P-ISSN: 2986-5190
E-ISSN: 2986-5700

Volume 4, Nomor 3, September 2026

Entrepreneurial Mind-set, Risk Taking Behaviour and Innovations in Start-Ups : Effect of Creative Self Efficacy as Mediating in PLS –SEM

Rakhi Gupta*[1], Uma Barman[2], Divya Chowdhry[3]

[1,2] Faculty of Commerce, Banaras Hindu University, Varanasi, Uttar Pradesh, India
[3] Jagran Institute of Management, Kanpur, Uttar Pradesh, India
*e-mail: rakhigupta15@gmail.com[1], Email-commerce.org.in@gmail.com[2], divya201234@gmail.com[3]

*(**Received**: July 14, 2026; **Revised**: August 19, 2026; **Accepted**: September 15, 2026)*

ABSTRACT

Innovation performance is essential for start-up sustainability because entrepreneurs must continuously adapt, experiment, and develop creative solutions under uncertain and competitive conditions. However, entrepreneurial characteristics alone may not fully explain differences in innovation outcomes because psychological capabilities may determine how entrepreneurs transform ideas into innovative actions. This study examines the influence of entrepreneurial mindset and risk-taking behaviour on innovation performance by considering the role of creative self-efficacy among start-up entrepreneurs. A quantitative cross-sectional research design was employed using data collected from 300 start-up entrepreneurs and founders in Uttar Pradesh, India. Data were gathered through a structured questionnaire and analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM). The results indicate that creative self-efficacy has a significant positive effect on innovation performance. Entrepreneurial mindset significantly influences both creative self-efficacy and innovation performance, demonstrating its importance in developing innovative capabilities among entrepreneurs. Risk-taking behaviour significantly influences creative self-efficacy; however, its direct effect on innovation performance is not statistically significant. These findings highlight that willingness to accept uncertainty does not automatically generate innovation outcomes without supporting psychological capabilities. This study contributes to entrepreneurship literature by emphasizing the importance of integrating entrepreneurial characteristics and psychological resources in explaining start-up innovation performance. The findings also provide practical implications for entrepreneurship education, incubation programs, and start-up development initiatives by highlighting the need to strengthen both entrepreneurial thinking and creative confidence.

Keywords: Creative Self-Efficacy; Entrepreneurial Mindset; Innovation Performance; Risk-Taking Behaviour; Start-Ups

This is an open access article under the CC BY-SA license

1. INTRODUCTION

Innovation performance has become an important determinant of start-up sustainability because new ventures operate in highly uncertain, dynamic, and competitive environments. Unlike established firms that generally possess structured resources, organizational routines, and accumulated capabilities, start-ups often depend on entrepreneurs' personal characteristics, cognitive abilities, and psychological resources to identify opportunities and develop innovative solutions (Kuratko et al., 2023; Caputo et al., 2025). In emerging entrepreneurial ecosystems, innovation capability becomes increasingly important because start-ups must continuously adapt to technological changes, shifting customer demands, and competitive pressures with limited resources (Kraus et al., 2022; Nambisan et al., 2021). Therefore, understanding

the factors that encourage innovation performance remains an important issue in entrepreneurship research because entrepreneurial activities require continuous adaptation, experimentation, and creative problem-solving (Anderson et al., 2021). Among the factors receiving increasing attention are entrepreneurial mindset and risk-taking behaviour because both characteristics influence how entrepreneurs perceive opportunities, respond to uncertainty, and pursue innovative activities (Covin & Wales, 2021; Kuratko et al., 2023).

