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From the Desk of the Chief Editor

The NEHU Journal remains steadfast in its commitment to highlighting rigorous research and review work centered on contemporary multidisciplinary topics. As our academic landscape continues to evolve, our scope embraces the rich diversity of human inquiry across science and technology, social sciences, humanities, economics, and management. Building upon the foundational vision of this journal, we are constantly reminded that the true power of multidisciplinary research emerges not merely from the coexistence of different fields, but from the vital conversations they ignite. Interdisciplinarity encourages us to view global complexity as an intellectual resource rather than an insurmountable barrier. It reminds us that knowledge is a dynamic entity, continually reshaped by the intricate interactions between people, environments, and emerging ideas.

This current issue is a proud continuation of our legacy in fostering such critical interactions. The papers collected in The NEHU Journal XXIII No 2 (2025) offer profound perspectives and cutting-edge innovations that hold the potential to shift paradigms across both academic theory and applied practices. This issue features a collection of nine rigorously peer-reviewed articles and research papers that explore diverse yet deeply interconnected areas. The contributions in this volume span critical themes, including women's entrepreneurship and cognitive business patterns, the macroeconomic implications of pandemic-induced tourism decline, the evolution of fair value accounting, the influence of artificial intelligence on entrepreneurial intentions, global supply chain resilience amid rising geopolitical uncertainty, the development of teaching profession scales for educators, service quality metrics in the airline industry, and transformative approaches to sustainable global health. These contributions represent meaningful advancements in their respective fields, offering actionable insights for academicians, industry practitioners, and students alike. Each article within these pages demonstrates the profound insights gained when different academic traditions intersect, illuminating solutions that might otherwise remain hidden within isolated silos.

Presenting this new issue also requires us to acknowledge the broader, ever-evolving challenges that shape the global academic community today. Rigorous research demands immense dedication, and I want to extend my deepest appreciation to all the authors for entrusting us with their insightful contributions. I am equally grateful to our diligent external referees for upholding the integrity of our peer-review process, and to the entire editorial board for their tireless, behind-the-scenes efforts. Their collective dedication ensures the high standard of quality that our readership has come to expect.

Looking ahead, our vision for The NEHU Journal remains focused on amplifying its global footprint through enhanced digital accessibility, fostering deeper collaborative networks with scholars and institutions worldwide, and championing research that tackles pressing societal and economic concerns. We are continuously striving to strengthen our editorial workflows, encourage thematic issues aligned with emerging global challenges, and expand our network of esteemed reviewers. As the frontiers of knowledge become increasingly interconnected, our journal will continue to evolve to enhance its academic impact and integrity. Above all, we hope this latest issue will inspire fellow scholars to fully embrace the power of interdisciplinary collaboration in understanding and addressing the complex challenges of our time.

Prof. Fameline K. Marak
Chief Editor

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Entrepreneurial Opportunities and Business Performance of Women Entrepreneurs in Manipur

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Abstract

Women entrepreneurship is an important driver of economic growth and personal empowerment, particularly in regions like Manipur. The objective of the present study is to explore the relationship between the entrepreneurial opportunities and business performance among women entrepreneurs in Manipur. Also to study the influence of socio-economic factors on women's entrepreneurial performance. A structure questionnaire was used and a sample of 385 respondents were chosen from different districts of Manipur. Using both descriptive and statistical analyses, the study examined how opportunities and socio-economic conditions contribute to business performance. The results indicate that the success and growth of their enterprises are determined by entrepreneurial opportunities, resource accessibility, and socio-economic environments. It also highlights how better training, increased financial inclusion as well as more market exposure can lead to higher business productivity and greater participation of women entrepreneurship.

Keywords: Women Entrepreneurs, Business Performance, Socio-Economic Factors

Introduction

Women's entrepreneurship has been identified as a new frontier for economic development, social change and poverty alleviation in developing countries (Carranza et al., 2018). Women-led enterprises are a major source of employment generation, value creation and community development (especially in rural and resource-constrained societies) around the world (Jennings & Brush, 2013; Gilda, 2025). Promotion of women entrepreneurship has become of great importance lately in India as a national development priority owing to its prospects for income security, household well-being and gender equality (Sahoo, 2020). However, women entrepreneurs still face many structural, institutional and socio-cultural barriers which impact their opportunities and performance.

