

THE RELATIONSHIP BETWEEN TECHNOPRENEURIAL INTENTION AND TECHNOPRENEURIAL BEHAVIOUR: THE MODERATING EFFECT OF ATTITUDE

RAMLEE, N. A. Z.^{1*} – KAMARUZAMAN, K. N.¹ – NOR, N. S. N. M.¹

¹ *Department of Entrepreneurship and Marketing Studies, Universiti Teknologi MARA, Selangor, Malaysia.*

**Corresponding author
e-mail: nurat3842[at]uitm.edu.my*

(Received 18th March 2026; revised 26th June 2026; accepted 28th July 2026)

Abstract. Technopreneurship has become increasingly important in fostering technology-based innovation and economic growth, particularly within higher education institutions that aim to develop future technology entrepreneurs. Although technopreneurial intention has been widely recognised as a key predictor of entrepreneurial behaviour, the transition from intention to actual behaviour remains insufficiently explored. Therefore, this study examines the relationship between technopreneurial intention and technopreneurial behaviour by investigating the moderating role of attitude among university students. Drawing upon the Theory of Planned Behaviour, this study adopts a quantitative research approach using a cross-sectional survey design. Data were collected from 373 students enrolled in technology entrepreneurship courses at Universiti Teknologi MARA (UiTM), Malaysia. The data were analysed using Partial Least Squares Structural Equation Modelling (PLS-SEM) through SmartPLS. The measurement model was assessed through indicator reliability, internal consistency reliability, and convergent validity, while the structural model was evaluated through coefficient of determination and moderation analysis. The findings reveal that technopreneurial intention influence technopreneurial behaviour. Furthermore, attitude significantly moderates the relationship between technopreneurial intention and technopreneurial behaviour, indicating that favourable attitudes strengthen the translation of intention into actual technopreneurial actions. This study contributes to the technopreneurship literature by addressing the intention and behaviour gap and highlights the importance of cultivating positive entrepreneurial attitudes among university students to enhance technology-based venture creation.

Keywords: *technopreneurial intention, technopreneurial behaviour, attitude, Theory of Planned Behaviour*

Introduction

Technopreneurship represents the strategic fusion of technological innovation and entrepreneurial venture creation, serving as a critical engine for economic growth and competitiveness in an increasingly globalized digital economy (Ramlee, 2023). As digital ecosystems continue to mature, the capacity to convert scientific advancements into scalable market solutions has become essential for maintaining national economic resilience (Ramlee et al., 2023). Despite the widely held consensus that intention acts as the primary precursor to action, a significant research gap persists in empirically mapping the specific mechanisms that translate technopreneurial cognitive states into actualized venture behavior within rapidly evolving digital landscapes (Phạm et al., 2023). This study seeks to bridge this divide by investigating the psychological and environmental antecedents that facilitate the transition from aspirational mindset to concrete startup execution. By clarifying these determinants, the research aims to provide actionable insights for stakeholders seeking to cultivate innovation ecosystems that effectively nurture and support nascent high-tech ventures (Suanpong et al., 2025).

Furthermore, this inquiry addresses the inherent volatility in the link between intent and performance, exploring how distinct technological contexts might moderate the conversion of motivational drives into sustainable entrepreneurial activity (Chahal et al., 2023). This study further evaluates how individual cognitive frameworks, rooted in the Theory of Planned Behaviour, serve as fundamental mediators in the realization of such ventures. By examining these cognitive components, this analysis provides empirical depth to the scarcity of literature regarding the direct translation of entrepreneurial intentions into formal business practices. In addition, the role of attitudes that is conceptualized using the Theory of Planned Behaviour has previously been employed to study its impact towards entrepreneurial intention or technopreneurial intention. Apart of attitude as an independent variable, some researchers also studied the impact of intention through the moderating role of attitudes, who studied the moderating role of attitudes between perceived behavioural control and intention.

Literature review

Technopreneurial intention

Intention has been described as a state of mind that directs one's attention toward a certain purpose in order to achieve a specific goal (Bird and Jelinek, 1989). In recent years, it has become one of the most common theoretical paradigms for studying the influencing aspects of entrepreneurial behaviour (Liñán and Fayolle, 2015). In the TPB, intentions are proposed to predict behaviour as to what extent an individual is able to execute the behaviour, therefore implying a high degree of actual control over behavioural performance (La Barbera and Ajzen, 2020). According to Ajzen (1991), intention comprises the motivational component of behaviour because it "indicates how hard people are willing to try and how much effort they are preparing to exert to achieve the behaviour". He added that generally speaking, the stronger one's intention to engage in a particular behaviour, the more likely one is to accomplish it (Ajzen, 1991). Study conducted by Waspada et al (2024) has discovered the influences technopreneurial learning towards technopreneurial interest highly correlated and has significantly contributed to the overview of entrepreneurial dynamics in a technological landscape. On the other hands, that conducted on identification of key factors that has significant impact towards students' technopreneur motivation has reported that hands-on learning opportunities as well as support services have positively impact the entrepreneurial intentions among students.

