria for discriminant validity.

*6.1.2 Common method bias (CMB).* For PLS-SEM, common method bias (CMB) is detected using a full collinearity assessment approach (Kock, 2015). In this study, the researchers employed the variance inflation factor (VIF) values to evaluate collinearity, with a threshold of 3.3 established. VIF values below 3.3 indicated an absence of CMB, whereas values above 3.3 indicated its presence. Rather than reporting the collinearity issues directly, the researchers computed the VIF values, adhering to standard procedures in business

**Table 4.** Heterotrait– monotrait ratio (HTMT)

| Variables | TSE | TE | TI | TO |
|---|---|---|---|---|
| TSE | | | | |
| TE | 0.729 | | | |
| T1 | 0.717 | 0.764 | | |
| TO | 0.742 | 0.799 | 0.751 | |

**Note(s):** TSE = Technopreneurial self-efficacy; TE = Technopreneurship education; TI = Technopreneurship intention; TO = Technological optimism
**Source(s):** From the current research analysis

research. Table 2 presents the results of the multicollinearity evaluation using VIF values. The findings reveal that all constructs had VIF values below 3.3 (Kock and Lynn, 2012), suggesting that CMB was not an issue in the investigation.

*6.1.3 The standardised root mean square residual.* The researchers also evaluated the model fit using the Standardised Root Mean Square Residual (SRMR), which measures the average standardised residuals between the observed and hypothesised covariance matrices (Chen, 2007). A good fit for the study model is indicated by an SRMR value of less than 0.08, with a lower value signifying a better fit (Hu and Bentler, 1998). In this instance, the theoretical model's SRMR was 0.06, indicating a good fit. Furthermore, the Chi-Square value was reported as 1,919.037, and the Normed Fit Index (NFI) was measured at 0.900, which met the recommended threshold for NFI (Afthanorhan, 2013). Table 5 presents the results for model fit.

*6.1.4 Coefficient of determination ($R^2$).* Examining the coefficient of determination ($R^2$) values of the endogenous constructs was conducted as part of the analysis in the study. These values further supported the model's adequacy. The researchers examined the coefficient of determination ($R^2$) values of the endogenous constructs as part of the analysis in the study. According to Schumacher *et al*. (2016), the $R^2$ value represents the percentage of variance in a variable that the independent variable groups can explain. Hair *et al*. (2019) suggest that $R^2$ values of 0.75, 0.5, and 0.25 can be considered substantial, moderate, and weak, respectively. The researchers reported the $R^2$ values for two constructs in the study: technopreneurship education and technopreneurship intention. The $R^2$ values for these constructs were 0.587 and 0.731, respectively. These values indicate that the developed model has moderate to substantial explanatory power, according to Hair *et al*. (2019).

*6.1.5 Predictive relevance ($Q^2$).* In addition to R2 as a predictive criterion, Hair *et al*. (2019) suggest that researchers should also examine Q2 to evaluate the predictive relevance of the structural model. The predictive applicability of constructs should be positive and have values greater than zero (Hair *et al*., 2019). Q2, presented in Table 6, measures how an exogenous construct contributes to an endogenous latent construct. Q2 values can be small (0.02), medium (0.15), or large (0.35) to assess the size of the Q2 effect, as explained in Table 5. In the study, the Q2 values obtained were 0.446 for technopreneurship education and 0.415 for technopreneurship intention. These values fall within the required limit, indicating that the path model has adequate predictive relevance for the endogenous constructs.

**Table 5.** Model fit summary

| *Estimated model* | |
|---|---|
| SRMR | 0.060 |
| d_ULS | 1.827 |
| d_G1 | 0.941 |
| d_G2 | 0.783 |
| Chi-square | 1919.037 |
| NFI | 0.900 |

**Source(s):** From the current research analysis

**Table 6.** Coefficient of determination ($R^2$), effect size ($f^2$) and predictive relevance ($Q^2$)

| Variables | *R* square | $Q^2$ | Effect size |
|---|---|---|---|
| Technopreneurship education | 0.587 | 0.446 | 3.423 |
| Technopreneurship intention | 0.731 | 0.415 | 2.823 |

**Source(s):** From the current research analysis

*6.1.6 Effect size ($f^2$).* According to Habtemaryam *et al.* (2025), the F-squared ($f^2$) measure of effect size indicates the degree of correlation between a predictor and an endogenous variable in PLS-SEM. Cohen (1988) recommended using the F-squared statistic to assess the magnitude of impact in exploratory and predictive studies. An effect size $f^2 \geq 0.30$, $0.30 < f^2 \leq 0.50$, and $f^2 > 0.50$ are regarded as representing weak, moderate, and strong effects, respectively (Bliwise, 2006). According to Table 6, the $f^2$ values for technopreneurship education and technopreneurship intention are deemed strong.

## 7. Path model

The PLS estimation path coefficient values and the item loadings for the research construct are shown in Figure 2.

### *7.1 Hypotheses testing results*

Table 7 presents the proposed hypotheses, path coefficients, *t*-statistics, and the decision to reject or support each hypothesis. Chin (1998) indicates that $t > 1.96$ signifies a significant relationship and that higher path coefficients reflect stronger relationships among latent variables. Based on the results in Table 6, H1 ($\beta = 0.428$; $t = 5.841$), H2 ($\beta = 0.376$; $t = 4.276$), H3 ($\beta = 0.638$; $t = 11.180$), H4 ($\beta = 0.477$; $t = 5.982$), H5 ($\beta = 0.485$; $t = 6.058$), H6 ($\beta = 0.325$; $t = 2.947$), H7 ($\beta = 0.612$; $t = 9.971$), and H8 ($\beta = 0.525$; $t = 7.932$) are significantly supported, as the t-statistics exceed 1.96. Figure 2 presents the structural model, including path coefficients, *p* values, and $R^2$ values.

## 8. Discussion

The statistical analysis indicated a significant positive impact of technopreneurial self-efficacy on technopreneurial education, aligning with previous research by Bateman and Crant (1993) and Hoque *et al.* (2017). Studies conducted in Malaysia and Taiwan have similarly

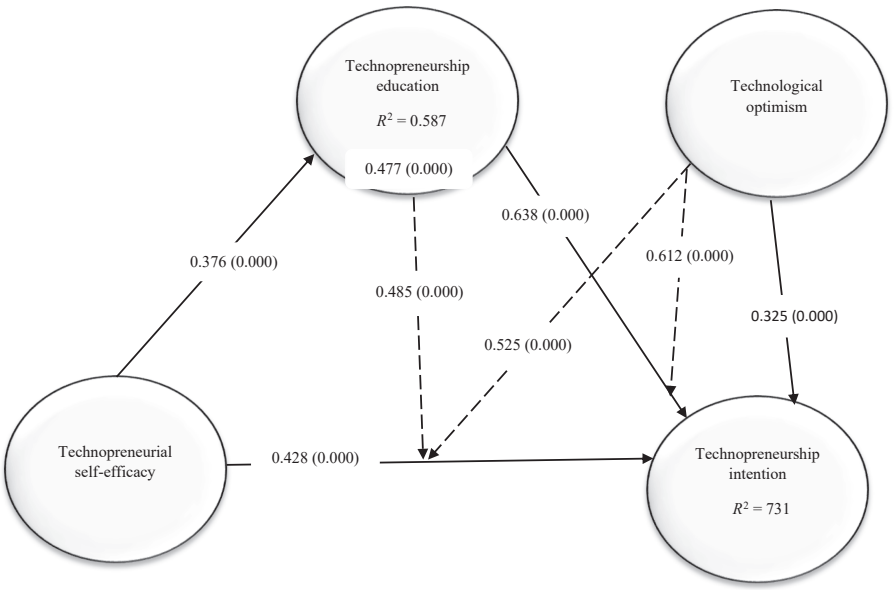


**Figure 2.** Structural model. Source(s): Authors' own creation

**Table 7.** Results of structural equation model analysis

| Hypothesis | Hypothesised relationship | Path coefficient values | *T* statistics (\|O/STDEV\|) | *p*-values | Decision |
|---|---|---|---|---|---|
| H1 | TSE → TI | 0.428 | 5.841 | 0.000 | Supported |
| H2 | TSE → TE | 0.376 | 4.276 | 0.000 | Supported |
| H3 | TE → TI | 0.638 | 11.180 | 0.000 | Supported |
| H4 | TSE → TE → TI | 0.477 | 5.982 | 0.000 | Supported |
| H5 | TE x TSE → TI | 0.485 | 6.058 | 0.000 | Supported |
| H6 | TO → TI | 0.325 | 2.947 | 0.000 | Supported |
| H7 | TO x TE → TI | 0.612 | 9.971 | 0.000 | Supported |
| H8 | TO x TSE → TI | 0.525 | 7.932 | 0.003 | supported |

