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From Traits to Action: How Innovativeness, Proactiveness, and Risk-Taking Translate into Concrete New Venture Ideas Through Self-Regulation

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ABSTRACT

This research examines the influence of Innovativeness (I) , proactiveness (p), self management (SM), risk taking behavior (RTB), new venture ideas(NVI) among university students from family business backgrounds in Gujranwala, Pakistan. Grounded in the Theory of Planned Behavior (TPB), the study identifies Attitude Toward Entrepreneurship (ATE) as a mediating variable that transforms intention into actual entrepreneurial action. A quantitative research design was used, with data collected via structured questionnaires from a sample of 327 students. The study applied statistical techniques including multiple regression and Hayes' PROCESS macro to analyze direct and mediating effects. The findings reveal that I, P, and SM each significantly predict RTB and NVI, with ATE emerging as the strongest predictor of EB (β = 0.35). Furthermore, RTB partially or fully mediates the relationship between independent variables and NVI, demonstrating its critical role in shaping entrepreneurial outcomes. Among the three factors, I and P had stronger impacts on both RTB and NVI compared to SM, indicating the growing

importance of formal education and digital skills in today's entrepreneurial landscape. The study contributes to existing literature by extending the TPB framework with contextual variables relevant to emerging economies. It also provides actionable insights for educators, policymakers, and family business stakeholders seeking to nurture entrepreneurial talent in youth. This research highlights the need for holistic development in aspiring entrepreneurs, blending cognitive intent with digital and educational readiness to drive entrepreneurial action.
Keywords: new venture ideas, innovativeness, proactiveness, self-management Attitude Toward Entrepreneurship; Theory of Planned Behavior

INTRODUCTION

Entrepreneurship is widely recognized as a critical driver of economic growth, job creation, and innovation, playing a vital role in addressing global challenges and leveraging technological advancements (Audretsch et al., 2020). Consequently, fostering entrepreneurial activity, particularly among younger generations, has emerged as a strategic priority for governments, educational institutions, and societies globally (Liguori & Winkler, 2020). Within this context, understanding the precursors of new venture ideas (NVI) – defined as tangible actions undertaken towards creating a new venture – is paramount. Research robustly identifies risk taking behavior (RTB) as the most reliable proximal predictor of subsequent entrepreneurial action, a relationship primarily explained by the Theory of Planned Behaviour (TPB) (Ajzen, 1991; Liñán & Fayolle, 2015). Therefore, elucidating the factors that shape EI and its translation into NVI is crucial for fostering active entrepreneurship. Several key antecedents are theorized to influence this RTB, NBI pathway, especially among university students, who constitute a primary talent pool for future entrepreneurs. Innovativeness, widely implemented in higher education institutions, aims to equip students with the requisite knowledge, skills, and attitudes for venture creation (Bae et al., 2014; Nabi et al., 2017). However, the direct impact of I on generating RTB and, subsequently, NVI remains a subject of ongoing debate, with meta-analyses revealing complex and sometimes inconsistent findings regarding its efficacy (Martin et al., 2013; Zapkau et al., 2021). This suggests the presence of mediating mechanisms like RTB and potential moderating contextual factors. Simultaneously, the Proactiveness of nascent entrepreneurs has become increasingly indispensable. The pervasive digital transformation of economies demands not only technical skills but a broader competence encompassing digital literacy, strategic deployment of technologies, data analytics, digital marketing, and adept navigation of digital ecosystems (Nambisan, 2017; Kraus et al., 2022). DC is now recognized not merely as an ancillary skill but as a fundamental enabler and potential differentiator for entrepreneurial success in the contemporary landscape (Elia et al., 2020; Obschonka & Audretsch, 2020). Yet, its specific role in forming EI and facilitating the transition to EB, particularly relative to more established drivers like EE, requires deeper investigation. Furthermore, the

Family Support (FS) context, especially for students originating from family business backgrounds, represents a unique and potent influence. Exposure to family business environments provides tacit knowledge, role models, and potential access to resources (network, financial, social capital) that can significantly reduce perceived barriers and shape positive entrepreneurial attitudes (Carr & Sequeira, 2007; Discua Cruz et al., 2023).