Entrepreneurial mindset reflects an individual's ability to recognize opportunities, think proactively, develop creative approaches, and adapt effectively to changing conditions (Skaggs et al., 2012; Kuratko et al., 2023). Entrepreneurs with a strong entrepreneurial mindset tend to interpret uncertainty as an opportunity for exploration rather than merely a limitation. This cognitive orientation encourages entrepreneurs to challenge existing assumptions, search for new possibilities, and engage in innovative problem-solving processes. Entrepreneurial mindset also enables individuals to evaluate market changes, identify emerging opportunities, and develop adaptive strategies that support entrepreneurial actions (Adomako et al., 2021). Previous studies have demonstrated that entrepreneurial mindset contributes to innovation by strengthening opportunity recognition, entrepreneurial behaviour, and innovation-oriented decision-making (Hanandeh et al., 2021; Abdullah et al., 2024). However, entrepreneurial mindset alone may not fully explain differences in innovation outcomes among entrepreneurs because cognitive orientation requires additional psychological capabilities that enable individuals to transform ideas into implemented innovations (Bandura, 1997; Tierney & Farmer, 2002).

Risk-taking behaviour represents another important entrepreneurial characteristic associated with innovation activities. In start-up environments, entrepreneurs frequently make decisions under conditions of uncertainty, incomplete information, and unpredictable market changes. Therefore, entrepreneurs must demonstrate willingness to accept potential failure and allocate resources when pursuing new opportunities (Giaccone & Magnusson, 2022). Risk-taking behaviour may encourage innovation because entrepreneurs who are willing to face uncertainty are more likely to experiment, explore alternative strategies, and introduce new products, services, or processes (Llopis et al., 2013). However, previous research has reported inconsistent findings regarding the relationship between risk-taking behaviour and innovation performance. Some studies indicate that risk-taking directly enhances innovation because it encourages exploration and opportunity exploitation (Covin & Wales, 2021), whereas other studies suggest that risk-taking alone may not guarantee innovation because entrepreneurs require additional cognitive and psychological resources to transform uncertainty into valuable outcomes (Elsayed et al., 2023; Wales et al., 2021). These inconsistent findings indicate the need to investigate the psychological mechanism underlying how entrepreneurial characteristics contribute to innovation performance.

One psychological factor that may explain this mechanism is creative self-efficacy. Based on Social Cognitive Theory, self-efficacy represents individuals' beliefs regarding their ability to successfully perform actions and achieve desired outcomes (Bandura, 1997). Specifically, creative self-efficacy refers to an individual's confidence in their ability to generate creative ideas and develop innovative solutions (Tierney & Farmer, 2002). Individuals with higher creative self-efficacy tend to demonstrate greater

persistence, confidence, and willingness to experiment when facing complex challenges (Heslin & Klehe, 2006; Newman et al., 2021). In entrepreneurial contexts, creative self-efficacy may function as an internal psychological capability that connects entrepreneurial characteristics with innovation outcomes. Entrepreneurs may possess a strong entrepreneurial mindset and willingness to take risks; however, these characteristics are more likely to contribute to innovation when individuals believe that they have the creative capability to overcome challenges and implement new ideas (Tierney & Farmer, 2002).

Creative self-efficacy is particularly relevant in start-up environments because entrepreneurs often operate under resource constraints and uncertain conditions that require strong psychological capabilities. Unlike large organizations that may rely on established innovation systems, start-ups frequently depend on entrepreneurs' individual creativity, persistence, and adaptive decision-making to sustain innovation activities. Psychological resources allow entrepreneurs to maintain motivation, explore alternative solutions, and continue innovation efforts despite uncertainty and failure risks (Bandura, 1997; Newman et al., 2021). In emerging entrepreneurial contexts such as Uttar Pradesh, India, early-stage entrepreneurs face challenges related to market uncertainty, limited resources, and competitive pressures. Under these conditions, examining creative self-efficacy provides a more comprehensive understanding of how entrepreneurs utilize their characteristics and psychological resources to generate innovation performance.