Technopreneurial behaviour

The concept of "technopreneurship," which unites the economic world of technology with academic entrepreneurship, is profound and connected to many significant subjects (Qasim and Mahmood, 2022). In addition, Phuthong (2023) has define technopreneurial as the attitudes, characteristics and individuals' intention that are driven to start and run technology based business. Technopreneurial behaviour is knowledge and skills that has drive the individual towards certain performance. It has been noticed that there is a lack of common definition of entrepreneurial behaviour found in the available literature. Entrepreneurial behaviour as the ability, knowledge and skills described as component characteristics of an enterprise that constitute the construct of entrepreneurial behaviour. More studies are needed to understand how universities might encourage student entrepreneurship, according to many recent studies. This was agreed by Yordanova

(2021) who stated that understanding strategies to unleash technological potential and promoting technological entrepreneurship among STEM students may both be gained through research on technological processes.

Attitudes as moderating effect

Attitudes refers to specific habits or actions, such as entrepreneurship, which reflect the personal beliefs individuals may hold (Al-Jubari, 2019). These habits can be either positive or negative, influencing how individuals engage in certain behaviors, determining their willingness to act or refrain from acting. Ajzen (1991), who developed the Theory of Planned Behaviour, emphasized that individuals with more positive attitudes tend to exhibit behavior that aligns with those attitudes, leading to stronger intentions to achieve their goals. Therefore, possessing positive attitudes signifies that individuals have constructive intentions towards performing the behavior. The position of attitudes as a moderator or mediator between intention and behaviour has been rarely discussed. However, the previous study by Sui and Chang (2023) assigned attitude as a mediating role and they found entrepreneurial attitude has an effect on technopreneurial intention, acting as a full mediator between entrepreneurial motivation and intention, emphasizing its importance in encouraging entrepreneurship. another study, Tulipa et.al, (2024) found that attitude has a positive effect on perceived desirability, which mediates the relationship between attitude and entrepreneurial intention, demonstrating that a favourable attitude might boost the perceived motivation of entrepreneurship. Position attitudes as moderator have become contribution in this study. Hence, further study on the moderating effect of attituded between technopreneurial intention and technopreneurial behaviour are needed to identify its relationship. Hence, the research framework for this study is presented in *Figure 1*. The literature review allows the development of hypotheses to be articulated to describe the relationship between the independent variable (technopreneurial intention), moderating variable (attitudes) and depedndent variable (technopreneurial behaviour). Therefore, based on the review, the following hypothesis is formulated: (H1): Technopreneurial Intention has a positive effect on Technopreneurial Behaviour; (H2): Attitude moderates the relationship between technopreneurial intention and technopreneurial behaviour.

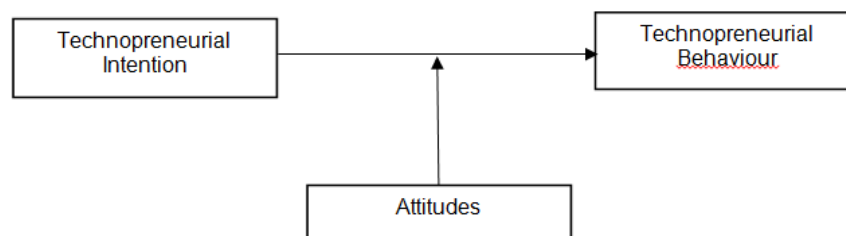


Figure 1. Research framework.

Materials and Methods

Students from Universiti Teknologi MARA (UiTM), the largest university in Malaysia has been chosen as population of this study. With over 160,000 total student's enrolment across 35 branch campuses, UiTM given the highest annual target given by the Ministry of Higher Education in producing numbers of technology-based startups

among students. Choosing the largest community as the population of the study could enhance the generalizability of the research findings. The sample of this study is 373 as suggested by Raosoft (2004) based on number of populations it is sufficient enough as the minimum required respondents is 359 samples with population 5397 students who enrol technology entrepreneurship course. Data collection was conducted through online platform which is google form. To ensure that the data are collected from the targeted respondents to provide suitable data for this study, the purposive sampling is employed. Descriptive analysis, they defined mean as an average collection of numbers. For the current study, the variables are measured using the fivepoint Likert scale where the respondents are asked to answer each question based on the proposed scale, providing a degree of agreement from one (1) to indicate “Strongly Disagree”, (2) Disagree, (3) Neutral, (4) Agree and (5) Strongly Agree.