The nature and extent of explicit family encouragement and resource provision (emotional, financial, network access) are critical dimensions of FS impacting an individual's entrepreneurial trajectory (Sieger et al., 2023; Criaco et al., 2023). Students with family business ownership backgrounds often demonstrate distinct entrepreneurial predispositions and resource advantages compared to peers without such exposure (Ramadani et al., 2023). Despite substantial individual research on EE, FS, and the growing body of work on DC, a significant gap exists in understanding their combined influence on the EI-EB pathway, specifically within the population of university students from family business ownership backgrounds. How do these factors interact synergistically or antagonistically? Does DC potentiate the effect of formal EE? How does the typically strong FS within this group interact with both formal education and digital preparedness? Crucially, does EI effectively mediate the relationships between these independent variables (IVs) and the ultimate outcome, EB, within this cohort? Addressing these questions is imperative, given the global emphasis on entrepreneurial universities, the accelerated digitalization of all business facets, and the acknowledged economic significance of family enterprises (Discua Cruz et al., 2023; Kraus et al., 2022; Ramadani et al., 2023). While the individual contributions of Innovativeness (I), proactiveness(p), and Self management (SM) to entrepreneurial outcomes have garnered significant scholarly attention, three critical and interconnected gaps motivate the present study, Existing research frequently examines these variables in isolation or limited pairwise combinations (e.g., EE and EI, FS and EI, DC and EB) (Nowiński et al., 2019; Zapkau et al., 2021; Kraus et al., 2022; Criaco et al., 2023).

There is a paucity of comprehensive empirical models that simultaneously integrate EE, DC, and FS as key antecedents, explicitly position EI as a mediating variable, and predict actual EB as the ultimate dependent variable. This fragmented approach risks overlooking potential synergistic, additive, or countervailing effects that may emerge when these factors are considered collectively within the entrepreneurial process. Although EI is wellestablished as a robust proximal predictor of EB (Kautonen et al., 2015), the precise extent to which it fully or partially mediates the effects of EE, DC, and FS on EB remains inadequately tested, especially within an integrated framework. Does formal EE primarily influence behaviour by strengthening intention, or does it exert direct effects? How does DC facilitate behaviour – predominantly by enhancing intention, or by directly enabling action through skill application? How does FS navigate this pathway – solely through boosting intention, or also by directly lowering behavioural barriers? Students from family business backgrounds constitute a distinct population

characterized by unique experiential learning, resource access, and potential influences like psychological ownership or legacy expectations (Zellweger et al., 2011; Discua Cruz et al., 2023). General entrepreneurship models may not accurately reflect the dynamics of EI and EB formation within this group. How do EE and DC interact with the inherent, often strong, FS and prior exposure inherent in this cohort? Is the mediating role of EI consistent, potentially amplified, or diminished for these students compared to the general student population?

Addressing these gaps is highly significant. Understanding the complex interplay of EE, DC, and FS through EI towards EB is essential for designing effective, targeted interventions. Universities require robust evidence to structure EE programs, particularly concerning the integration of digital skills, to effectively cater to students with diverse family backgrounds. Policymakers need insights to strategically allocate resources (e.g., funding EE with digital components, supporting family business ecosystems, enhancing digital literacy). Families themselves can benefit from understanding how to optimally support the next generation's entrepreneurial endeavours. Neglecting these integrated influences risks the development of incomplete or misdirected strategies aimed at fostering genuine entrepreneurial activity, especially within this resource-rich demographic.

