

Perceived Environmental Unpredictability and Strategic Flexibility among Entrepreneurs: A Cross-sectional Correlational Study

Sumayya Shakir ^{1*} Qurat ul Ain Aslam Khan ² Farhia Jabbar ³

¹ Lecturer, Department of Psychology, Lahore Garrison University, Lahore, Punjab, Pakistan.

Email: sumayyashakir65@gmail.com

² Lecturer, Department of Business Administration, Fazaia Bilquis College of Education for Women, PAF Nur Khan (Affiliated with Air University), Rawalpindi, Punjab, Pakistan. Email: quratsaeed1@gmail.com

³ Researcher, Greater Manchester Business School, University of Greater Manchester, England, United Kingdom.

Email: farhijabbar2024@gmail.com

ABSTRACT: The study aimed to examine the relationship between perceived environmental unpredictability and strategic flexibility among entrepreneurs in Pakistan, addressing a gap in the existing literature within the Pakistani cultural context. Data were collected from Lahore, Islamabad, and Rawalpindi, with inclusion criteria of a minimum age of 25 years and at least one year of business experience. The study utilized standardized questionnaires to measure the variables. The correlational analysis revealed a significant positive association between perceived environmental unpredictability and strategic flexibility. The independent-samples t-test for gender revealed no significant mean difference in perceived environmental unpredictability, whereas women scored significantly higher on strategic flexibility than men. The findings suggest that strategic flexibility is associated with entrepreneurs' perceptions of environmental unpredictability and may be relevant to their responses to changing business conditions. The study recommends collecting data from other cities in Pakistan, such as Karachi, Faisalabad, Peshawar, Quetta, and Multan, and using a stratified sampling technique to improve the generalizability of the findings.

KEYWORDS: Perceived Environmental Unpredictability, Strategic Flexibility, Entrepreneurs

Introduction

Entrepreneurs face a constantly changing environment across the globe, including changes in customer preferences, technological innovations, marketing strategies, government regulations and taxes, and economic conditions such as inflation (Bessant & Tidd, 2007; Daraojimba et al., 2023; Terchila, 2025; Urbano et al., 2018). To cope with such unpredictable factors, entrepreneurs tend to consistently adapt their strategies to sustain their businesses (Doh et al., 2019; Lant & Mezias, 1990; Murray, 1984).

Perceived environmental unpredictability refers to the entrepreneurs' perception that changes taking place in the external environment are difficult to forecast and to control (Freel, 2005; McKelvie et al., 2011; St-Pierre et al., 2023; Zayadin et al., 2022). Environment unpredictability influences the decision making and resources allocation to meet the organizational objectives and keep the business running productively (Erfani et al., 2018; Khan &

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Corresponding Author

Sumayya Shakir

✉ sumayyashakir65@gmail.com

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Ahmed, 2024; Rafiq-uz-Zaman & Jabeen, 2024). Studies have demonstrated that unpredictability can influence entrepreneurial decision-making by increasing the need for information processing and resource allocation (Kiani, 2024; Shepherd et al., 2014; Townsend et al., 2018).

Strategic flexibility refers to the ability of the organization to adapt or change its tactics, planning, resource relocation, and to counter the environmental changes influencing the market (Rana et al., 2025; Sanchez, 1997; Singh, 2026). It is bond to the organizational adaptability very closely and competitive responsiveness as flexible firms can change their configuration as well as strategic actions as per external challenges faced by the firm (Anning-Dorson & Nyamekye, 2020; Bernardes & Hanna, 2009; Penchev & Kenarova-Pencheva, 2025). For entrepreneurs, such flexibility may include changing products and services, entering new markets, effectively adjusting resources, and adapting and enhancing operations when environmental conditions change (Ireland & Webb, 2007; Hitt et al., 1998; Ramya et al., 2025).