Results and Discussion

Indicator reliability

The value of outer loadings for all constructs is above 0.70; thus, all items and dimensions for all constructs are considered acceptable for the validity level, as suggested by Hair et al (2019). ATTD represent the variable Attitudes, TI represent Technopreneurial Intention and TB represent variable Technopreneurial Behaviour. For reflective measurement model, the first step is assessing the instrument metric (Hair et al., 2019) (Table 1).

Table 1. Outer loadings.

Category	ATTD	TB	TI	ATTD x TI
ATTD1	0.765			
ATTD2	0.885			
ATTD3	0.9			
ATTD4	0.934			
ATTD5	0.858			
TB1		0.726		
TB2		0.881		
TB3		0.853		
TB4		0.786		
TB5		0.84		
TB6		0.851		
TB7		0.825		
TI1			0.871	
TI2			0.888	
TI3			0.908	
TI4			0.889	
TI5			0.856	
TI6			0.849	
TI7			0.89	
TI8			0.858	
ATTD x TI				1

R square

The value of CR should be higher than 0.7 to demonstrate acceptable internal consistency (Hair et al., 2019). Cronbach's Alpha is frequently used by many researchers to assess reliability of set of items in research instrument in various studies of entrepreneurial, psychology, education and other social sciences. As suggested by Hair et al. (2019), the value of Cronbach's Alpha should be greater than 0.7 to indicate its reliability. Hence, these study have indicating the significant level of consistency is

achieved. As suggested by Hair et al. (2019), the value of AVE should be higher than 0.5 for each construct to achieve significant convergent validity. Based on above table, the value of AVE is at the level of satisfactory ranging from 0.68 to 0.768, which is greater than 0.50 (*Table 2*). According to Hair et al. (2019), the value of AVE must at least be 50% of the allocated indicator variance. From the *Table 3* it shows that Technopreneurial Intention has 50.40% explain Technopreneurial Behaviour while 49.6% explained by other factors not included in this research.

Table 2. Cronbach's Alpha, composite reliability and AVE.

Category	Cronbach's alpha	Composite reliability	Average variance extracted (AVE)
ATTD	0.919	0.923	0.757
TB	0.921	0.928	0.68
TI	0.957	0.958	0.768

Table 3. R square.

Category	R-square
TB	0.504

Moderation analysis

Moderating analysis refers to statistical approach to assess the strength or direction of relationships between two variables. Hair et al. (2019) suggested the threshold value in assessing the moderation analysis by first looking at the value of t-value. Hair et al. (2019) also suggested p-value in determining the moderation effect. Typically, the threshold value of p-value that is less than 0.05 is considered significant. For the current study, it shows that the p-value is 0.001, which is less than 0.05, hence the moderation variable is significant (*Table 4*).

Table 4. Moderation relationship.

Moderation Relationship	t-value	p-value
Attitude moderates the relationship between Technopreneurial Intention and Technopreneurial Behaviour	0.001	0.001

Conclusion

This study examined the relationship between technopreneurial intention and technopreneurial behaviour and further investigated the moderating role of attitude among university students. Based on the Theory of Planned Behaviour, the findings provide empirical evidence that intention plays an important role in explaining actual technopreneurial behaviour. The structural model results indicate that technopreneurial intention explains 50.4% of the variance in technopreneurial behaviour, demonstrating that students with stronger intentions are more likely to engage in technology-based entrepreneurial activities. Furthermore, the findings confirm the significant moderating effect of attitude in strengthening the relationship between technopreneurial intention and technopreneurial behaviour. This suggests that intention alone may not be sufficient to encourage students to translate their entrepreneurial aspirations into actual behaviour. Instead, positive attitudes towards technopreneurship enhance students' willingness and confidence to transform their intentions into real entrepreneurial actions. Therefore, developing favourable attitudes towards technology-based entrepreneurship should become an important focus for universities, policymakers, and entrepreneurship educators.

From a theoretical perspective, this study extends the application of the Theory of Planned Behaviour by demonstrating the importance of attitude as a boundary condition in the intention and behaviour relationship within the technopreneurship context. While previous studies have predominantly focused on entrepreneurial intention formation, this study contributes by examining the subsequent behavioural outcome, thereby addressing the existing intention–behaviour gap in technopreneurship research. From a practical perspective, universities should strengthen technology entrepreneurship education by incorporating experiential learning activities, technology commercialisation projects, mentorship programmes, and startup development initiatives. Such interventions may enhance students' positive attitudes towards technology-based ventures and increase the likelihood of converting entrepreneurial intentions into actual business activities.