**Note(s):** Arrows signify the relationships between each construct to indicate the proposed hypothesis
**Source(s):** From the current research analysis

demonstrated that students' technopreneurial self-efficacy significantly influences their learning behaviours (Ainul *et al.*, 2016; Chou *et al.*, 2011). Technopreneurs often lack a background in business or entrepreneurial skills; however, individuals with high self-efficacy tend to adopt a more proactive approach to tasks and exhibit greater confidence in their ability to succeed (Bandura, 1997). This is consistent with the Theory of Planned Behaviour (TPB), which emphasises the role of individual motivational factors in shaping behaviour.

Enhancing technopreneurial self-efficacy among students could encourage their engagement with technopreneurial education and strengthen their entrepreneurial competencies. By fostering self-confidence and entrepreneurial skills within educational programmes, particularly for those lacking prior business experience, students can be better prepared for successful ventures.

Investigating key underlying factors, such as "knowledge stickiness" and "Gen Z literacy," is essential. "Knowledge stickiness" refers to the retention, sharing, and application of knowledge within a specific context, while "Gen Z literacy" encompasses integrating technological expertise into real-world scenarios. Gen Z students are skilled at quickly acquiring and applying new information, and when technopreneurial education supports the retention of entrepreneurial skills and technological knowledge, it boosts their self-efficacy. A higher level of Gen Z literacy enables students to take greater ownership of their learning, further reinforcing their self-efficacy in technopreneurial ventures. Therefore, the positive effect of education on self-efficacy is not solely due to the provision of technical knowledge but also the effective transfer and retention of knowledge within the Gen Z cohort.

Research has shown that technopreneurial education significantly shapes technopreneurial intentions, suggesting that exposure to education focused on technology and entrepreneurship positively influences individuals' aspirations to become technopreneurs. These findings are in line with previous studies. For instance, Machmud *et al*. (2020), in their study "Effect of self-efficacy ICT on technopreneurship intention of technopreneurial learning mediation: The case of the young generation in Indonesia", emphasised that technopreneurial learning strongly impacts technopreneurship intention. Similarly, Rafiana (2024), in "Technopreneurship strategy to expand entrepreneurship career options for students in higher education", found that incorporating entrepreneurship education into higher education curricula, such as through business incubators, significantly shapes students' attitudes towards pursuing careers as technopreneurs. These findings align with existing theories, indicating that internal, external, and contextual factors (Rosdi *et al*., 2018; Nathalie *et al*., 2010) all influence technopreneurial intentions. Consequently, acquiring knowledge related to entrepreneurship and technology can profoundly affect an individual's mindset, motivating them to pursue a technopreneurial

career. This supports earlier research suggesting that contextual factors, such as educational programmes, enhance entrepreneurial intentions (Salhieh and Al-Abdallat, 2022).

Nonetheless, further investigation is necessary to examine the impact of "knowledge stickiness" on Gen Z literacy. For Gen Z, technological tools and platforms are integral to their daily lives, and they actively seek information that resonates with their interests. Therefore, the design of technopreneurial education must effectively utilise these tools to shape intentions. The learning process should be dynamic and immersive, ensuring that acquired knowledge is retained and applied meaningfully in entrepreneurial contexts. The application of knowledge is crucial for sustaining strong technopreneurial intentions. When technopreneurial education empowers students to connect theoretical knowledge with practical applications—such as through case studies, internships, or incubators—their intention to pursue technopreneurship is enhanced. Students with high levels of Gen Z literacy quickly recognise the relevance of technology in entrepreneurship, further bolstering their aspirations with a solid foundation in both business and technology.

These findings underscore the significance of technopreneurial education in cultivating an entrepreneurial mindset, particularly within technology-based enterprises. Engagement in programmes that combine entrepreneurship with technology enhances business acumen and promotes entrepreneurial ventures. Higher education curricula ought to integrate more technopreneurial learning opportunities, such as business incubators and mentoring schemes. Developing self-efficacy—the belief in one's capacity to succeed in entrepreneurship—is essential for shaping technopreneurial intentions. Courses that bolster technical and entrepreneurial skills can elevate students' confidence to embark on a technopreneurial career. External factors, including institutional support, access to resources, and exposure to role models, also significantly shape entrepreneurial intentions. Institutions can offer support and practical experiences to enhance students' entrepreneurial confidence and aspirations. Technopreneurial intentions are influenced by individual ambitions as well as by educational and contextual elements. Establishing a supportive environment for learning and networking in technopreneurship can steer students towards innovative and entrepreneurial trajectories in technology. This outcome merits further investigation through the lens of "knowledge stickiness" and its impact on Gen Z literacy. For Gen Z, technological tools and platforms are integral to their daily lives, and they are predisposed to seek information that aligns with their interests. Hence, the manner in which technopreneurial education is structured to harness these tools will affect its efficacy in shaping intentions. The learning process needs to be dynamic and immersive, ensuring that the knowledge acquired is retained and can be applied meaningfully in entrepreneurial contexts. The practical application of knowledge is crucial for maintaining high technopreneurial intentions. The more technopreneurial education allows students to link theoretical concepts with practical applications (through case studies, internships, or incubators), the greater their inclination to pursue technopreneurship. As students with strong Gen Z literacy can swiftly understand the relevance of technology in entrepreneurship, their intentions are further enhanced by a robust foundation in both business and technology.

The analysis reveals that technopreneurship education significantly and positively mediates the relationship between technopreneurial self-efficacy and the intention to pursue technopreneurship. While prior studies on the role of technopreneurial education as a mediator in shaping technopreneurial intentions have been sparse (Hoque *et al*., 2017), our results align with their findings, demonstrating that technopreneurial education partially mediates the link between self-efficacy and entrepreneurial intention. This suggests that such educational experiences enhance individuals' understanding of technopreneurship, boosting their self-confidence and skills, which in turn strengthens their intention to embark on a technopreneurial venture (Kakava and Fields, 2017; Liu *et al*., 2019; Suleiman, 2021). These findings imply that providing robust technopreneurial education can significantly influence individuals' decisions to pursue entrepreneurial ventures. By improving self-efficacy and competence, education increases confidence and encourages action, ultimately

driving higher technopreneurship intentions. This underscores the importance of integrating educational programmes that foster both practical and theoretical knowledge to nurture future technopreneurs. For Gen Z students, these results emphasise the importance of engaging with technopreneurial education to develop competence and confidence. The findings suggest that structured learning experiences, particularly those that integrate technology and entrepreneurship, can encourage students to start their own ventures. Thus, investing time in technopreneurial education could be a game-changer for Gen Z individuals aspiring to become successful technopreneurs.

Technological optimism has been found to positively and significantly impact technopreneurial intention. This suggests that optimistic individuals about technology tend to have favourable attitudes towards technopreneurship. This could stem from their familiarity with technology and their willingness to embrace new and innovative experiences (Maziriri *et al*., 2023). Such individuals view technology as a transformative force capable of creating ground-breaking products and services, thereby driving the success of technopreneurial ventures. Furthermore, the significant impact of technological optimism highlights that attitudes towards technology play a crucial role in shaping technopreneurial intention. Individuals with more positive attitudes are more likely to express an intention to engage in technopreneurship. This underscores the importance of understanding and promoting technological optimism in fostering the adoption of technopreneurship within a specific group.