The North-Eastern part of India, particularly the State of Manipur is a unique socio-economic set-up for women entrepreneurs. Manipuri women have traditionally been the central players in trade, craft production, agricultural markets, and socio-political movements (e.g. the "Ima Keithel" or Mother's Market). Research has revealed that the social norms that foster women's mobility and leadership have led to a rise in entrepreneurial interests and economic involvement of women in Manipur (Devi, 2025). However, despite this sound cultural

foundation, business growth and performance have been shown to depend on a plethora of contextual factors such as access to resources, institutional support, market conditions and socio-economic constraints (Singh & Pandey, 2024).

Generally, it is accepted that entrepreneurial behaviour, growth and performance are a function of opportunity (Shane & Venkataraman, 2000). Market gaps, availability of resources, changes in the environment and socio-economic conditions create opportunities for individuals to create value. On the other hand, women entrepreneurs have limited access to these due to a variety of gendered constraints such as restricted networks, no or even less training as compared to men as well as lesser exposure towards markets and technology (Panda 2018; Rajamani 2022).

According to empirical studies, women who are aware of higher local opportunities, such as customer demand, community resources, or new market niches, are more likely to undertake entrepreneurial activities and succeed (Annapurna, 2025; Srivastava, 2025). Meanwhile, the combination of individual competences, access to capital, institutional support and experience affects business performance. Research has noted that women-owned businesses are generally small and grow more slowly because of the challenges in obtaining credit, training, markets and policy incentives (Carranza et al., 2018; Gilda, 2025). However, research also indicates that women entrepreneurs with more experience, better skills, and favourable environments can attain high levels of profitability and sustainability (Panda, 2018; Srivastava, 2025).

In such a scenario, there is a need to analyze the effect of entrepreneurial opportunity and socio-economic background on the business performance of women entrepreneurs in Manipur. Studies done at national level show the challenges faced by women entrepreneurs in India, but there is lack of empirical evidence on socio-cultural and economic environment of women entrepreneurship in Manipur. Also, it is worth noting that few studies have statistically investigated between opportunities and actual business performance results in this context. Therefore, the present study tries to fill this gap by assessing the entrepreneurial scenario of women entrepreneurs in Manipur and examining the influence of opportunities and socio-economic conditions on their business performance.

Literature Review

The phrase “women entrepreneurship” is a catch phrase in development circles especially in developing countries where the economic contribution of women entrepreneurs can make a significant addition to income generation, livelihood support and community development. This awareness of the potential impact of women entrepreneurs on regional growth, poverty alleviation and social empowerment has recently been documented (Dey & Maitra, 2025). This diverse engagement across agro-based activities along with small-scale manufacturing, services etc. is emerging from changing socio-economic structures, local resources and family roles (Sahoo 2020; Singh & Pandey 2024) in developing regions. Reviews of literature suggest that opportunities are important to women’s entrepreneurial engagement.

Opportunity-driven entrepreneurship is a new story that is replacing the traditional story that women start businesses because of economic compulsion (Shankar, 2023; Annapurna, 2024). In India, the matrices for abating space of opportunity are widened with accelerated urbanization and development of local markets with better access to education especially in rural and semi-urban geographies (Rajamani, 2022). Studies in several Indian states showed how stimulation for local resources and environmental awareness directly gets embedded in women's mental framework, alleviating their sensitivity to cultural affordances that can identify and pursue viable entrepreneurial opportunities (Prabha et al., 2025; Gangte, 2024). These findings correlate well with contexts such as Manipur where women are also involved in resource based, eco-friendly enterprises which are more community focused. Despite the growth of women entrepreneurship, the literature continues to stress the wide range of socio-cultural and institutional barriers that impede their development. The constraints in women entrepreneurship include conservative gender norms, mobility restrictions and household responsibilities and less power in decision making (Devi, 2025; Gilda, 2025). Geng et al. (2023) provide a comprehensive review of the challenges to women entrepreneurship globally, and confirm that access to finance is one of the most reported barriers and studies show that they also face discrimination, collateral challenges and bureaucratic delays when seeking formal credit (World Bank, 2018; Jones et al., 2018). However, despite the convincing arguments from various scholars that governments and financial institutions have adopted pioneering schemes to uplift women, the implementation rate remains meager owing to lack of awareness amongst the target audience, weak implementations, administrative complexities (Ignited, 2020; Sharma & Tripathi, 2021).