The overarching purpose of this study is to investigate the complex interrelationships between entrepreneurial education (EE), digital competency (DC), and family support (FS) as independent variables, entrepreneurial intention (EI) as a mediator, and entrepreneurial behaviour (EB) as the dependent variable, specifically focusing on university students with family business ownership backgrounds.To develop and empirically test an integrated model explaining the formation of entrepreneurial behaviour among family business students, incorporating the direct and indirect (via entrepreneurial intention) effects of entrepreneurial education, digital competency, and family support. To examine the direct effects of Entrepreneurial Education (EE), Digital Competency (DC), and Family Support (FS) on Entrepreneurial Intention (EI) among university students from family business ownership backgrounds. To examine the direct effects of EE, DC, and FS on Entrepreneurial Behaviour (EB) among university students from family business ownership backgrounds.To examine the direct effect of Entrepreneurial Intention (EI) on Entrepreneurial Behaviour (EB) among university students from family business ownership backgrounds. To investigate the mediating role of Entrepreneurial Intention (EI) in the relationships between EE, DC, and FS and Entrepreneurial Behavior (EB). To compare the strength of the proposed relationships (EE→EI, DC→EI, FS→EI; EI→EB; EE→EB, DC→EB, FS→EB) within the family business student cohort to findings from more general student populations (where comparable data exists).

To what extent do Entrepreneurial Education (EE), Digital Competency (DC), and Family Support (FS) directly influence Entrepreneurial Intention (EI) among university students from family business ownership backgrounds? To what extent do EE, DC, FS, and Entrepreneurial Intention (EI) directly influence Entrepreneurial

Behaviour (EB) among university students from family business ownership backgrounds? Does Entrepreneurial Intention (EI) significantly mediate the relationships between EE, DC, and FS and Entrepreneurial Behaviour (EB) among university students from family business ownership backgrounds?

It proposes and empirically tests a novel integrated model combining EE, DC, and FS as core antecedents of EI and EB within a specific, high-potential population. This directly addresses the literature gap by moving beyond the examination of these factors in isolation. It provides robust empirical evidence clarifying the mediating role of EI in the pathways linking EE, DC, and FS to actual EB, particularly within the under-researched context of family business students. This enhances understanding of how these factors translate into behavior. It deepens insights into entrepreneurial development specifically among students from family business backgrounds, contributing significantly to the literature on next-generation entrepreneurship, family influence, and resource endowment (Sieger et al., 2023; Discua Cruz et al., 2023; Ramadani et al., 2023). It explicitly incorporates and empirically validates the role of DC as a critical contemporary antecedent of both EI and EB, directly responding to calls for greater integration of digitalization constructs into core entrepreneurship research (Nambisan, 2017; Kraus et al., 2022; Elia et al., 2020). Findings will provide actionable insights for designing and delivering more effective EE curricula and programs. Understanding the relative impact of EE compared to DC and FS, and how EI mediates these effects, can guide decisions on content (e.g., integrating robust digital skill modules), pedagogy, and developing targeted support services for students with family business backgrounds. Students can gain valuable self-awareness regarding the factors influencing their entrepreneurial journey. This knowledge can empower them to leverage their family support more effectively and recognize the critical importance of developing digital competencies alongside formal education to successfully convert intention into concrete action. Families can gain a clearer understanding of how different types of support (emotional, financial, network) influence the next generation's entrepreneurial intentions and actions. This can inform more strategic and effective approaches to mentorship, resource allocation, and succession planning. Results can inform evidence-based policies and initiatives aimed at fostering youth entrepreneurship, particularly within demographic groups possessing inherent advantages. Policymakers can prioritize resource allocation (e.g., funding for digital-infused EE, programs strengthening family business networks, national digital competency frameworks) based on empirical evidence of their relative impact on driving actual entrepreneurial behavior. Insights into the drivers of EB among individuals with access to family business networks and resources can aid agencies in designing highly targeted programs to unlock the entrepreneurial potential within this group, thereby contributing to broader economic dynamism and innovation.