Although previous studies have extensively investigated the relationship between entrepreneurial characteristics and innovation, several research gaps remain. First, existing studies have predominantly examined the direct relationship between entrepreneurial traits and innovation outcomes, while the psychological processes explaining how these characteristics are transformed into innovation performance remain insufficiently explored (Tierney & Farmer, 2002; Newman et al., 2021). Second, many previous studies have focused on established organizations, large firms, or student populations rather than early-stage start-ups, even though start-ups represent a distinctive context where entrepreneurs directly experience uncertainty, resource limitations, and rapid environmental changes (Caputo et al., 2025). Third, empirical evidence from emerging entrepreneurial regions remains relatively limited compared with research conducted in developed economies. This limitation is important because entrepreneurial characteristics and psychological mechanisms may operate differently depending on institutional environments, resource availability, and ecosystem conditions (McMullen & Shepherd, 2021).

Therefore, this study examines the influence of entrepreneurial mindset and risk-taking behaviour on innovation performance among start-ups by considering the role of creative self-efficacy. Specifically, this research investigates how entrepreneurial mindset and risk-taking behaviour influence creative self-efficacy, how creative self-efficacy contributes to innovation performance, and how entrepreneurial characteristics are associated with innovative outcomes. Using Partial Least Squares Structural Equation Modelling (PLS-SEM), this study provides empirical evidence regarding the psychological pathways that explain innovation development among start-up entrepreneurs in Uttar Pradesh, India. The findings contribute to entrepreneurship literature by highlighting the importance of integrating entrepreneurial characteristics and psychological capabilities in understanding innovation performance. Furthermore,

the study provides practical implications for entrepreneurship educators, start-up incubators, and entrepreneurial support programs by emphasizing the importance of developing not only entrepreneurial orientation but also creative confidence among entrepreneurs.

2. METHOD

Research Design

This study employed a quantitative research approach with a cross-sectional design to examine the relationships among entrepreneurial mindset, risk-taking behaviour, creative self-efficacy, and innovation performance in start-up contexts. The research adopted an explanatory research design because it aimed to investigate the predictive relationships among entrepreneurial characteristics and innovation outcomes, while also examining the psychological mechanism through which creative self-efficacy contributes to innovation performance. The unit of analysis in this study was individual entrepreneurs, particularly start-up founders and early-stage entrepreneurs who are directly involved in business decision-making and innovation activities.

Partial Least Squares Structural Equation Modelling (PLS-SEM) was employed as the analytical approach because it is appropriate for examining complex relationships among multiple latent constructs and evaluating both the measurement and structural models simultaneously. PLS-SEM is particularly suitable for entrepreneurship research involving behavioural and psychological constructs because it enables researchers to assess construct reliability, validity, and predictive relationships within a theoretical model.

Sample and Data Collection

The population of this study consisted of start-up entrepreneurs and founders operating in Uttar Pradesh, India. This context was selected because early-stage entrepreneurs frequently encounter uncertainty, limited resources, and competitive pressures that require strong entrepreneurial characteristics and psychological capabilities to develop innovative outcomes. Therefore, examining start-up founders provides an appropriate setting for understanding how entrepreneurial mindset, risk-taking behaviour, and creative self-efficacy influence innovation performance.

A total of 300 entrepreneurs participated in this study. Respondents were selected using a purposive sampling approach based on the following criteria: (1) participants were founders or individuals actively involved in managing start-up ventures, and (2) their businesses were in the early development stage. Data were collected using a structured questionnaire distributed through start-up incubators, entrepreneurship networks, and entrepreneurial community events in Uttar Pradesh, India. The respondents represented diverse business sectors, including technology, services, manufacturing, and social enterprises, providing broader representation of the start-up ecosystem.

Research Instrument

Data were collected using a structured questionnaire consisting of measurement items adapted from previously validated scales in entrepreneurship and organizational psychology research. The questionnaire measured four latent constructs: entrepreneurial mindset, risk-taking behaviour, creative self-efficacy, and innovation performance.

All constructs were measured using multiple indicators on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Entrepreneurial mindset items assessed entrepreneurs' ability to recognize opportunities, think proactively, and respond creatively to uncertain situations. Risk-taking behaviour items measured entrepreneurs' willingness to make decisions under uncertainty and accept potential risks in pursuing opportunities. Creative self-efficacy items evaluated individuals' confidence in generating

creative ideas and developing innovative solutions, while innovation performance items measured the ability of entrepreneurs to generate and implement new ideas, products, or processes.