The nature of success for entrepreneurs is also substantially influenced by the institution's support structure such as policy frameworks, training programmes, networking platforms and technology-based support systems. Evidence shows that skill development, knowledge enhancement and market exposure provides women competitive edge and leads to sustainability of business (Popli, 2021; Pradeep & Leela, 2021). Studies in the North-East region in particular suggest that the women are strong entrepreneurs but their potential is poorly utilised due to poor infrastructure, political instability and poorly developed institutional networks (Devi 2025; Gangte 5 2024). The findings of Panda (2018) are supportive that the development and use of competencies in the business, managerial and innovative dimensions significantly predict financial performance as well as non-financial outcomes of women-led firms. Similarly, a systematic review of quality studies by Srivastava (2025) reported that the performance of women entrepreneurs is due to human capital, psychological capital (resilience, confidence & innovativeness), social networking and structural support. Sales growth, profit growth, market expansion, in terms of product performance indicators have been correlated with experience, training, opportunity awareness of the sales force (Keshari & Tiwari 2020; Prasad et al., 2022). Minniti and Naudé (2010) suggest that entrepreneurial education enhances opportunity recognition, decision making capacity and business resilience, which then has a positive effect on performance. The argument is also supported by empirical evidence. Women in India with increased exposure to training and business management skills perform better on sales, financial management and customer retention (Nawaz, 2022).

Another cause of the performance gap is the gender constraint. Cross-national analysis finds that women-owned enterprises tend to be smaller in size and grow more slowly due to limited access to product sectors, resources, and gender biases (Carranza 2018). However, recent studies argue that if women-led firms have equal access to resources, finance and markets, they can be equal to or outperform their male counterparts (Bianchi & Wickham, 2025; Brush et al., 2019). This is especially so in sectors where relational, community based or skills intensive work is valued. Other studies from the Indian North-East revealed varied dimensions of entrepreneurial behaviour. In many parts of Manipur, Meghalaya, and Nagaland, women have dominated traditional markets or produced and managed indigenous trade due to a matrilineal/matrifocal custom (Devi, 2025; Singh, 2023). But the institutions remain incomplete. Personal savings, informal credit and family support are sources of funding for women to maintain their businesses, and social networks are key to the continuity of the enterprise (Gilda, 2025; Sharma et al., 2021). Despite these, high transportation costs, political blockage and limited technology integration continued to impede market growth and sustainability.

The overall literature suggests that women entrepreneurs are working in an ecosystem where opportunities, socio-economic background, personal competency, support by institutions collectively influence performance outcomes. The studies suffer from a major gap in terms of an established empirical association between opportunity conditions and actual business performance of women, particularly in less studied contexts such as Manipur. Most of the research so far has been on challenges/barriers women face in entrepreneurship or motivational and socio-cultural aspects. This has created a gap in understanding how women's access to opportunities and resources results in observable and quantifiable business outcomes.

Objectives of the Study

The main objectives of the study are: The main objectives of the study are:

- I. To analyze the relationship of entrepreneurial opportunities and business performance of women entrepreneurs of Manipur.
- II. To examine the influence of socio-economic factors on women's entrepreneurial performance

Methodology

Research Design

The study was conducted in descriptive and analytical research design to study the relationship between entrepreneurial opportunities and business performance among women entrepreneurs in Manipur. The quantitative approach was used because it allows systematic measurement of variables and statistical testing of the relationships. The study investigated the effects of opportunity-based factors and socio-economic attributes on entrepreneurial performance.

Participants and Sampling

The study population consists of the women entrepreneurs of various districts of Manipur. 385 women entrepreneurs were selected through purposive sampling method, targeting active business owners from sectors like agro-based enterprises, handloom and textiles, handicrafts, food and beverages, services and other small-scale activities. A sample size of 385 was considered sufficient for statistical analysis and met the minimum recommended for correlation and regression modelling.

Data Collection

Structured questionnaires which had items on socio economic characteristics, opportunity related items and business performance indicators were used for data collection. Opportunity and performance questions were measured on a 5-point Likert scale. Demographic variables were measured with categorical or continuous variables. The questionnaire was given personally to obtain accurate responses.

Data Analysis

Data collected was coded and analyzed using SPSS. Descriptive statistics (frequency, percentage, mean and standard deviation) were used to describe the demographic characteristics, opportunity items and performance indicators. The normality of major variables was tested by the Shapiro-Wilk test which confirmed a common non-normal distribution for Likert scale data. Spearman's rho correlation was used to explore the associations between opportunity score, performance score, age and work experience.