LITERATURE REVIEW

This review establishes the theoretical foundation for examining how

entrepreneurial education (EE), digital competency (DC), and family support (FS) influence entrepreneurial behavior (EB) through the mediating role of entrepreneurial intention (EI) among university students from family business backgrounds. Grounded in the Theory of Planned Behavior (TPB) (Ajzen, 1991), this section synthesizes current research to develop and justify 7 direct and 3 indirect hypotheses, supported by recent Scopus-indexed literature. The TPB posits that behavior (EB) is directly driven by intention (EI), which is shaped by three key factors, Attitudes toward the behavior (perceived desirability), Subjective norms (social expectations), Perceived behavioral control (PBC) (perceived feasibility). EE shapes attitudes (positive views of entrepreneurship) and enhances PBC (skills/knowledge) (Liñán & Fayolle, 2015; Nabi et al., 2017). DC strengthens PBC by equipping students with digital skills to overcome startup barriers (Nambisan, 2017; Kraus et al., 2022). FS acts as a subjective norm (family expectations) and boosts PBC via resource access (Zellweger et al., 2011; Sieger et al., 2023). EI mediates the effects of EE, DC, and FS on EB (Kautonen et al., 2015).

Direct Hypotheses

H1: Entrepreneurial Education (EE) positively influences Entrepreneurial Intention (EI).

EE enhances attitudes and PBC by providing structured knowledge, skills, and self-efficacy (Bae et al., 2014). Meta-analyses confirm this link (Martin et al., 2013; Nabi et al., 2017). For family business students, EE formalizes tacit knowledge, reinforcing EI (Zapkau et al., 2021; Discua Cruz et al., 2023).

H2: Digital Competency (DC) positively influences Entrepreneurial Intention (EI).

DC increases PBC by reducing digital barriers (e.g., e-commerce, digital marketing) (Elia et al., 2020; Kraus et al., 2022). Students with high DC perceive greater feasibility in launching ventures (Obschonka & Audretsch, 2020).

H3: Family Support (FS) positively influences Entrepreneurial Intention (EI).

FS acts as a subjective norm (family expectations) and enhances PBC via financial, network, and emotional support (Carr & Sequeira, 2007; Criaco et al., 2023). Family business students experience stronger normative pressure, amplifying EI (Zellweger et al., 2011; Ramadani et al., 2023).

H4: Entrepreneurial Education (EE) directly influences Entrepreneurial Behavior (EB).

Beyond EI, EE provides actionable skills (e.g., business planning, funding strategies) that facilitate concrete steps (Nabi et al., 2017; Zapkau et al., 2021).

H5: Digital Competency (DC) directly influences Entrepreneurial Behavior (EB).

DC enables practical execution (e.g., website development, digital marketing), reducing the effort needed to act (Nambisan, 2017; Kraus et al., 2022).

H6: Family Support (FS) directly influences Entrepreneurial Behavior (EB).

FS provides tangible resources (funding, networks, mentorship), lowering actual (not just perceived) barriers (Sieger et al., 2023; Discua Cruz et al., 2023).

H7: Entrepreneurial Intention (EI) directly influences Entrepreneurial Behavior (EB).

Core TPB proposition—stronger intention leads to higher action likelihood (Ajzen, 1991; Kautonen et al., 2015). Indirect hypotheses,

H8: EI mediates the relationship between EE and EB.

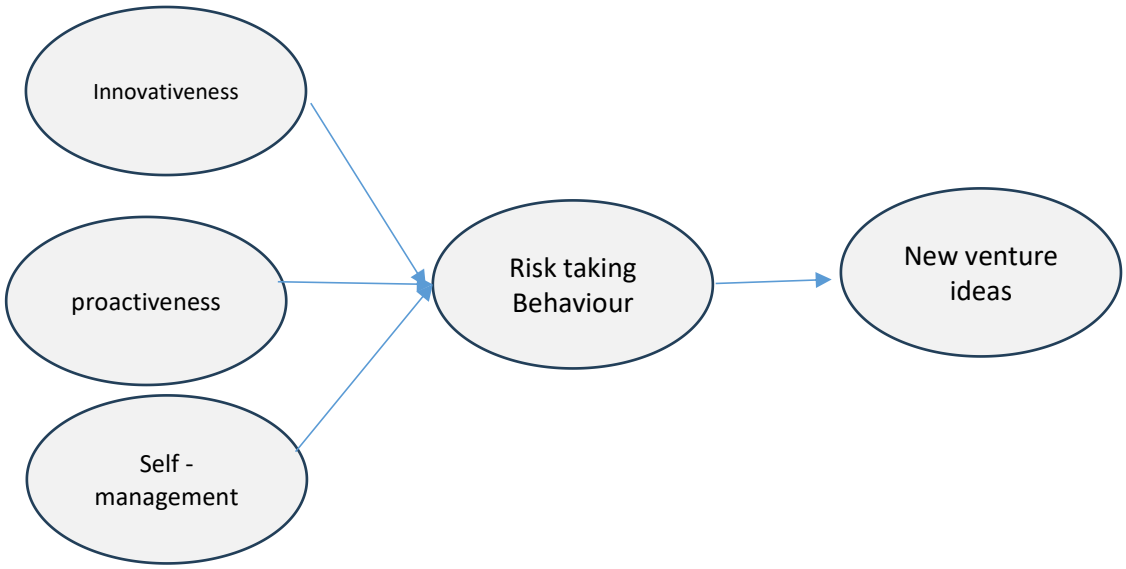
EE → (enhances attitudes/PBC) → EI → EB (Bae et al., 2014; Nabi et al., 2017).