The measurement items were adapted from established literature to ensure conceptual consistency and measurement validity. Before hypothesis testing, the reliability and validity of the measurement model were assessed through PLS-SEM procedures.

Ethical Consideration and Informed Consent

This study involved human participants; therefore, ethical principles were considered throughout the research process. The study followed the ethical principles outlined in the Declaration of Helsinki regarding voluntary participation, confidentiality, and responsible data management. Participation was voluntary, and respondents were informed about the purpose of the research before completing the questionnaire. Informed consent was obtained from all participants, and respondents' identities were kept confidential throughout the research process.

Data Analysis

The collected data were analyzed using Partial Least Squares Structural Equation Modelling (PLS-SEM) with SmartPLS software. The analysis followed a two-stage approach consisting of measurement model evaluation and structural model evaluation.

First, the measurement model was assessed to evaluate the reliability and validity of the constructs. Internal consistency reliability was examined using Cronbach's alpha and composite reliability values, while convergent validity was assessed through average variance extracted (AVE). Discriminant validity was evaluated using the Fornell-Larcker criterion to confirm that each construct represented a distinct theoretical concept.

Second, the structural model was evaluated to test the hypothesized relationships among entrepreneurial mindset, risk-taking behaviour, creative self-efficacy, and innovation performance. The assessment included path coefficients, t-statistics, p-values, coefficient of determination (R^2), and predictive relevance indicators. The significance of the structural relationships was examined using bootstrapping procedures. Furthermore, the mediating role of creative self-efficacy was evaluated by analyzing the indirect effects between entrepreneurial characteristics and innovation performance.

3. RESULTS AND DISCUSSION

Result

Measurement Model Assessment

Before examining the structural relationships among the constructs, the measurement model was evaluated to assess the reliability and validity of the measurement instruments. The evaluation included internal consistency reliability and convergent validity using Cronbach's alpha, composite reliability (ρa and ρc), and average variance extracted (AVE).

Table 1. Cronbach's Alpha, Composite Reliability (ρa and ρc), and Average Variance Extracted (AVE)

Construct	Cronbach's Alpha	Composite Reliability (ρa)	Composite Reliability (ρc)	Average Variance Extracted (AVE)
Creative Self-Efficacy	0.934	0.934	0.958	0.883
Innovation Performance	0.932	0.933	0.957	0.881

The results presented in Table 1 indicate that all measurement criteria were achieved. The Cronbach's alpha values for Creative Self-Efficacy (0.934) and Innovation Performance (0.932) exceeded the recommended threshold, indicating strong internal consistency. The composite reliability values (ρa and ρc) were also above the acceptable level, confirming the reliability of the constructs. Furthermore, the AVE values for Creative Self-Efficacy (0.883) and Innovation Performance (0.881) exceeded the minimum criterion of 0.50, indicating adequate convergent validity.

Discriminant validity was assessed using the Fornell-Larcker criterion to ensure that each construct represented a distinct concept.

Table 2. Fornell-Larcker Criterion

Construct	Creative Self-Efficacy	Innovation Performance
Creative Self-Efficacy	0.940	
Innovation Performance	0.917	0.939

Table 2 shows that the square root values of AVE for each construct were higher than the correlations between constructs. The square root of AVE for Creative Self-Efficacy was 0.940, while the square root of AVE for Innovation Performance was 0.939. These values were higher than the correlation value between Creative Self-Efficacy and Innovation Performance (0.917), confirming the discriminant validity of the measurement model.

Structural Model Assessment

After confirming the reliability and validity of the measurement model, the structural model was evaluated to examine the hypothesized relationships among Entrepreneurial Mindset, Risk-Taking Propensity, Creative Self-Efficacy, and Innovation Performance. The structural model was analyzed using bootstrapping procedures in PLS-SEM.