This study makes a valuable and unique contribution to the field by extending the well-established Theory of Planned Behaviour (TPB) and the Generation Cohort Theory (GCT). By exploring the moderating effects of technological optimism and technopreneurial education, the study ventures into uncharted territory regarding technopreneurship intentions among Generation Z students in South Africa. Including technological optimism as a moderating factor provides insights into technopreneurial intentions influenced by technopreneurial self-efficacy. Similarly, the investigation of technopreneurial education as a moderator examines the technopreneurial knowledge and skills of Generation Z students in embracing technopreneurship. These distinct moderating roles illuminate the intricate dynamics of Generation Z students in South Africa, enriching our understanding of the factors shaping the adoption of technopreneurship among students.

This study examined the moderating role of technopreneurial education in the relationship between technopreneurial self-efficacy and the intention to engage in technopreneurship. The analysis revealed that technopreneurial education significantly and positively influences the connection between technopreneurial self-efficacy and technopreneurship intention. Given the existing research gaps regarding this moderating effect (Anggraini and Handayati, 2023; Maziriri *et al*., 2024a, b; Shah *et al*., 2020; Kee *et al*., 2017), this study offers new theoretical insights by enhancing our understanding of how technopreneurial education can shape intentions in technopreneurship. It is crucial to comprehend the interaction between the moderating variable (technopreneurial education) and the relationship between technopreneurial self-efficacy and technopreneurship intention. The practical implications of these findings suggest that technopreneurs who enhance their knowledge and skills through education or training are likely to boost their self-efficacy and cultivate a stronger intention to engage in technopreneurship. Consequently, their aspiration to pursue a career in technopreneurship is likely to be reinforced.

This study found that technological optimism significantly moderates the relationship between technopreneurial education and the intention to pursue technopreneurship. Empirical studies support these findings. For example, Kraus *et al*. (2019) argue that technological optimism enhances entrepreneurs' ability to overcome barriers and leverage digital opportunities, thereby facilitating the execution of entrepreneurial intentions. Similarly, Venkatesh *et al*. (2003) highlight that positive perceptions of technology contribute to greater acceptance and utilisation, which are essential for entrepreneurial success in the digital sphere. The results indicate that technological optimism promotes a culture of continuous learning and adaptability, which is vital for technopreneurs navigating a volatile environment. Given the

gaps in research regarding the moderating role of technological optimism in the connection between technopreneurial education and intention, this study offers new theoretical insights by identifying technological optimism as a crucial factor influencing Generation Z students' inclination towards technopreneurship. When Generation Z students are optimistic about the future of technology, they are more likely to stay informed about the latest trends and developments, integrating these into their entrepreneurial endeavours. This positive outlook complements technopreneurial education by encouraging students to rely on the knowledge they have gained and remain flexible and innovative. Consequently, their intention to pursue technopreneurship is strengthened, as they feel equipped to continuously improve and adapt their strategies in response to technological progress.

The statistical analysis revealed that technological optimism either moderates or reinforces the relationship between technopreneurial self-efficacy and the intention to engage in technopreneurship. These findings suggest that technological optimism enhances the belief that technology can provide the necessary tools and platforms to turn innovative ideas into reality. Essentially, individuals with high technopreneurial self-efficacy – confidence in their ability to excel in entrepreneurial tasks – find their belief bolstered by technological optimism, which underscores the potential and availability of technology. Given the existing gaps in research regarding the moderating impact of technological optimism on the relationship between technopreneurial self-efficacy and the intention to pursue technopreneurship, this study contributes fresh insights to the literature. For instance, technological optimism acts as a catalyst, boosting the confidence of potential Generation Z technopreneurs that ongoing technological advancements will support their technological skills and innovative ideas. Consequently, Generation Z students are more likely to pursue technopreneurship, as a positive outlook on the technological landscape reinforces their enhanced self-efficacy.

## 9. Implications

The study makes significant contributions to the academic literature on technopreneurship, particularly focusing on Generation Z. Firstly, it highlights the positive and substantial impact of technopreneurial self-efficacy (TSE) on technopreneurial education (TE) and technopreneurship intention (TI), emphasising the essential role of self-efficacy in entrepreneurial studies. This is consistent with Bandura's (1977) theory of self-efficacy, which suggests that individuals with higher confidence in their abilities are more likely to engage in and succeed in entrepreneurial activities.

### *9.1 Theoretical implications*

This study extends the Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM) by incorporating three variables: technopreneurial self-efficacy, technopreneurial education, and technological optimism, to enhance technopreneurship intention (behavioural intention as per the TPB). The application of these theories reveals that the TPB and TAM can elucidate how technopreneurial self-efficacy, education, and technological optimism collectively influence individuals' intentions to engage in tech-driven entrepreneurship. Adopting the TAM perspective, this study presents a distinctive model through which technopreneurial self-efficacy, technopreneurial education, and technological optimism impact technopreneurship intention among Generation Z students in South Africa. Additionally, it examines the moderating effect of technological optimism on the relationship between technopreneurial self-efficacy, education, and technopreneurship intention. The research underscores the importance of self-belief in one's technopreneurial abilities as a determinant of success in technopreneurial education and the fostering of technopreneurial intentions. Aligning with the TAM, which posits that perceived ease of use and usefulness drive technology adoption, technopreneurial self-efficacy reinforces the argument that confidence in one's ability to navigate technological and entrepreneurial

challenges directly influences outcomes in technopreneurship. Moreover, the study bridges a critical gap by emphasising the psychological construct of technopreneurial self-efficacy within the broader framework of entrepreneurial studies, particularly in the technology-driven domain. Furthermore, the study bolsters the Theory of Planned Behaviour (TPB) and Technology Acceptance Model (TAM) by incorporating a behavioural and attitudinal perspective, emphasising that self-efficacy facilitates technology acceptance and propels entrepreneurial endeavours. Future research could further investigate how varying levels of technological optimism among different cohorts affect entrepreneurial intentions and outcomes, potentially leading to more targeted educational interventions.

The study enhances the perspectives of Generation Cohort Theory (GCT), which considers the relationships between age, general experiences, and value systems across various age groups. Applying Generation Cohort Theory (GCT) to this study elucidates how technopreneurs' self-efficacy, education, and technological optimism influence individuals' intentions to engage in tech-driven entrepreneurship. Predicting historical events and societal social changes based on individuals' values, beliefs, attitudes, and inclinations helps explain why people share similar life paths due to overarching values and traits (Cheung *et al*., 2023). Each generation exhibits distinct spending patterns, consuming behaviours, and purchasing habits, as demonstrated in the current study, which examines how technopreneurial self-efficacy, education, and technological optimism collectively impact Generation Z's intentions in South Africa towards engaging in tech-driven entrepreneurship. The study also substantiates the mediating and moderating roles of technopreneurship education (TE) between technopreneurial self-efficacy (TSE) and intentions (TI), resonating with prior research from scholars like Fayolle and Gailly (2015) and Fayolle *et al*. (2006) that emphasises the significance of education in shaping entrepreneurial intentions.

### *9.2 Practical implications*

This study has significant practical and managerial implications for educational institutions and policymakers aiming to foster technopreneurship among Generation Z. The findings emphasise critical managerial and educational implications, which entail the integration of technologies such as AI, VR, metaverse and live streaming into the curriculum. These tools can enhance learning experiences and align with the demonstrated positive impact of technopreneurial self-efficacy on technopreneurial education. For example, VR and Metaverse facilitate immersive simulations for business planning and prototyping while, AI uses intelligent tools for personalised learning and decision-making support. In addition, livestreaming enables real-time engagement with industry experts and technopreneurial mentors. Business and educational institutions should emphasise the opportunities in emerging technological domains, such as starting ventures in metaverse-based economies or developing AI-driven solutions. Highlighting such possibilities can inspire students and potential entrepreneurs to pursue careers in technopreneurship. Moreover, businesses should identify and nurture leaders with high technopreneurial self-efficacy. These individuals will likely pioneer innovative projects in fields like AI, VR, and live streaming, driving technological development within the business. Educational institutions should ensure equitable access to technologies that foster technopreneurial self-efficacy. This includes subsidised tools, free training resources and accessible platforms for underprivileged learners, ensuring that technological development benefits a diverse range of aspiring technopreneurs. By aligning technopreneurial self-efficacy with advancements in AI, VR, metaverse, and live streaming, managers can capitalise on the intersection of education, innovation, and entrepreneurship to drive sustainable growth and competitive advantage in the digital economy.