Studies have reported that gender differences also exist when it comes to changes in the business environment and demand for strategic planning and execution. Previous research has demonstrated that women entrepreneurs are more likely to take risks, make effective decisions, recognize opportunities, and respond to uncertainty in an effective manner to counter it (Khan et al., 2021; Reichert, 2021). Women entrepreneurs have also been reported to follow different patterns of resource reallocation, making connections, and adaptation to consistent changing business climate compared with men (Rehman & Qamar, 2024; Rizvi et al., 2024). However, some other studies have reported that men are more prone to take effective decision to the consistent changing business environment and are more emotionally stable, suggesting that cultural and environmental factors may shape these differences (Chochoiek & Rosendahl Huber, 2024; Zona et al., 2023). Therefore, examining gender differences in perceived environmental unpredictability and strategic flexibility in the cultural context of Pakistan is essential.

The relationship between perceived environmental unpredictability and strategic flexibility can be explained through Dynamic Capabilities Theory (Teece, 2018; Teece, 2025). The theory suggests that organizations enhance their adaptability by assessing environmental uncertainty, identifying opportunities, and readjusting resources and credentials accordingly. As entrepreneurs perceive greater unpredictability, they are likely to develop flexible strategies to counter unpredictable changes. Previous and recent studies indicated that environmental unpredictability is associated with organizations developing flexible capabilities (Amoa-Gyarteng et al., 2026; Teeter & Sandberg, 2016; Zhang et al., 2002).

There is ample literature on perceived environmental unpredictability and strategic flexibility in Western cultural contexts. However, studies examining these variables in the Pakistani cultural context are limited, particularly among entrepreneurs. The present study aimed to address this gap by examining the relationship between perceived environmental unpredictability and strategic flexibility among entrepreneurs. The study is also expected to provide useful practical implications.

Hypotheses

H1: There is a significant positive association between variables, namely perceived environmental unpredictability and strategic flexibility.

H2: There is a significant mean difference between men and women in perceived environmental unpredictability and strategic flexibility.

Methodology

The study utilized a quantitative cross-sectional design and a purposive sampling technique. The inclusion criteria comprised a minimum age of 25 years, at least one year of business experience, and a minimum educational qualification of a bachelor's degree.

Participants

Out of 250 entrepreneurs approached, 220 completed the questionnaire, yielding a response rate of 88.0%. The mean age of the participants was 35.90 years (SD = 11.43). Regarding gender, 117 (53.2%) participants were men, while 103 (46.8%) were women. In terms of education, 45 (20.5%) participants had a bachelor’s degree, 129 (58.6%) had a master’s degree, 38 (17.3%) had a PhD, and 8 (3.6%) were categorized as 4.00. Regarding city, 117 (53.2%) participants were from Lahore, 61 (27.7%) from Islamabad, and 42 (19.1%) from Rawalpindi. In terms of business type, 20 (9.1%) participants were engaged in retail, 18 (8.2%) in wholesale, 15 (6.8%) in manufacturing, 20 (9.1%) in services, 30 (13.6%) in e-commerce, 13 (5.9%) in food, 15 (6.8%) in hospitality, 23 (10.5%) in construction, 12 (5.5%) in real estate, 11 (5.0%) in information technology, 11 (5.0%) in education, 12 (5.5%) in healthcare, 12 (5.5%) in agriculture, and 8 (3.6%) in transportation.

Instruments

The following instruments were utilized in the Study

Perceived Environmental Uncertainty Scale was used to assess environmental unpredictability. The 28-item scale was adapted from Miles and Snow (1978) and rated on a 7-point Likert scale ranging from 1 = Predictable to 7 = Unpredictable. The scale demonstrated good internal consistency ($\alpha = .87$; Buchko, 1994; Miles & Snow, 1978), while the present study showed excellent reliability ($\alpha = .91$).

Strategic flexibility was assessed using the Strategic Flexibility Scale, a 6-item measure rated on a 5-point Likert scale from 1 = Very Low to 5 = Very High (Zahra et al., 2008). The scale demonstrated good internal consistency ($\alpha = .84$), with $\alpha = .89$ in the present study.