Table 3. Path Coefficients, Mean, Standard Deviation, t-values, and p-values

Relationship	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics	P Values
Creative Self-Efficacy → Innovation Performance	0.457	0.441	0.147	3.106	0.002
Entrepreneurial Mindset → Creative Self-Efficacy	0.317	0.316	0.093	3.404	0.001
Entrepreneurial Mindset → Innovation Performance	0.397	0.405	0.118	3.380	0.001
Risk-Taking Propensity → Creative Self-Efficacy	0.644	0.646	0.096	6.716	0.000
Risk-Taking Propensity → Innovation Performance	0.092	0.102	0.129	0.714	0.475

The structural model results presented in Table 3 indicate that Creative Self-Efficacy significantly influences Innovation Performance ($\beta = 0.457$, $t = 3.106$, $p = 0.002$). Entrepreneurial Mindset significantly influences Creative Self-Efficacy ($\beta = 0.317$, $t = 3.404$, $p = 0.001$) and Innovation Performance ($\beta = 0.397$, $t = 3.380$, $p = 0.001$).

Risk-Taking Propensity significantly influences Creative Self-Efficacy ($\beta = 0.644$, $t = 6.716$, $p < 0.001$). However, the relationship between Risk-Taking Propensity and Innovation Performance is not statistically significant ($\beta = 0.092$, $t = 0.714$, $p = 0.475$).

Based on these findings, four proposed relationships demonstrate statistically significant effects, while the direct relationship between Risk-Taking Propensity and Innovation Performance is not supported.

Table 4. Structural Relationship Matrix

Construct	Creative Self-Efficacy	Entrepreneurial Mindset	Innovation Performance	Risk-Taking Propensity
Creative Self-Efficacy			0.457	
Entrepreneurial Mindset	0.317		0.397	
Innovation Performance				
Risk-Taking Propensity	0.644		0.092	

Table 4 presents the structural relationship coefficients among the research constructs. The highest coefficient was observed between Risk-Taking Propensity and Creative Self-Efficacy (0.644), followed by Creative Self-Efficacy and Innovation Performance (0.457), Entrepreneurial Mindset and Innovation Performance (0.397), Entrepreneurial Mindset and Creative Self-Efficacy (0.317), and Risk-Taking Propensity and Innovation Performance (0.092).

Coefficient of Determination (R^2)

The explanatory capability of the structural model was assessed using the coefficient of determination (R^2).

Table 5. R-Square and Adjusted R-Square

Endogenous Construct	R-Square	Adjusted R-Square
Creative Self-Efficacy	0.865	0.865
Innovation Performance	0.882	0.881

Table 5 shows that Creative Self-Efficacy obtained an R^2 value of 0.865, indicating that 86.5% of the variance in Creative Self-Efficacy is explained by the predictor variables included in the model. Innovation Performance obtained an R^2 value of 0.882, indicating that 88.2% of its variance is explained by Entrepreneurial Mindset, Risk-Taking Propensity, and Creative Self-Efficacy.

Collinearity Assessment

The inner model was assessed to evaluate potential multicollinearity among predictor constructs. The Variance Inflation Factor (VIF) values were examined to ensure that the structural model did not contain problematic relationships among independent constructs.

Table 6. Inner Model Matrix

Construct	Creative Self-Efficacy	Entrepreneurial Mindset	Innovation Performance	Risk-Taking Propensity
Creative Self-Efficacy			1.000	
Entrepreneurial Mindset	1.000		1.000	
Innovation				

Construct	Creative Self-Efficacy	Entrepreneurial Mindset	Innovation Performance	Risk-Taking Propensity
Performance				
Risk-Taking Propensity	1.000		1.000	

The results in Table 6 show that all VIF values were 1.000, indicating that multicollinearity was not present among the predictor constructs. These results confirm that the structural model can be interpreted without concerns regarding excessive overlap among the independent variables.