## 10. Conclusion

In conclusion, this study provides a comprehensive examination of the key factors that influence technology-driven entrepreneurial intentions, particularly focusing on the roles of

technopreneurial self-efficacy, technopreneurial education, and technological optimism. The findings underscore the significance of technopreneurial self-efficacy in fostering confidence and resilience among aspiring technopreneurs, suggesting that individuals who believe in their ability to succeed are more likely to pursue entrepreneurial ventures in the tech sector. Furthermore, the study highlights the essential role of technopreneurship education in equipping Generation Z with the necessary knowledge, skills, and practical tools to thrive in the evolving digital economy. By providing a structured learning environment, education helps bridge the gap between self-efficacy and entrepreneurial intentions. Additionally, the study reveals how technological optimism, or a positive outlook on emerging technologies, plays a crucial role in shaping students' perceptions of technological opportunities, motivating them to view tech entrepreneurship as a viable and promising career path. Collectively, these interconnected factors create a robust framework that offers deeper insights into how the Generation Z cohort navigates the technopreneurial journey, with implications for educational practices and policy initiatives to foster a generation of innovative, technology-driven entrepreneurs.

## 11. Limitations and future directions of research

Despite the study's contributions, the study's limitations should not be understated. First, the research relies on self-reported data, which may introduce biases such as social desirability or overestimating entrepreneurial intentions. Second, the study is context-dependent, focusing on a specific geographical or institutional setting, which may limit the generalisability of the findings to broader populations. Third, the cross-sectional nature of the research does not account for the dynamic evolution of technopreneurial intentions over time, restricting insights into the long-term impact of education and self-efficacy. Lastly, while the study examines key predictors of technology-driven entrepreneurial intentions, other potential factors, such as access to funding and market conditions, were not included in the analysis.

Future research can address these limitations by adopting a longitudinal approach to track changes in technopreneurial intentions over time, offering deeper insights into how education, self-efficacy, and optimism shape entrepreneurial behaviour. Expanding the study across diverse cultural and economic contexts can enhance generalisability and uncover region-specific drivers of technopreneurial success. Additionally, integrating qualitative methods, such as interviews and case studies, can provide richer narratives on the lived experiences of technopreneurs. Further exploring external factors, including policy interventions, investment climate, and industry collaborations, can offer a more holistic understanding of the technopreneurial environment. Finally, incorporating experimental or intervention-based studies to assess the efficacy of tailored educational programs and mentorship initiatives can refine strategies for cultivating tech-driven entrepreneurship.

### References

Abaddi, S. (2025), "Factors and moderators influencing artificial intelligence adoption by Jordanian MSMEs", *Management and Sustainability: An Arab Review*, Vol. 4 No. 1, pp. 47-73, doi: 10.1108/MSAR-10-2023-0049.

Abdulgani, M.A., Mamangkiang, J. and Islam, M.S. (2016), "Factors that affect technnopreneurship: a meta-analysis", *1st International Conference on Global Business, Entrepreneurship and Creative Industry*, pp. 1-7.

Adeoti, J.O. (2019), "Technopreneurship and national development: powering businesses and the economy with new technologies", In *Proceedings of the 31st Convocation Lecture, Federal University of Technology, Akure*, available at: https://www.researchgate.net/profile/John-Adeoti/publication/338019624_TECHNOPRENEURSHIP_AND_NATIONAL_DEVELOPMENT_Powering_Businesses_and_the_Economy_with_New_Technologies/links/5dfa9ed4299bf10bc3660b19/TECHNOPRENEURSHIP-AND-NATIONAL-DEVELOPMENT-Powering-Businesses-and-the-Economy-with-New-Technologies.pdf (accessed 20 May 2024).

Afthanorhan, W.M.A.B.W. (2013), "A comparison of partial least square structural equation modelling (PLS-SEM) and covariance based structural equation modeling (CB-SEM) for confirmatory factor analysis", *International Journal of Engineering Science and Innovative Technology*, Vol. 2 No. 5, pp. 198-205.

Ainul, N., Norida, N., Sudirman, S. and Mahfuz, M.A. (2016), "An analysis of technopreneurial intention among non-business students", *Paper Presented at the 2nd International Conference on Management*.

Ajzen, I. (2002), "Perceived behavioral control, self-efficacy, locus of control, and the theory of planned behavior", *Journal of Applied Social Psychology*, Vol. 32 No. 4, pp. 665-683.

Almaiah, M.A. and Al-Khasawneh, A. (2020), "Investigating the main determinants of mobile cloud computing adoption in university campus", *Education information Technology*, Vol. 25 No. 4, pp. 3087-3107, doi: 10.1007/s10639-020-10120-8.

Almaiah, M.A., Al-Otaibi, S., Lutfi, A., Almomani, O., Awajan, A., Alsaaidah, A., Alrawad, M. and Awad, A.B. (2022), "Employing the TAM model to investigate the readiness of M-learning system usage using SEM technique", *Electronics*, Vol. 11 No. 8, p. 1259, doi: 10.3390/electronics11081259.

Amante, A.D. and Ronquillo, T.A. (2017), "Technopreneurship as an outcomes-based education tool applied in some engineering and computing science programme", *Australasian Journal of Engineering Education*, Vol. 22 No. 1, pp. 32-38, doi: 10.1080/22054952.2017.1348186.

Anderson, J.C. and Gerbing, D.W. (1988), "Structural equation modelling in practice: a review and recommended two-step approach", *Psychological Bulletin*, Vol. 103 No. 3, pp. 4-11.

Anggraini, U.D. and Handayati, P. (2023), "The influence of technopreneur insight, family environment, and financial literacy on entrepreneurial interest moderated by self-efficacy", *Journal of Economics, Education, Business and Managements*, Vol. 1 No. 2, pp. 173-201.

Armitage, C.J. and Conner, M. (2001), "Efficacy of the theory of planned behaviour: a meta-analytic review", *British Journal of Social Psychology*, Vol. 40 No. 4, pp. 471-499, doi: 10.1348/014466601164939.

Bandura, A. (1977), "Self-efficacy: toward a unifying theory of behavioral change", *Psychological Review*, Vol. 84 No. 1, pp. 191-215, doi: 10.1037//0033-295x.84.2.191.

Baron, R.A. (2006), "Opportunity recognition as pattern recognition: how entrepreneurs 'connect the dots' to identify new business opportunities", *Academy of Management Perspectives*, Vol. 20 No. 1, pp. 104-119, doi: 10.5465/amp.2006.19873412.

Bashar, A., Nyagadza, B., Ligaraba, N. and Maziriri, E.T. (2024a), "The influence of Covid-19 on consumer behaviour: a bibliometric review analysis & text mining", *Arab Gulf Journal of Scientific Research*, Vol. 42 No. 3, pp. 585-601.

Bashar, A., Wasiq, M., Nyagadza, B. and Maziriri, E.T. (2024b), "Emerging trends in social media marketing: a Retrospective review using data mining and bibliometric analysis", *Future Business Journal (FBJ)*, Vol. 10 No. 1, 23, doi: 10.1186/s43093-024-00308-6.

Bateman, T.S. and Crant, J.M. (1993), "The proactive component of organizational behavior: a measure and correlates", *Journal of Organizational Behavior*, Vol. 14 No. 2, pp. 103-118, doi: 10.1002/job.4030140202.

Baumol and William, J. (2002), *The Free-Market Innovation Machine: Analyzing the Growth Miracle of Capitalism*, Princeton University Press, Princeton, NJ.

Bell, E., Bryman, A. and Harley, B. (2022), *Business Research Methods*, Oxford University Press, Oxford.