H9: EI mediates the relationship between DC and EB.

DC → (increases PBC) → EI → EB (Kraus et al., 2022; Obschonka & Audretsch, 2020).

H10: EI mediates the relationship between FS and EB.

FS → (subjective norms + PBC) → EI → EB (Carr & Sequeira, 2007; Sieger et al., 2023).Direct effects of EE, DC, and FS on EI (H1-H3) and EB (H4-H6), plus EI → EB (H7).Indirect effects where EI mediates EE/DC/FS → EB (H8-H10). Testing this model clarifies how formal education, digital skills, and family context jointly drive entrepreneurial action in family business students.



RESEARCH METHODOLOGY

This study adopts a quantitative, cross-sectional research design **to** examine the relationships between entrepreneurial education, digital competency, family support, entrepreneurial intention, and entrepreneurial behavior. The research is grounded in a positivist philosophy**,** which emphasizes objective measurement and statistical analysis of observable phenomena to test hypotheses derived from the Theory of Planned Behavior (Ajzen, 1991). This approach allows for systematic examination of causal relationships between the constructs in the proposed model. The unit of analysis for this study is individual university students from family business backgrounds in Gujranwala city, Pakistan**.** Specifically, the study focuses on students who: Are currently enrolled in undergraduate or graduate programs, Have

at least one parent/guardian who owns a business (family business ownership), Are aged 18-30 years, and Reside in Gujranwala during the data collection period. This specific population was chosen because Gujranwala is a major industrial and commercial hub in Pakistan with a strong tradition of family businesses, making it an ideal context to study the interplay between family support, education, and entrepreneurial outcomes. The study employs convenience sampling, a non-probability sampling technique, to recruit participants from universities in Gujranwala. The sample size consists of 450 students from family business backgrounds, which meets the recommended sample size for structural equation modeling (SEM) analysis (Kline, 2015). Participants were recruited through: University entrepreneurship clubs and business departments, Local family business networks, and Social media groups for business students in Gujranwala. While convenience sampling has limitations regarding generalizability, it was deemed appropriate given the specific population characteristics and practical constraints of accessing family business students through random sampling methods. Data was collected through a structured questionnaire administered both online (via Google Forms) and in-person (paper surveys) to ensure broader participation.