The assumption of normality was violated. However, regression is robust when the sample size is large (Lumley et al., 2002; Schmider et al., 2010) and therefore simple linear regression was conducted. Regression analysis was used to test whether the total entrepreneurial opportunity score predicted performance of the business. All the tests were performed at 5% significance level.

Results

Descriptive Statistics

The study was carried out on 385 women entrepreneurs from different districts of Manipur. Respondents averaged 43.45 years of age (SD=12.17) and had completed 12.54 years of schooling. The average length of time participants had worked was 13.24 years.

The sample comprised mainly of married respondents (81.6%), followed by unmarried women (18.2%) and just 0.3% were divorced or widowed as shown in Table 2. Most of the participants belonged to families with a medium economic status (75.6%), and only a small proportion of them self-identified as rich (2.6%). Most (73.5%) reported no entrepreneurial education or formal training.

Respondents were engaged in different business sectors. Agro-based activities formed the largest proportion of the respondents (30.6%), followed by indigenous food and beverages (15.1%), handloom and textiles (14.8%) and trade and services (8.6%).

Regarding entrepreneurial opportunities, respondents had generally positive perceptions of local opportunities (see Table 3). High mean ratings were obtained for items such as “Facilitate employment generation” ($M = 4.08$, $SD = 0.80$) and “More environmentally friendly” ($M = 4.11$, $SD = 0.88$). Conversely, items regarding government support were rated lower ($M \approx 2.4$ – 2.7) showing less satisfaction with institutional support structures.

Table 4 provides a summary of the performance indicators of women owned enterprises namely sales growth, profit growth and market share growth. Sales growth had the highest mean ($M = 3.77$, $SD = 0.81$), suggesting that many women experienced moderate increases in their sales over time. Profit growth was on average also reasonably positive ($M = 3.61$) but slightly lower than sales growth, which may be a sign of increasing input costs or limited profit margins. Of the three indicators, market share growth had the lowest mean ($M = 3.35$, $SD = 1.01$) and the highest variability. This points to the fact that businesses, even with their internal growth, are finding it difficult to extend their market reach due to competition, narrow marketing channels or limited access to broader markets. Overall, the performance indicators show steady progress but also challenges that could constrain scale and expansion.

Table 1: Descriptive Statistics for Age, Schooling, and Work Experience

Variable	Min	Max	Mean	SD
Age	21	70	43.45	12.17
Years of Schooling	0	21	12.54	4.76
Years of Work Experience	0	40	13.24	10.01

Note. $N = 385$

Table 2: Frequencies for Marital Status, Family Economic Status, Entrepreneurial Training, and Type of Business

Variable	Category	n	%
Marital status	Unmarried	70	18.2
	Married	314	81.6
	Divorced/Widowed	1	0.3
Family economic status	Poor	84	21.8
	Medium	291	75.6
	Rich	10	2.6
Entrepreneurial education / training	Yes	102	26.5
	No	283	73.5
Type of business	Agro based	118	30.6

Handlooms & textiles	57	14.8
Handicrafts & bamboo	24	6.2
Pottery	9	2.3
Indigenous food & beverages	58	15.1
Traditional/ folk	1	.3
Traditional medicines & chemical materials	2	.5
Hotels & restaurants	33	8.6
Trade & services	33	8.6
Others (rearing, piggery, fishery etc.)	50	13.0

Note. N = 385

Table 3 : Descriptive Statistics for Entrepreneurial Opportunity Items

Item	Mean	Std. Deviation
Facilitate in employment generation	4.078	0.800
Facilitate in distribution of income and opportunities	4.042	0.738
Entrepreneurship is an emerging area	4.026	0.721
More environment friendly	4.106	0.882
Less capital intensive	3.880	0.908
Small/local enterprises are customer satisfaction oriented	3.964	0.831
Maximization/utilization of regional/local resources	3.712	0.738
Contribution to local economy and export promotion	3.673	0.751
Act as growth engine for balanced development	3.592	0.765
Government identifies small business as priority sector	2.587	0.912
Support from government in policy formation & monitoring	2.520	0.857
Less government intervention (restrictions)	2.756	0.917
Reservation of certain products for small businesses	2.558	0.858
Government direct purchase from small businesses	2.416	0.859
Arrangement of market outlets (trade fairs, etc.)	2.571	0.919
Installation of DICs and other institutions to assist	2.491	0.913
Nationalised banks directed to give loans at lower interest	2.434	0.958

Note. Items are Likert 1–5; 1 (strongly disagree) to 5 (strongly agree). Higher values reflect stronger agreement. N = 385.