Belmonte, Z.J., Decapia, R., Tu, K.E., Lavado, M.J., Junio, M.N. and Lira, P.E.V. (2022), "Impact of information and communications technology on technopreneurial intention among engineering students", *International Journal of Information and Education Technology*, Vol. 12 No. 8, pp. 756-761, doi: 10.18178/ijiet.2022.12.8.1681.

Blanka, C., Rückel, D., Koch, S. and Kailer, N. (2019), "Technology intrapreneurs – intrapreneurial orientation and potential of IT students. In rigour and relevance in entrepreneurship research", *Resources and Outcomes*, pp. 90-115.

Bliwise, N.G. (2006), "Structural equation modelling", available at: www.psychology.emory.edu/clinical/bliwise/Tutori (accessed 23 December 2024).

Bomani, M., Gamariel, G. and Juana, J. (2021), "University strategic planning and the impartation of technopreneur-ship skills to students: a literature review", *Journal of Governance and Regulation*, Vol. 10 No. 2, pp. 196-203, doi: 10.22495/jjgrv10i2siart.

Borrero, J.D., Yousafzai, S.Y., Javed, U. and Page, K.L. (2014), "Expressive participation in internet social movements: testing the moderating effect of technology readiness and sex on student SNS use", *Computers in Human Behavior*, Vol. 30, pp. 39-49, doi: 10.1016/j.chb.2013.07.032.

Bui, Q.T. and Lo, F.Y. (2022), "Technology multinational enterprises from emerging markets: competitive interplay of international entry timing decisions", *Sustainable Technology and Entrepreneurship*, Vol. 1 No. 3, 100019, doi: 10.1016/j.stae.2022.100019.

Cadenas, G.A., Cantú, E.A., Lynn, N., Spence, T. and Ruth, A. (2020), "A programmatic intervention to promote entrepreneurial self-efficacy, critical behavior, and technology readiness among underrepresented college students", *Journal of Vocational Behavior*, Vol. 116, 103350, doi: 10.1016/j.jvb.2019.103350.

Chao, C.M. and Yu, T.K. (2019), "The moderating effect of technology optimism: how it affects students' weblog learning", *Online Information Review*, Vol. 43 No. 1, pp. 161-180, doi: 10.1108/oir-11-2016-0316.

Chen, F.F. (2007), "Sensitivity of goodness of fit indexes to lack of measurement invariance", *Structural Equation Modeling: A Multidisciplinary Journal*, Vol. 14 No. 3, pp. 464-504, doi: 10.1080/10705510701301834.

Cheung, M.L., Leung, W.K. and Chan, H. (2021), "Driving healthcare wearable technology adoption for generation Z consumers in Hong Kong", *Young Consumers*, Vol. 22 No. 1, pp. 10-27, doi: 10.1108/yc-04-2020-1123.

Cheung, M.L., Leung, W.K., Taheri, B. and Tse, S.Y. (2023), "Driving destination brand engagement: the role of traveller participation", *International Journal of Tourism Research*, Vol. 25 No. 6, pp. 565-580, doi: 10.1002/jtr.2594.

Cheung, M.L., Leung, W.K.S., Chang, L.M.K., Aw, E.C.-X. and Wong, R.Y.M. (2024a), "Immersive time in the metaverse and visits to the physical world: why not both? A holistic customer engagement framework", *International Journal of Contemporary Hospitality Management*, Vol. 36 No. 11, pp. 3674-3703, doi: 10.1108/IJCHM-07-2023-0999.

Cheung, M.L., Leung, W.K.S., Chang, M.K., Wong, R.Y.M. and Tse, S.Y. (2024b), "Driving engagement in metaverse-mediated tourism environments: exploring the role of perceived realism", *Internet Research*, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/INTR-06-2023-0496.

Chin, W.W. (1998), "Commentary: issues and opinion on structural equation modeling", *MIS Quarterly*, Vol. 22 No. 1, pp. 7-16.

Chinomona, R. and Chinomona, E. (2013), "The influence of employees' perceptions of organizational politics on turnover intentions in Zimbabwe's SME sector", *South African Journal of Business Management*, Vol. 44 No. 2, pp. 15-24, doi: 10.4102/sajbm.v44i2.156.

Chou, C.-M., Shen, C.-H. and Hsiao, H.-C. (2011), "The influence of entrepreneurial self-efficacy on entrepreneurial learning behavior - using entrepreneurial intention as the mediator variable", *International Business and Management*, Vol. 3 No. 2, pp. 7-11, doi: 10.3968/j.ibm.1923842820110302.4Z0145.

Cohen, J. (1988), *Statistical Power Analysis for the Behavioral Sciences*, 2nd ed., Routledge, New York.

Cui, J. and Bell, R. (2022), "Behavioural entrepreneurial mindset: how entrepreneurial education activity impacts entrepreneurial intention and behaviour", *International Journal of Management in Education*, Vol. 20 No. 2, 100639, doi: 10.1016/j.ijme.2022.100639.

Danaher, J. (2022), "Techno-optimism: an analysis, an evaluation and a modest defence", *Philosophy and Technology*, Vol. 35 No. 54, pp. 1-29, doi: 10.1007/s13347-022-00550-2.

Davis, F.D. (1989), "Technology acceptance model: TAM", *Al-Suqri, MN, Al-Aufi, AS: Information Seeking Behavior and Technology Adoption*, Vol. 205, p. 219.

Davis, F.D., Bagozzi, R.P. and Warshaw, P.R. (1989), "User acceptance of computer technology: a comparison of two theoretical models", *Management Science*, Vol. 35 No. 8, pp. 982-1003, doi: 10.1287/mnsc.35.8.982.

Donald, I.J., Cooper, S.R. and Conchie, S.M. (2014), "An extended theory of planned behaviour model of the psychological factors affecting commuters' transport mode use", *Journal of Environmental Psychology*, Vol. 40 No. 1, pp. 39-48, doi: 10.1016/j.jenvp.2014.03.003.

Dwivedi, Y.K., Rana, N.P., Jeyaraj, A., Clement, M. and Williams, M.D. (2019), "Re-examining the unified theory of acceptance and use of technology (UTAUT): towards a revised theoretical model", *Information Systems Frontiers*, Vol. 21 No. 3, pp. 719-734, doi: 10.1007/s10796-017-9774-y.

Dzomonda, O. and Neneh, B.N. (2023), "How attitude, need for achievement and self control personality shape entrepreneurial intention in students", *South African Journal of Economic and Management Sciences*, Vol. 26 No. 1, pp. 1-11, doi: 10.4102/sajems.v26i1.4927.

Ernst and Young (2021), "Gen Z survey respondents are optimistic about the future and feel that business and education can help better prepare them for the future", available at: https://www.ey.com/en_gl/news/2021/04/gen-z-survey-respondents-are-optimistic-about-the-future-and-feel-that-business-and-education-can-help-better-prepare-them-for-the-future (accessed 13 February 2024).

Fayolle, A. and Gailly, B. (2015), "The impact of entrepreneurship education on entrepreneurial attitudes and intention: hysteresis and persistence", *Journal of Small Business Management*, Vol. 53 No. 1, pp. 75-93, doi: 10.1111/jsbm.12065.

Fayolle, A., Gailly, B. and Lassas-Clerc, N. (2006), "Effect and counter-effect of entrepreneurship education and social context on student's intentions", *Estudios de Economía Aplicada*, Vol. 24 No. 2, pp. 509-523.

Field, A. (2013), *Discovering Statistics Using IBM SPSS*, 4th ed., Sage, London.

Fielding, K.S., McDonald, R. and Louis, W.R. (2008), "Theory of planned behaviour, identity and intentions to engage in environmental activism", *Journal of Environmental Psychology*, Vol. 28 No. 4, pp. 318-326, doi: 10.1016/j.jenvp.2008.03.003.

Gardezi, M. and Arbuckle, J.G. (2020), "Techno-optimism and farmers' attitudes toward climate change adaptation", *Environment and Behavior*, Vol. 52 No. 1, pp. 82-105, doi: 10.1177/0013916518793482.

Gieure, C., del Mar Benavides-Espinosa, M. and Roig-Dobon, S. (2020), "The entrepreneurial process: the link between intentions and behavior", *Journal of Business Research*, Vol. 112 No. 1, pp. 541-548, doi: 10.1016/j.jbusres.2019.11.088.