Discussion

This study examined how entrepreneurial mindset and risk-taking propensity influence innovation performance among start-ups by considering the role of creative self-efficacy. The findings demonstrate that entrepreneurial characteristics contribute to innovation outcomes through different psychological and behavioural mechanisms. Specifically, entrepreneurial mindset positively influences both creative self-efficacy and innovation performance, while risk-taking propensity contributes to creative self-efficacy but does not directly enhance innovation performance. Furthermore, creative self-efficacy significantly influences innovation performance, highlighting the importance of entrepreneurs' psychological confidence in developing innovative outcomes.

The significant relationship between creative self-efficacy and innovation performance indicates that entrepreneurs who possess stronger beliefs in their creative abilities are more capable of generating and implementing innovative ideas. This finding supports Bandura's (1997) Social Cognitive Theory, which explains that self-efficacy influences individuals' motivation, persistence, and behavioural performance. In the start-up context, entrepreneurs frequently encounter uncertain situations that require continuous experimentation and problem-solving. Creative self-efficacy provides the psychological foundation that enables entrepreneurs to approach challenges with confidence, persist when facing failure, and explore alternative solutions. Therefore, innovation performance is not only determined by external resources or market opportunities but also by entrepreneurs' internal belief that they are capable of creating valuable solutions.

The findings also confirm that entrepreneurial mindset significantly influences creative self-efficacy. This relationship suggests that entrepreneurs who demonstrate opportunity recognition, proactive thinking, and adaptability tend to develop stronger confidence in their creative capabilities. Entrepreneurial mindset encourages individuals to interpret uncertainty as an opportunity for learning and exploration rather than merely as a threat. Through continuous engagement with entrepreneurial challenges, individuals develop greater confidence in their ability to generate new ideas and solve complex problems. This finding extends previous entrepreneurship research by showing that entrepreneurial mindset functions not only as a cognitive orientation that supports entrepreneurial actions but also as a psychological resource that strengthens creative confidence.

Furthermore, entrepreneurial mindset was found to have a significant direct effect on innovation performance. This finding indicates that entrepreneurs with stronger entrepreneurial thinking are more likely to engage in innovation-related activities. Entrepreneurs who actively identify opportunities, challenge existing approaches, and respond flexibly to environmental changes are better positioned to develop new products, services, or processes. This result is consistent with previous studies suggesting that entrepreneurial mindset supports innovation by enhancing opportunity exploration and creative problem-solving capabilities. The finding reinforces the argument that entrepreneurial cognition represents an important foundation for innovation activities, particularly in start-up environments where entrepreneurs must make strategic decisions under uncertain conditions.

The relationship between risk-taking propensity and creative self-efficacy was also found to be significant. This finding suggests that entrepreneurs who are more willing to accept uncertainty and potential failure tend to develop stronger confidence in their creative capabilities. Risk-taking behaviour may encourage entrepreneurs to engage in experimentation and explore unfamiliar alternatives, which can gradually strengthen their perception of creative competence. In other words, willingness to face uncertainty may provide entrepreneurs with experiences that enhance their confidence in generating innovative solutions. This finding highlights that risk-taking behaviour has an important psychological dimension beyond its behavioural characteristics.

However, the direct relationship between risk-taking propensity and innovation performance was not significant. This result indicates that willingness to take risks alone does not automatically produce innovation outcomes. Although risk-taking is often considered a fundamental entrepreneurial characteristic, excessive emphasis on risk orientation without adequate cognitive and psychological capabilities may not lead to successful innovation. Start-up innovation requires more than the willingness to make uncertain decisions; entrepreneurs also need the ability to evaluate opportunities, develop creative solutions, and transform ideas into practical outcomes. Therefore, this finding provides a more nuanced understanding of the role of risk-taking in entrepreneurship by suggesting that risk orientation may require complementary capabilities to contribute effectively to innovation performance.

The insignificant relationship between risk-taking propensity and innovation performance also contributes to the ongoing discussion regarding the complex role of risk behaviour in entrepreneurship. Previous studies have produced mixed findings regarding whether risk-taking directly enhances innovation. While some studies emphasize that risk acceptance encourages experimentation and exploration, other research suggests that risk-taking outcomes depend on additional contextual and psychological factors. The current findings support the latter perspective by indicating that risk-taking may be more closely associated with entrepreneurs' internal confidence rather than directly determining innovation performance.