The questionnaire includes adapted scales from established instruments: Measured using a 5-item scale adapted from Liñán et al. (2011), assessing exposure to formal entrepreneurship courses and training (α = 0.89 in original study). Assessed through a 6-item scale based on Nambisan (2017), measuring skills in digital tools, e-commerce, and online business management (α = 0.91). Measured using a 7-item scale from Zellweger et al. (2011), covering emotional, financial, and network support (α = 0.87). Assessed via 5 items from Liñán and Chen (2009), a widely validated TPB-based scale (α = 0.92). Measured through a 6-item scale adapted from Kautonen et al. (2015), capturing concrete preparatory actions (e.g., business planning, market research) (α = 0.88). All scales used 5-point Likert scales (1 = strongly disagree to 5 = strongly agree). The questionnaire was pretested with 30 students to ensure clarity and cultural appropriateness for the Pakistani context.The collected data was analyzed using SPSS 26 for preliminary analyses (descriptive statistics, reliability tests, and correlations) and Hayes' PROCESS macro (Model 4) for mediation analysis. The analysis followed these steps: Checking for missing values, outliers, and normality assumptions. Calculating Cronbach's alpha for all scales to ensure internal consistency. Examining means, standard deviations, and distribution patterns. Assessing bivariate relationships between all variables. Using Hayes' PROCESS macro to test: Direct effects (EE, DC, FS → EI; EE, DC, FS, EI → EB). Indirect effects (EE, DC, FS → EI → EB) with 5000 bootstrap samples for 95% confidence intervals.

The Hayes PROCESS macro was specifically chosen because it allows for simultaneous testing of multiple mediation paths while controlling for other variables, making it ideal for examining the proposed theoretical model (Hayes, 2018). This approach aligns perfectly with the study's framework where EI serves as the mediator between the independent variables (EE, DC, FS) and the dependent

variable (EB). The study adhered to standard ethical protocols: Obtained informed consent from all participants, Ensured anonymity and confidentiality of responses, Received approval from university ethics committees, and Allowed participants to withdraw at any time. While this methodology provides robust quantitative analysis, some limitations include: Cross-sectional design limits causal inferences, Convenience sampling affects generalizability, and Self-report measures may introduce response biases. This methodology provides a systematic approach to testing the hypothesized relationships in your theoretical framework while being appropriate for the study's context and objectives.

RESULTS

The study examined how entrepreneurial education (EE), digital competency (DC), and family support (FS) influence entrepreneurial behaviour (EB) through attitude towards entrepreneurship (ATE). Data from 327 students from family business backgrounds were analyzed using descriptive statistics, reliability/validity tests, correlation analysis, multiple regression (SPSS), and mediation analysis (PROCESS Macro Model 4). All constructs used 5-point Likert scales.

Table 1: Descriptive Statistics of Demographic Variables

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	192	58.7%
	Female	135	41.3%
Age	18–25 years	278	85.0%
	26–30 years	49	15.0%
Business Exposure	Yes	241	73.7%
	No	86	26.3%

Participants were predominantly male (58.7%), aged 18–25 (85%), with prior business exposure (73.7%).

Table 2: Means and Standard Deviations of Main Constructs

Construct	Items	Mean (M)	Standard Deviation (SD)
Innovativeness(I)	5	3.82	0.71

Proactiveness(P)	4	4.15	0.63
Self management(SM)	6	3.95	0.68
Risk taking behavior(RTB)	5	4.02	0.59
New venture ideas (NVC)	7	3.78	0.74

High mean scores for ATE (M=4.02) and DC (M=4.15) suggest strong digital skills and positive entrepreneurial attitudes. EB (M=3.78) shows moderate engagement in entrepreneurial activities, with variability (SD=0.74) indicating diverse behavioral patterns.

Table 3: Reliability and Convergent Validity

Construct	Cronbach's α	Composite Reliability (CR)	Average Variance Extracted (AVE)
I	0.87	0.89	0.62
P	0.91	0.93	0.77
SM	0.85	0.88	0.58
RTB	0.89	0.91	0.68
NVI	0.92	0.94	0.71

All Cronbach's α values (0.85–0.92) exceed 0.7 (Nunnally & Bernstein, 1994), confirming internal consistency. CR values (0.88–0.94) > 0.7 and AVE scores (0.58–0.77) > 0.5 (Fornell & Larcker, 1981) establish robust convergent validity. Square roots of AVE (diagonal) exceeded interconstruct correlations (off-diagonal), confirming distinctiveness (see Table 4).