Goh, E. and Lee, C. (2018), "A workforce to be reckoned with: the emerging pivotal generation Z hospitality workforce", *International Journal of Hospitality Management*, Vol. 73, pp. 20-28, doi: 10.1016/j.ijhm.2018.01.016.

Grant, M.J. and Booth, A. (2009), "A typology of reviews: an analysis of 14 review types and associated methodologies", *Health Information and Libraries Journal*, Vol. 26 No. 2, pp. 91-108, doi: 10.1111/j.1471-1842.2009.00848.x.

Groen, A., Cook, G. and Van Der Sijde, P. (2015), *New Technology-Based Firms in the New Millennium*, Emerald Group Publishing, Bingley.

Habtemaryam, T.N., Degoma, A. and Tsegaye, A. (2025), "Driving environmental sustainability through synergistic green business practices and green innovation in developing economies' leather, textile and garment industries", *Management and Sustainability: An Arab Review*, Vol. ahead-of-print No. ahead-of-print, doi: 10.1108/MSAR-07-2024-0070.

Hair, J.F. Jr, Hult, G.T.M., Ringle, C. and Sarstedt, M. (2017), *A Primer on Partial Least Squares Structural Equation Modeling*, 2nd ed., Sage publications, Los Angeles.

Hair, J.F., Risher, J.J., Sarstedt, M. and Ringle, C.M. (2019), "When to use and how to report the results of PLS-SEM", *European Business Review*, Vol. 31 No. 1, pp. 2-24, doi: 10.1108/ebr-11-2018-0203.

Harsono (2013), "Building technopreneurship for next generation: how the benefits of technoentrepreneurship education affect career intentions of college students", *Jurnal Ilmiah Sisfotenika*, Vol. 3 No. 1, pp. 31-40, doi: 10.30700/jst.v3i1.45.

Hasan, M., Tiara Hutamy, E., Supatminingsih, T., Ahmad, M.I.S., Aeni, N. and Dzhelilov, A.A. (2024), "The role of entrepreneurship education in the entrepreneurial readiness of generation Z students: why do digital business literacy and financial literacy matter?", *Cogent Education*, Vol. 11 No. 1, doi: 10.1080/2331186X.2024.2371178.

Hoque, A.S.M.M., Awang, Z. and Siddiqui, B.A. (2017), "Technopreneurial intention among university students of business courses in Malaysia: a structural equation modeling", *International Journal of Entrepreneurship and Small and Medium Enterprise*, Vol. 4 No. 7, pp. 1-16.

Hu, L.T. and Bentler, P.M. (1998), "Fit indices in covariance structure modelling: sensitivity to under parameterized model misspecification", *Psychological Methods*, Vol. 3 No. 4, pp. 424-453, doi: 10.1037//1082-989x.3.4.424.

Hulland, J. (1999), "Use of partial least squares (PLS) in strategic management research: a review of four recent studies", *Strategic Management Journal*, Vol. 20 No. 2, pp. 195-204, doi: 10.1002/(sici)1097-0266(199902)20:2<195::aid-smj13>3.0.co;2-7.

Jang, S.Y., Chung, J.Y. and Kim, Y.G. (2015), "Effects of environmentally friendly perceptions on customers' intentions to visit environmentally friendly restaurants: an extended theory of planned behavior", *Asia Pacific Journal of Tourism Research*, Vol. 20 No. 6, pp. 599-618, doi: 10.1080/10941665.2014.923923.

Kakava, N.Z. and Fields, Z. (2017), "Technopreneurial attitude in the Zimbabwean food-processing sector", *Journal of Social Sciences*, Vol. 51 No. 1, pp. 115-124.

Kamal, S.A., Shafiq, M. and Kakria, P. (2020), "Investigating acceptance of telemedicine services through an ex-tended technology acceptance model (TAM)", *Technology in Society*, Vol. 60, 101212, doi: 10.1016/j.techsoc.2019.101212.

Kee, D.M.H., Khin, S., Taib, F.M. and Rahman, N.A. (2017), "Using PLS-SEM to assess the effect of entrepreneurial orientation (EO) on start-up success: the moderating role of support services", *Advanced Science Letters*, Vol. 23 No. 8, pp. 7817-7820, doi: 10.1166/asl.2017.9584.

Kock, N. (2015), "Common method bias in PLS-SEM: a full collinearity assessment approach", *International Journal of E-Collaboration*, Vol. 11 No. 4, pp. 1-10, doi: 10.4018/ijec.2015100101.

Kock, N. and Lynn, G. (2012), "Lateral collinearity and misleading results in variance-based SEM: an illustration and recommendations", *Journal of the Association for Information Systems*, Vol. 13 No. 7, pp. 546-580, doi: 10.17705/1jais.00302.

Koe, W.L., Krishnan, R. and Alias, N.E. (2021), "The influence of self-efficacy and individual entrepreneurial orientation on technopreneurial intention among bumiputra undergraduate students", *Asian Journal of University Education*, Vol. 17 No. 4, pp. 490-497, doi: 10.24191/ajue.v17i4.16196.

Kolb, D.A. (1984), *Experiential Learning: Experience as the Source of Learning and Development*, Prentice-Hall, NJ.

Kong, F., Zhao, L. and Tsai, C.H. (2020), "The relationship between entrepreneurial intention and action: the effects of fear of failure and role model", *Frontiers in Psychology*, Vol. 11 No. 1, pp. 1-9, doi: 10.3389/fpsyg.2020.00229.

Kraus, S., Palmer, C., Kailer, N., Kallinger, F.L. and Spitzer, J. (2019), "Digital entrepreneurship: a research agenda on new business models for the twenty-first century", *International Journal of Entrepreneurial Behavior and Research*, Vol. 25 No. 2, pp. 353-375.

Krueger, N.F. Jr, Reilly, M.D. and Carsrud, A.L. (2000), "Competing models of entrepreneurial intentions", *Journal of Business Venturing*, Vol. 15 No. 5, pp. 411-432.

Kumar, V. and Kaushik, A.K. (2020), "Does experience affect engagement? Role of destination brand engagement in developing brand advocacy and revisit intentions", *Journal of Travel and Tourism Marketing*, Vol. 37 No. 3, pp. 332-346, doi: 10.1080/10548408.2020.1757562.

Leung, W.K., Chang, M.K., Cheung, M.L. and Shi, S. (2023), "VR tourism experiences and tourist behavior intention in COVID-19: an experience economy and mood management perspective", *Information Technology and People*, Vol. 36 No. 3, pp. 1095-1125, doi: 10.1108/itp-06-2021-0423.

Lewis, J.R. and Mayes, D.K. (2014), "Development and psychometric evaluation of the emotional metric outcomes (EMO) questionnaire", *International Journal of Human-Computer Interaction*, Vol. 30 No. 9, pp. 685-702, doi: 10.1080/10447318.2014.930312.

Ligaraba, R., Nyagadza, B., Dorfling, D. and Zulu, Q. (2023), "Factors influencing re-usage intention of online and mobile grocery shopping amongst young adults in South Africa", *Arab Gulf Journal of Scientific Research*, Vol. 41 No. 3, pp. 389-415, doi: 10.1108/agjsr-06-2022-0088.

Linan, F. and Chen, Y.W. (2009), "Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions", *Entrepreneurship Theory and Practice*, Vol. 33 No. 3, pp. 593-617, doi: 10.1111/j.1540-6520.2009.00318.x.

Liñán, F., Rodríguez-Cohard, J.C. and Rueda-Cantuche, J.M. (2011), "Factors affecting entrepreneurial intention levels: a role for education", *The International Entrepreneurship and Management Journal*, Vol. 7 No. 2, pp. 195-218, doi: 10.1007/s11365-010-0154-z.

Linton, J.D. and Xu, W. (2021), "Research on science and technological entrepreneurship education: what needs to happen next?", *The Journal of Technology Transfer*, Vol. 46 No. 2, pp. 393-406, doi: 10.1007/s10961-020-09786-6.