Despite its contributions, this study has several limitations that provide opportunities for future research. First, this study employed a cross-sectional research design; therefore, future studies may adopt a longitudinal approach to examine how technopreneurial intention develops into actual entrepreneurial behaviour over time. Second, this study focused only on students from a single Malaysian public university, which may limit the generalizability of the findings. Future research could include students from multiple universities, countries, or different educational backgrounds to provide broader insights into technopreneurial behaviour. Future studies may also consider incorporating additional variables such as perceived behavioural control, entrepreneurial education, innovation capability, entrepreneurial self-efficacy, institutional support, or technology readiness to provide a more comprehensive understanding of technopreneurial behaviour. Additionally, qualitative approaches such as interviews with student entrepreneurs or technology startup founders may provide deeper insights into the psychological and contextual factors influencing the transition from intention to entrepreneurial action.

Acknowledgement

This research is self-funded.

Conflict of interest

The authors confirm that there is no conflict of interest involve with any parties in this research study.

REFERENCES

- [1] Ajzen, I. (1991): The theory of planned behavior. – *Organizational Behavior and Human Decision Processes* 50(2): 179-211.
- [2] Al-Jubari, I. (2019): College students' entrepreneurial intention: Testing an integrated model of SDT and TPB. – *SAGE Open* 9(2): 1-16.
- [3] Bird, B., Jelinek, M. (1989): The operation of entrepreneurial intentions. – *Entrepreneurship Theory and Practice* 13(2): 21-30.
- [4] Chahal, J., Dagar, V., Dagher, L., Rao, A., Udemba, E.N. (2023): The crisis effect in TPB as a moderator for post-pandemic entrepreneurial intentions among higher education

- students: PLS-SEM and ANN approach. – *The International Journal of Management Education* 21(3): 1-18.
- [5] Hair, J.F., Risher, J.J., Sarstedt, M., Ringle, C.M. (2019): When to use and how to report the results of PLS-SEM. – *European Business Review* 31(1): 2-24.
 - [6] La Barbera, F., Ajzen, I. (2020): Control interactions in the theory of planned behavior: Rethinking the role of subjective norm. – *Europe's Journal of Psychology* 16(3): 401-417.
 - [7] Liñán, F., Fayolle, A. (2015): A systematic literature review on entrepreneurial intentions: Citation, thematic analyses, and research agenda. – *International Entrepreneurship and Management Journal* 11(4): 907-933.
 - [8] Pham, M., Nguyen, A.T.T., Tran, D.T., Mai, T.T., Nguyen, V.T. (2023): The impact of entrepreneurship knowledge on students' e-entrepreneurial intention formation and the moderating role of technological innovativeness. – *Journal of Innovation and Entrepreneurship* 12(1): 1-30.
 - [9] Phuthong, T. (2023): Defining technopreneurs' commercialization research process in the emerging Thai economy: Research for constructing grounded theory. – *TEM Journal* 12(2): 1142-1155.
 - [10] Qasim, Y., Mahmood, Z. (2022): Technopreneurship education: The way to rebuild COVID-19 affected economy. – *Journal of Management and Research* 9(1): 1-22.
 - [11] Ramlee, N.A.Z., Abd Rahim, L.N., Rahim, H.L., Ahmad, N.N. (2023): Bibliometric analysis of technopreneurship research in Scopus database. – *Information Management and Business Review* 15(3(SI)): 359-368.
 - [12] Raosoft, Inc. (2004): Raosoft sample size calculator. – Raosoft, Inc. 1p.
 - [13] Suanpong, K., Yeing-Aramkul, Y., Yoochayantee, K., Tripopsakul, S. (2025): Cognitive and motivational drivers of entrepreneurial intention in an emerging economy: Implications for open innovation dynamics. – *Journal of Open Innovation: Technology, Market, and Complexity* 11(2): 1-11.
 - [14] Sui, F.M., Chang, J.C. (2023): The mediating effect of entrepreneurial attitude on the relationship between entrepreneurial motivation and entrepreneurial intention. – 2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM): 421-425.
 - [15] Tulipa, D., Sancoko, A.H., Rahmawati, V. (2024): Peranan perceived desirability dalam memediasi hubungan antara attitude dengan entrepreneurial intention. – *Media Mahardhika* 22(3): 365-376.
 - [16] Waspada, I., Mulyadi, H., Lubis, A.R. (2024): Entrepreneurial motives, technopreneurship intention in FPEB UPI students. – *Mimbar Pendidikan* 9(2): 170-177.
 - [17] Yordanova, D. (2021): Nascent technology entrepreneurship among Bulgarian STEM students. – *Administrative Sciences* 11(4): 1-14.