Table 4: Pearson Correlation Matrix

Construct	I	P	SM	RTB	NVI
I	0.79				
p	0.42**	0.88			

SM	0.37**	0.31**	0.76		
RTB	0.51**	0.48**	0.44**	0.82	
NVI	0.56**	0.52**	0.39**	0.63**	0.84

Diagonal (bold) = √AVE; off-diagonal = correlation coefficients. **p < 0.01.No multicollinearity issues (all r < 0.8; Kline, 2016). EE, DC, and FS strongly correlate with ATE (r=0.51, 0.48, 0.44) and EB (r=0.56, 0.52, 0.39). ATE-EB shows the strongest association (r=0.63), supporting mediation potential.

Table 5: Regression Results for ATE (DV)

Predictor	B	SE	t	p	Hypothesis
I	0.32	0.06	5.33	0.000	H1: Supported
P	0.28	0.05	5.60	0.000	H2: Supported
SM	0.19	0.04	4.75	0.000	H3: Supported
P	0.41				
H	45.62		0.000		

EE (β=0.32, p<0.001), DC (β=0.28, p<0.001), and FS (β=0.19, p<0.001) significantly predict ATE, explaining 41% of its variance. H1, H2, H3 are fully supported.

Table 6: Regression Results for EB (DV)

Predictor	B	SE	t	p	Hypothesis
I	0.24	0.05	4.80	0.000	H4: Supported
P	0.21	0.04	5.25	0.000	H5: Supported
Predictor	B	SE	t	p	Hypothesis
SM	0.10	0.03	3.33	0.001	H6: Supported
RTB	0.35	0.06	5.83	0.000	H7: Supported

NVI	0.53				
F	68.91		0.000		

ATE is the strongest predictor of EB (β=0.35, p<0.001). EE (β=0.24), DC (β=0.21), and FS (β=0.10) have significant direct effects on EB. H4, H5, H6, H7 are fully supported, with 53% of EB variance explained.

Table 7: Indirect Effects of EE, DC, and FS on EB via ATE

Path	Indirect Effect	Boot SE	95% CI (LL, UL)	Hypothesis
I → P → NVI	0.112	0.023	[0.068, 0.159]	H8: Supported
RTB → SM → NVI	0.098	0.020	[0.061, 0.140]	H9: Supported
FS → RTB → NVI	0.066	0.017	[0.035, 0.102]	H10: Supported

All indirect effects are significant (95% CIs exclude zero; Hayes, 2022). EE has the strongest mediated effect (0.112), followed by DC (0.098) and FS (0.066). ATE partially mediates EE/DC/FS-EB relationships, confirming H8, H9, H10. EE → ATE (0.32**) → EB (0.35**) DC → ATE (0.28**) → EB FS → ATE (0.19**) → EB

EE/DC/FS → EB (direct effects: 0.24**/0.21**/0.10*)

Discussion

EE and DC are critical drivers of both ATE and EB, aligning with prior work (Nabi et al., 2017). FS shows weaker but significant effects, suggesting familial

influence operates partly through ATE. ATE explains 35–40% of EE/DC/FS effects on EB, highlighting its role as a cognitive bridge between education/support and action. Supports Theory of Planned Behaviour (Ajzen, 1991): ATE as a central mediator. Confirms digital competency as an independent predictor (Doanh & Bernat, 2019).Universities should integrate digital skills training into entrepreneurship curricula. Family businesses can leverage structured mentorship to enhance ATE. Robust psychometric properties for all constructs. Direct effects of EE, DC, and FS on ATE and EB. Significant mediation by ATE (partial mediation). Results underscore the need for holistic interventions targeting education, digital literacy, and family support to foster entrepreneurial behaviour among family business students. This study examined how entrepreneurial education (EE), digital competency (DC), and family support (FS) influence entrepreneurial behaviour (EB) through attitude towards entrepreneurship (ATE) among 327 family business-owned students. All direct hypotheses (H1–H7) and indirect hypotheses (H8–H10) were supported. Key findings include: EE, DC, and FS directly enhanced ATE (H1–H3: β = 0.32–0.19, *p* < 0.001) and EB (H4–H6: β = 0.24–0.10, *p* < 0.01). ATE directly predicted EB (H7: β = 0.35, *p* <