Liu, X., Lin, C., Zhao, G. and Zhao, D. (2019), "Research on the effects of entrepreneurial education and entrepreneurial self-efficacy on college students' entrepreneurial intention", *Frontiers in Psychology*, Vol. 10, p. 869, doi: 10.3389/FPSYG.2019.00869/BIBTEX.

Lutfi, A., Al-Khasawneh, A.L., Almaiah, M.A., Alsyouf, A. and Alrawad, M. (2022), "Business sustainability of small and medium enterprises during the COVID-19 pandemic: the role of AIS implementation", *Sustainability*, Vol. 14 No. 9, p. 5362, doi: 10.3390/su14095362.

Machmud, A., Nurhayati, D., Aprilianti, I. and Fathonah, W.N. (2020), "Effect of self efficacy ICT on technopreneurship intention of technopreneurial learning mediation: the case young generation in Indonesia", *Journal of Entrepreneurship Education*, Vol. 23 No. 1, pp. 1-11.

Maheshwari, G. and Kha, K.L. (2023), "Investigating the relationship between educational support and entrepreneurial intention in Vietnam: the mediating role of entrepreneurial self-efficacy in the theory of planned behavior", *International Journal of Management in Education*, Vol. 20 No. 2, pp. 1-14, doi: 10.1016/j.ijme.2021.100553.

Maichum, K., Parichatnon, S. and Peng, K.C. (2016), "Application of the extended theory of planned behavior model to investigate purchase intention of green products among Thai consumers", *Sustainability*, Vol. 8 No. 10, p. 1077, doi: 10.3390/su8101077.

Mannetti, L., Pierro, A. and Livi, S. (2004), "Recycling: planned and self-expressive behaviour", *Journal of Environmental Psychology*, Vol. 24 No. 2, pp. 227-236, doi: 10.1016/j.jenvp.2004.01.002.

Maziriri, E.T., Mashapa, M.M., Nyagadza, B. and Mabuyana, B. (2023), "As far as my eyes can see: generation Y consumers' use of virtual reality glasses to determine tourist destinations", *Cogent Business and Management*, Vol. 10 No. 3, 2246745, doi: 10.1080/23311975.2023.2246745.

Maziriri, E.T., Dzingirai, M., Nyagadza, B. and Mabuyana, B. (2024a), "From perceived parental entrepreneurial passion to technopreneurship intention: the moderating role of perseverance and perceived parental entrepreneurial rewards", *Sustainable Technology and Entrepreneurship*, Vol. 3 No. 1, 100051, doi: 10.1016/j.stae.2023.100051.

Maziriri, E.T., Nyagadza, B. and Maramura, T.C. (2024b), "Entrepreneurial role models influence on entrepreneurial self-efficacy, social entrepreneurial intent and social entrepreneurial action: entrepreneurial motivation as a moderator", *Social Enterprise Journal*, Vol. 20 No. 3, pp. 278-317, doi: 10.1108/sej-12-2022-0114, available at: https://www.emerald.com/insight/content/doi/10.1108/SEJ-12-2022-0114

Minniti, M. and Bygrave, W. (2001), "A dynamic model of entrepreneurial learning", *Entrepreneurship Theory and Practice*, Vol. 25 No. 3, pp. 5-16, doi: 10.1177/104225870102500301.

Musah, M.B., Ali, H.B.M., Al-Hudawi, S.H.V., Tahir, L.M., Daud, K.B. and Hamdan, A.R. (2015), "Determinants of students' outcome: a full-fledged structural equation modelling approach", *Asia Pacific Education Review*, Vol. 16 No. 4, pp. 579-589, doi: 10.1007/s12564-015-9396-3.

Najjari, H., Didehkhani, H., Mostaghimi, M. and Hosseini, S.M. (2021), "Identifying and prioritizing the dimensions of medical tourism with emphasis on technological entrepreneurship", *Journal of Health Administration*, Vol. 24 No. 1, pp. 9-20.

Nathalie, D.C., Reed-Rhoads, T. and Haghighi, S. (2010), "Investigating the impact of entrepreneurship education on engineering students", *Peer-reviewed Paper Presented at NCIIA*.

Nayak, B., Bhattacharyya, S.S., Kumar, S. and Jumnani, R.K. (2022), "Exploring the factors influencing adoption of health-care wearables among generation Z consumers in India", *Journal of Information, Communication and Ethics in Society*, Vol. 20 No. 1, pp. 150-174, doi: 10.1108/jices-07-2021-0072.

Neneh, B.N. (2019a), "From entrepreneurial alertness to entrepreneurial behaviour: the role of trait competitiveness and proactive personality", *Personality and Individual Differences*, Vol. 138 No. 1, pp. 273-279, doi: 10.1016/j.paid.2018.10.020.

Neneh, B.N. (2019b), "From entrepreneurial intentions to behavior: the role of anticipated regret and proactive personality", *Journal of Vocational Behavior*, Vol. 112 No. 1, pp. 4311-4324, doi: 10.1016/j.jvb.2019.04.005.

Neneh, B.N. and Dzomonda, O. (2024), "Transitioning from entrepreneurial intention to actual behaviour: the role of commitment and locus of control", *International Journal of Management in Education*, Vol. 22 No. 2, 100964, doi: 10.1016/j.ijme.2024.100964.

Nikraftar, T., Hosseini, E. and Mohammadi, E. (2022), "The factors influencing technological entrepreneurship in nanotechnology businesses", *Revista de Gestao*, Vol. 29 No. 1, pp. 76-99, doi: 10.1108/rege-02-2021-0029.

Nyagadza, B. (2021), "Futurology reorientation nexus: fourth industrial revolution", book chapter 3, in Kazeroony, H. and Tsang, D. (Eds), *Management Education and Automation*, 1st ed, Routledge Advances in Management and Business Studies, Routledge, Taylor & Francis, Abingdon, UK, ISBN: 9780367861117.

Nyagadza, B., Pashapa, R., Chare, A., Mazuruse, G. and Hove, P.K. (2022), "Digital technologies, fourth industrial revolution (4IR) & global value chains (GVCs) nexus with emerging economies' future industrial innovation dynamics", *Cogent Economics and Finance*, Vol. 10 No. 1, 2014654.

Obschonka, M., Silbereisen, R.K. and Schmitt-Rodermund, E. (2019), "Entrepreneurial intention as developmental outcome", *Journal of Vocational Behavior*, Vol. 110, pp. 132-144.

Othman, A.K., Hamzah, M.I. and Abu Hassan, L.F. (2020), "Modeling the contingent role of technological optimism on customer satisfaction with self-service technologies: a case of cash-recycling ATMs", *Journal of Enterprise Information Management*, Vol. 33 No. 3, pp. 559-578, doi: 10.1108/jeim-09-2019-0295.

Partala, T. and Saari, T. (2015), "Understanding the most influential user experiences in successful and unsuccessful technology adoptions", *Computers in Human Behavior*, Vol. 53, pp. 381-395, doi: 10.1016/j.chb.2015.07.012.

Puga, J.L. and García, J.G. (2010), "Technological potential entrepreneurs and optimism", *ICERI2010 Proceedings*, IATED, pp. 456-461.

Rachman, N.D.A. and Hendayani, R. (2023), "The effect of e-service quality on customer satisfaction of cash recycling atm users with technological optimism as a moderating variable", *International Journal of Economics, Business and Accounting Research*, Vol. 7 No. 2, pp. 1-15.

Rafiana, N.N. (2024), "Technopreneurship strategy to grow entrepreneurship career options for students in higher education", *ADI Journal on Recent Innovation*, Vol. 5 No. 2, pp. 110-126.

Rauch, A. and Hulsink, W. (2015), "Putting entrepreneurship education where the intention to act lies: an investigation into the impact of entrepreneurship education on entrepreneurial intentions",

*The Academy of Management Learning and Education*, Vol. 14 No. 2, pp. 187-204, doi: 10.5465/amle.2012.0293.