Ethical Considerations and Procedure of the Study

The study adhered to the ethical principles of the Helsinki Declaration. First, the authors of the instruments were contacted via email to obtain permission to use their questionnaires in the study. Subsequently, participants were approached in Lahore, Islamabad, and Rawalpindi based on the researchers’ accessibility. They were provided with a consent form, demographic questionnaire, and study instruments. The consent form clearly stated that participation was voluntary, participants had the right to withdraw at any time, and their confidentiality and anonymity would be maintained. After providing written consent, participants were given the demographic questionnaire and study instruments to complete.

Results

Table 1

Correlations Between Variables (N = 220)

Variables	1	2
1. PEU		.81***
2. Strategic Flexibility		

Note. *** $p < .001$, PEU = Perceived environmental Unpredictability

The table indicates a statistically significant positive relationship between perceived environmental unpredictability and strategic flexibility, $r = .81$, $p < .001$. This suggests that higher levels of perceived environmental unpredictability were associated with higher levels of strategic flexibility among entrepreneurs.

Table 2

Gender Differences with Respect to Study Variables (N = 220)

Variables	Men (n = 117)		Women (n = 103)		<i>t</i>	<i>p</i>	Cohens' <i>d</i>
	Mean	SD	Mean	SD			
PEU	90.22	28.27	95.01	22.74	-1.37	.17	.18
SF	18	7.81	19.97	6.82	-2.00	.04	.26

Note. SD = Standard Deviation, PEU = Perceived Environmental Unpredictability, SF = Strategic Flexibility.

Women scored significantly higher on strategic flexibility than men, $t = -2.00$, $p = .04$, with a small effect size ($d = .26$). No significant gender difference was found in perceived environmental unpredictability, $t = -1.37$, $p = .17$.

Discussion

The correlational analysis supported the first hypothesis, indicating a significant positive association between perceived environmental unpredictability and strategic flexibility ($r = .81^{***}$, $p < .001$). This finding indicates that entrepreneurs who perceive higher environmental unpredictability may be keener to adjust strategies and respond to changing business situations. Strategic flexibility enables the entrepreneur to develop strategies that enable their firm to be responsive under uncertain and resource-limited or scarcity environments (Chaubey, 2025; Shafizadeh, 2024; Shahid et al., 2025). This finding is also consistent with Shahid et al. (2025), emphasizing the role of adaptive organizational processes in Pakistan as an effective method to run the corporate sector effectively.

Women scored significantly higher on strategic flexibility than men, while no significant difference was found in perceived environmental unpredictability. The higher strategic flexibility demonstrated by women may indicate greater flexibility in adapting responses (Herhausen et al., 2020; Mujahid et al., 2026). Research has demonstrated that women with greater flexibility utilize emotional regulation effectively, particularly in the context of a broader range of strategies. However, research has also reported that flexibility is not consistent across different forms of flexibility, as a study reported better performance among men in strategically complex tasks (Sonfield et al., 2001).

Future Directions

The study had several limitations. For instance, only a limited number of cities, namely Lahore, Islamabad, and Rawalpindi, were targeted for data collection, and a purposive sampling technique was used. Future studies are recommended to include other cities in Pakistan, such as Karachi, Peshawar, Quetta, and Multan, to enhance the geographical representation of the sample. The use of online Google Forms may also improve accessibility and facilitate data collection. Furthermore, future studies should consider using a stratified sampling technique to improve the generalizability of the findings. Future research is also recommended to examine emotional regulation as a potential mediator, as entrepreneurs with better emotional regulation may be better able to cope with unpredictable and changing environments and develop appropriate strategies. Emotional regulation may help explain the underlying mechanism linking perceived environmental unpredictability and strategic flexibility.

Conclusion

The study examined the association between perceived environmental unpredictability and strategic flexibility among entrepreneurs in the Pakistani cultural context. The correlational analysis revealed a significant positive association between the two variables, indicating that higher perceived environmental unpredictability was associated with higher strategic flexibility. Furthermore, the analysis of gender differences showed that women scored significantly higher on strategic flexibility than men, whereas no significant mean difference was found in perceived environmental unpredictability. These findings suggest that strategic flexibility is associated with entrepreneurs' perceptions of environmental unpredictability and may be relevant to their responses to changing business conditions. Regular monitoring of market trends, technological innovations, and economic changes may help entrepreneurs respond to changing environmental conditions.

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