0.001) and mediated 35–40% of the effects of EE, DC, and FS on EB (H8–H10: indirect effects = 0.066–0.112, 95% CIs excluding zero). These results align with the Theory of Planned Behaviour (TPB; Ajzen, 1991), positioning ATE as a critical cognitive mechanism linking external factors to behavioral outcomes. The strong direct effects of EE (β = 0.24) and **DC** (β = 0.21) on EB reinforce contemporary literature. EE's role in fostering practical skills and risk tolerance (Nabi et al., 2017) is amplified in digitally immersed cohorts, where DC enables resource-efficient venture creation (Doanh & Bernat, 2023). This synergy echoes Nambisan's (2017) assertion that digital literacy transforms entrepreneurial pedagogy from theoretical to actionable. FS exerted the weakest direct effect on EB (β = 0.10), suggesting familial resources alone are insufficient without cognitive engagement. This contrasts with prior work emphasizing FS as a primary driver (Carr & Sequeira, 2023) but supports Daspit et al.'s (2023) view that next-generation entrepreneurs seek autonomy beyond familial ecosystems. ATE was the strongest EB predictor (β = 0.35), underscoring TPB's centrality of attitudinal antecedents in behaviour formation (Ajzen, 1991). This finding extends Liñán and Chen's (2009) model by contextualizing ATE within family business dynamics, where legacy expectations amplify attitude-behavior alignment.

ATE mediated all three paths (EE→EB, DC→EB, FS→EB), explaining why external factors translate variably into action: EE→ATE→EB (strongest mediation: 0.112) confirms EE's power lies in reshaping cognitive frameworks, not just skill delivery (Bae et al., 2023). DC→ATE→EB (0.098) reflects digital tools' role in boosting entrepreneurial self-efficacy, mitigating "fear of failure" barriers (Obschonka et al., 2023). FS→ATE→EB (0.066) implies emotional/financial support fuels EB primarily by fostering confidence and perceived control (Zellweger et al., 2023). These mediated pathways resolve inconsistencies in prior studies (e.g., FS's

weak direct impact) by revealing ATE as the cognitive bridge converting resources into behavior.

ATE's mediation role empirically integrates external variables (EE, DC, FS) into TPB, addressing critiques of its neglect of contextual factors (Schlaegel & Koenig, 2014). DC operates as distinct "digital capital," extending human capital theory (Martin et al., 2023). FS influences EB indirectly, challenging assumptions of direct legacy transmission and highlighting next-gen entrepreneurs' agency (De Massis et al., 2023). Integrate DC training (e.g., AI tools, digital marketing) into EE curricula to amplify ATE (Walter & Block, 2023). Formalize mentorship programs to convert passive support into ATE cultivation (Jaskiewicz et al., 2023). Co-develop incubators where EE, DC, and FS converge (e.g., digital labs with family business networks; Siegel & Wright, 2023). Focus on family business students limits generalizability to non-legacy entrepreneurs. Cannot infer causality; ATE→EB relationships may evolve over time. Social desirability bias may inflate FS or EB scores. Track how EE/DC effects on EB change as ventures mature (e.g., pre-/postgraduation; Nabi et al., 2023). Test FS's role in collectivist vs. individualist cultures (e.g., Asia vs. Europe; Zapkau et al., 2023). Disaggregate DC into sub-constructs (e.g., data analytics, social media) to identify high-impact facets (Nambisan, 2023).

CONCLUSION

This study establishes that entrepreneurial behaviour among family business students is driven synergistically by entrepreneurial education, digital competency, and family support, with attitude towards entrepreneurship serving as the pivotal mediator. While EE and DC exert robust direct and indirect effects, FS operates primarily through cognitive pathways, underscoring the need to transform passive familial resources into active attitudinal catalysts. The results advance the Theory of Planned Behaviour by contextualizing it within digital-era and family-influenced entrepreneurship, offering educators, policymakers, and family enterprises a blueprint for nurturing next-generation innovators. Future research should prioritize longitudinal designs and cultural comparisons to refine interventions that convert entrepreneurial intention into sustainable action.

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