Overall, this study contributes to entrepreneurship literature by demonstrating that innovation performance among start-ups is shaped not only by entrepreneurial characteristics but also by psychological capabilities. The findings highlight that entrepreneurial mindset has both cognitive and behavioural implications, while creative self-efficacy represents an important psychological capability associated with innovation outcomes. At the same time, the results indicate that risk-taking behaviour should not be interpreted as an automatic driver of innovation because its contribution may depend on whether entrepreneurs possess sufficient creative confidence and problem-solving capability.

From a theoretical perspective, this study extends entrepreneurial cognition and social cognitive perspectives by integrating entrepreneurial mindset, risk-taking propensity, and creative self-efficacy into a single framework for explaining innovation performance. The findings suggest that understanding innovation in start-up contexts requires attention to both what entrepreneurs do and how entrepreneurs perceive their own capabilities. This perspective provides a broader explanation of innovation development by emphasizing the interaction between entrepreneurial orientation and psychological resources.

4. CONCLUSIONS AND SUGGESTION

This study concludes that entrepreneurial characteristics and psychological capabilities play important roles in explaining innovation performance among start-ups. The findings demonstrate that entrepreneurial mindset positively influences both creative self-efficacy and innovation performance, indicating that entrepreneurs who are able to recognize opportunities, think proactively, and adapt to uncertainty are more likely to develop innovative outcomes.

Creative self-efficacy also contributes positively to innovation performance, highlighting the importance of entrepreneurs' confidence in their ability to generate and implement creative solutions. Meanwhile, risk-taking propensity strengthens creative self-efficacy but does not directly influence innovation performance, suggesting that willingness to accept uncertainty alone may not be sufficient to produce innovation without adequate cognitive and psychological capabilities. These findings contribute to entrepreneurship research by emphasizing the importance of integrating behavioural characteristics and psychological resources when explaining innovation development in start-up contexts. Practically, start-up founders, entrepreneurship educators, and incubator programs are encouraged to develop not only entrepreneurial orientation but also creative confidence through mentoring, experiential learning, and innovation-focused training activities. Future research may extend this study by employing longitudinal designs, examining different entrepreneurial contexts, and incorporating additional factors such as entrepreneurial learning, innovation climate, or digital capabilities to provide a broader understanding of the mechanisms that support start-up innovation performance.

REFERENCES

Abdullah, A., Taliang, A., Efendi, B., Kasmi, M., & Aman, A. (2024). Examining the effects of entrepreneurial mindset, digital marketing innovation and networking on SME performance. *Journal of System and Management Sciences, 14*(6), 113–127.

Anderson, N., Potočnik, K., & Zhou, J. (2021). Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management, 47*(1), 3–28. https://doi.org/10.1177/0149206314527128

Bandura, A. (1997). *Self-efficacy: The exercise of control*. W. H. Freeman.

Caputo, A., Nguyen, V. H. A., & Delladio, S. (2025). Risk-taking, knowledge, and mindset: Unpacking the antecedents of entrepreneurial intention. *International Entrepreneurship and Management Journal, 21*(1), 48.

Covin, J. G., & Wales, W. J. (2021). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. *Entrepreneurship Theory and Practice, 45*(2), 257–270. https://doi.org/10.1177/1042258720923533

Covin, J. G., & Wales, W. J. (2021). Crafting high-impact entrepreneurial orientation research: Some suggested guidelines. Entrepreneurship Theory and Practice, 45(2), 257–270. https://doi.org/10.1177/1042258720923533

Elsayed, A. M., Zhao, B., Goda, A. E. M., & Elsetouhi, A. M. (2023). The role of error risk taking and perceived organizational innovation climate in the relationship between perceived psychological safety and innovative work behavior: A moderated mediation model. *Frontiers in Psychology, 14*, 1042911. https://doi.org/10.3389/fpsyg.2023.1042911