Read, D.L., Brown, R.F., Thorsteinsson, E.B., Morgan, M. and Price, I. (2013), "The theory of planned behaviour as a model for predicting public opposition to wind farm developments", *Journal of Environmental Psychology*, Vol. 36 No. 1, pp. 70-76, doi: 10.1016/j.jenvp.2013.07.001.

Rosdi, S.A.M., Adnan, A.A.Z. and Samsudin, N. (2018), "Intention towards business start-up among Orang Asli in Peninsular Malaysia", *International Journal of Academic Research in Business and Social Sciences*, Vol. 8 No. 5, pp. 945-961, doi: 10.6007/ijarbss/v8-i5/4235.

Salhieh, S.E.M. and Al-Abdallat, Y. (2022), "Technopreneurial intentions: the effect of innate innovativeness and academic self-efficacy", *Sustainability*, Vol. 14 No. 1, p. 238, doi: 10.3390/su14010238.

Saunders, M., Lewis, P. and Thornhill, A. (2019), *Research Methods for Business Students*, 8th ed., Pearson Education, London.

Schumacher, A., Erol, S. and Sihn, W. (2016), "A maturity model for assessing Industry 4.0 readiness and maturity of manufacturing enterprises", *Procedia CIRP*, Vol. 52 No. 1, pp. 161-166, doi: 10.1016/j.procir.2016.07.040.

Schwieger, D. and Ladwig, C. (2018), "Reaching and retaining the next generation: adapting to the expectations of Gen Z in the classroom", *Information Systems Electronic Journal*, Vol. 16 No. 3, p. 45.

Seligman, M.E.P. (1991), *Learned Optimism*, Knopf, New York.

Shah, N. and Soomro, B.A. (2017), "Investigating entrepreneurial intention among public sector university students of Pakistan", *Education Training*, Vol. 59 Nos 7/8, pp. 841-855, doi: 10.1108/et-11-2016-0168.

Shah, I.A., Amjed, S. and Jaboob, S. (2020), "The moderating role of entrepreneurship education in shaping entrepreneurial intentions", *Journal of Economic Structures*, Vol. 9, pp. 1-15, doi: 10.1186/s40008-020-00195-4.

Sharma, L. (2018), "Entrepreneurial intentions and perceived barriers to entrepreneurship among youth in Uttarakhand state of India: a cross-cultural investigation across genders", *International Journal of Gender and Entrepreneurship*, Vol. 10 No. 3, pp. 243-269, doi: 10.1108/ijge-02-2018-0009.

Singhry, H.B. (2015), "The effect of technology entrepreneurial capabilities on technopreneurial intention of nascent graduates", *European Journal of Business and Management*, Vol. 7 No. 34, pp. 8-20.

Soomro, B.A. and Shah, N. (2021), "Technopreneurship intention among nonbusiness students: a quantitative assessment", *World Journal of Entrepreneurship, Management and Sustainable Development*, Vol. 17 No. 3, pp. 502-514, doi: 10.1108/wjemsd-10-2020-0129.

Srivastava, S., Madan, P., Dey, B., Qadir, A. and Mathew, J. (2022), "Impact of destination brand experience on destination advocacy: trust and loyalty as moderators", *Consumer Behavior in Tourism and Hospitality*, Vol. 17 No. 4, pp. 576-590, doi: 10.1108/cbth-01-2022-0002.

Sudarwati, N. and Chalimah (2022), "Technopreneurship intention: a study of economic education study program students influenced by entrepreneurial learning", *Jurnal Pendidikan Indonesia*, Vol. 11 No. 4, pp. 698-706, doi: 10.23887/jpiundiksha.v11i4.46866.

Suleiman, Y. (2021), "Integrating technopreneurship education in Nigerian universities: strategy for decreasing youth unemployment", *Journal of Education Research*, Vol. 11 No. 1, pp. 49-76, doi: 10.51474/jer.v11i1.501.

Surendran, P. (2012), "Technology acceptance model: a survey of literature", *International Journal of Business and Social Research*, Vol. 2 No. 4, pp. 175-178.

Syed, I., Butler, J.C., Smith, R.M. and Cao, X. (2020), "From entrepreneurial passion to entrepreneurial intentions: the role of entrepreneurial passion, innovativeness, and curiosity in driving entrepreneurial intentions", *Personality and Individual Differences*, Vol. 157 No. 1, pp. 1-6, doi: 10.1016/j.paid.2019.109758.

Taherdoost, H. (2022), "What are different research approaches? Comprehensive review of qualitative, quantitative, and mixed method research, their applications, types, and limitations", *Journal of Management Science and Engineering Research*, Vol. 5 No. 1, pp. 53-63, doi: 10.30564/jmser.v5i1.4538.

Venkatesh, V., Morris, M.G., Davis, G.B. and Davis, F.D. (2003), "User acceptance of information technology: toward a unified view", *MIS Quarterly*, Vol. 27 No. 3, pp. 425-478, doi: 10.2307/30036540.

Verkijika, S.F. and De Wet, L. (2018), "E-Government adoption in sub-Saharan Africa", *Electronic Commerce Research and Applications*, Vol. 30 No. 1, pp. 83-93, doi: 10.1016/j.elerap.2018.05.012.

Wardana, W., Heriyati, N., Oktafiani, D. and Gaol, T.V.L. (2020), "Importance of technology-based entrepreneurship in the education", *FIRM Journal of Management Studies*, Vol. 7 No. 1, pp. 1-20, doi: 10.33021/firm.v7i1.1565.

Wasiq, M., Bashar, A., Nyagadza, B. and Johri, A. (2024a), "Deciphering the evolution of metaverse - a techno-functional perspective in digital marketing", *International Journal of Information Management Data Insights*, Vol. 4 No. 2, 100296, doi: 10.1016/j.jjimei.2024.100296.

Wasiq, M., Bashar, A., Khan, I. and Nyagadza, B. (2024b), "Unveiling customer engagement dynamics in the metaverse: a retrospective bibliometric and topic modelling investigation", *Computers in Human Behavior Reports*, Vol. 16, 100483, doi: 10.1016/j.chbr.2024.100483.

Yingi, E., Hlungwani, P.M. and Nyagadza, B. (2022), "The fourth industrial revolution (4IR) in the heart of SDG Agenda: the role of education in Zimbabwe", *Africa Review*, Vol. 14 No. 2, pp. 213-229, doi: 10.1163/09744061-01402001(AR.

Yordanova, D., Filipe, J.A. and Pacheco Coelho, M. (2020), "Technopreneurial intentions among Bulgarian STEM students: the role of university", *Sustainability*, Vol. 12 No. 16, p. 6455, doi: 10.3390/su12166455.

Zhao, H., Seibert, S.E. and Hills, G.E. (2005), "The mediating role of self-efficacy in the development of entrepreneurial intentions", *Journal of Applied Psychology*, Vol. 90 No. 6, pp. 1265-1272, doi: 10.1037/0021-9010.90.6.1265.

**Further reading**

Ainul, N.S. and Mahfuz (2012), "An analysis of technopreneurial intention among non-business student", *2nd International Conference on Management (2nd ICM 2012), hlm*, pp. 1-11.

Bandura, A. and Wessels, S. (1997), *Self-Efficacy*, Cambridge University Press, Cambridge.

Field, A. (2024), *Discovering Statistics Using IBM SPSS Statistics*, 6th ed., Sage Publications, Los Angeles.

Fornell, C. and Larcker, D.F. (1981), "Evaluating structural equation models with unobservable variables and measurement error", *Journal of Marketing Research*, Vol. 18 No. 1, pp. 39-50, doi: 10.2307/3151312.

Fraering, M. and Minor, M.S. (2006), "Sense of community: an exploratory study of US consumers of financial services", *International Journal of Bank Marketing*, Vol. 24 No. 5, pp. 284-306, doi: 10.1108/02652320610681738.

Hair, J.F., Hult, G.T.M., Ringle, C.M. and Sarstedt, M. (2022), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, 3rd ed., Sage, Thousand Oaks, CA.

Nurhayati, D. and Machmud, A. (2019), "The influence of technopreneurial learning on technopreneurship intention students", *Proceeding ISETH (International Summit on Science, Technology, and Humanity)*, pp. 390-400.

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