Ferdousi, F., Rahman, M. Z., & Qamruzzaman, M. (2025). The role of business education in shaping entrepreneurial intentions: Examining psychological and contextual determinants among university students in Bangladesh. *Frontiers in Education, 10*, 1536604. https://doi.org/10.3389/feduc.2025.1536604

Giaccone, S. C., & Magnusson, M. (2022). Unveiling the role of risk-taking in innovation: Antecedents and effects. *R&D Management, 52*(1), 93–107. https://doi.org/10.1111/radm.12485

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial Least Squares Structural Equation Modeling (PLS-SEM) Using R: A Workbook*. Springer.

Hanandeh, R., Alnajdawi, S. M., Almansour, A., & Elrehail, H. (2021). The impact of entrepreneurship education on innovative start-up intention: The mediating role of

entrepreneurial mindsets. *World Journal of Entrepreneurship, Management and Sustainable Development, 17*(4), 856–871. https://doi.org/10.1108/WJEMSD-07-2020-0085

Heslin, P. A., & Klehe, U. C. (2006). Self-efficacy. In S. G. Rogelberg (Ed.), *Encyclopedia of Industrial/Organizational Psychology* (Vol. 2, pp. 705–708). Sage Publications.

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2021). Digital transformation: An overview of the current state of the art of research. *SAGE Open, 11*(3), 1–15. https://doi.org/10.1177/21582440211047576

Kraus, S., Jones, P., Kailer, N., Weinmann, A., Chaparro-Banegas, N., & Roig-Tierno, N. (2022). Digital transformation: An overview of the current state of the art of research. SAGE Open, 12(1), 1–15. https://doi.org/10.1177/21582440211047576

Kuratko, D. F., Hornsby, J. S., & McKelvie, A. (2023). Entrepreneurial mindset in corporate entrepreneurship: Forms, impediments, and actions for research. *Journal of Small Business Management, 61*(1), 132–154. https://doi.org/10.1080/00472778.2021.1949647

Llopis, O., Garcia-Granero, A., Fernández-Mesa, A., & Alegre, J. (2013). Managers' risk-taking propensity and innovation in organizations: The mediating influence of employees' perceived risk-taking climate. *35th DRUID Celebration Conference Proceedings*, 17–19.

McMullen, J. S., & Shepherd, D. A. (2021). Entrepreneurial action and the role of uncertainty in opportunity evaluation. *Academy of Management Review, 46*(1), 1–25.

Nambisan, S., Wright, M., & Feldman, M. (2021). The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes. Research Policy, 50(7), 104134. https://doi.org/10.1016/j.respol.2021.104134

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2021). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes. *Journal of Vocational Behavior, 110*, 403–419.

Newman, A., Obschonka, M., Schwarz, S., Cohen, M., & Nielsen, I. (2021). Entrepreneurial self-efficacy: A systematic review of the literature on its theoretical foundations, measurement, antecedents, and outcomes. Journal of Vocational Behavior, 110, 403–419. https://doi.org/10.1016/j.jvb.2018.05.012

Schunk, D. H., & Meece, J. L. (2006). Self-efficacy development in adolescence. In F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (pp. 71–96). Information Age Publishing.

Singh, R., Nika, A. S., & Bashir, N. U. (2024). Impact of entrepreneurial learning on tourism business performance: Exploring mediating role of innovation capabilities through PLS-SEM. *Journal of Quality Assurance in Hospitality & Tourism*, 1–32.

Skaggs, P., Fry, R., & Wright, G. (2012). Creating a mindset for innovation. *Journal of Strategic Innovation and Sustainability, 7*(3), 84–94.

Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. *Academy of Management Journal, 45*(6), 1137–1148. https://doi.org/10.2307/3069429

Wales, W. J., Kraus, S., Filser, M., Stöckmann, C., & Covin, J. G. (2021). The status quo in entrepreneurial orientation research: Conversational landmarks and theoretical directions. Entrepreneurship Theory and Practice, 45(2), 319–338. https://doi.org/10.1177/1042258720947753