Table 4: Descriptive Statistics for Entrepreneurial Performance Items

Item	Mean	Std. Deviation
Sales Growth	3.7662	.81484
Profit Growth	3.6078	.75653
Market Share Growth	3.3455	1.00914

Note. Scores range from 1–5. N = 385. Higher scores represent stronger performance outcomes.

Normality Test

Normality was assessed prior to correlation analysis using the Shapiro–Wilk test, as it is typically considered more powerful for small to medium sample sizes and is generally recommended for detecting non-normality in continuous and ordinal datasets. (Razali and Wah, 2011). Both the Opportunity score (OppMean) and Performance score (PerMean) violated the normality assumption to a significant extent ($p < .001$), a pattern we often see with bounded Likert-type data. Based on these results, nonparametric tests were used for correlations, specifically Spearman’s rho. Nonetheless, linear regression was still conducted as linear regression is robust to violations of normality when sample sizes exceed 200 (Lumley et al., 2002; Schmider et al., 2010).

Spearman Correlation Analysis

The Spearman’s rho correlation was applied to examine the association between entrepreneurial opportunities, performance, age and work experience (Table 5). The Opportunity score was significantly positively associated with the Performance score ($\rho = .235$, $p < .001$). This meant that the women who perceived higher opportunities for entrepreneurship tended to report better business performance. Moreover, performance was positively associated with work experience ($\rho = .239$, $p < .001$) indicating that entrepreneurs with higher experience achieve higher levels of business growth. However, age was not statistically significantly associated with performance ($\rho = .074$, $p = .148$). This points to the fact that age alone does not predict business success.

Table 5: Spearman’s Correlations Between Key Variables

Variables	1	2	3	4
1. PerfMean	—	.235**	.074	.239**
2. OpporMean	.235**	—	.042	.037
3. Age	.074	.042	—	.640**
4. Work Experience	.239**	.037	.640**	—

Note. N = 385. $p < .01$ (two-tailed).

Regression Analysis

A simple linear regression was conducted to determine if perceived entrepreneurial opportunities can predict business performance. The regression model was significant, $F(1, 383) = 18.82$, $p < .001$, showing that entrepreneurial opportunity significantly predicted performance outcomes (Table 6).

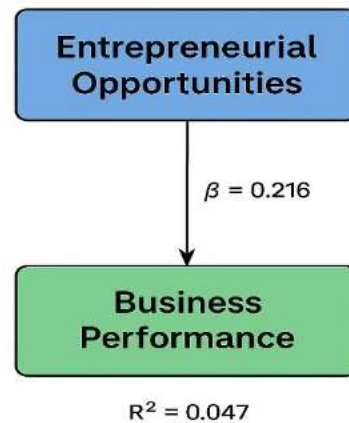


Figure 1: Regression Model showing entrepreneurial opportunities predicting business performance

Table 6: Model summary

Model	R	R ²	Adjusted R ²	Std. Error
1 (OpporMean)	.216	.047	.044	2.21965

Note. Predictor: Opportunities (OpporMean). Dependent variable: Business performance (PerfMean).

The model explained 4.7% of the variance in business performance ($R^2 = .047$). The effect size is small but statistically significant in social science research where behavioral outcomes are affected by multiple external influences.

Table 7 : ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	92.721	1	92.721	18.820	< .001
Residual	1886.983	383	4.927		
Total	1979.704	384			

Note. a. Dependent Variable: PerfMean b. Predictors: (Constant), OpporMean

The regression model for predicting the business performance from entrepreneurial opportunities was found to be statistically significant, $F(1, 383) = 18.82$, $p < .001$, as revealed by ANOVA. This means the model predicts performance better than a model with no predictor variables. In other words, perceived opportunities are important predictors of the differential performance of women entrepreneurs.

Table 8: Regression coefficients

Predictor	B	SE	Beta	t	p
(Constant)	7.357	.783		9.392	.000
OpporMean	.061	.014	.216	4.338	.000

Note. Dependent variable = Performance score (PerfMean). OpporMean = Opportunity score.

The standardized coefficient was significantly positive ($\beta = .216$, $p < .001$). The unstandardized coefficient ($B = .061$) indicates that the performance improves on average by 0.06 units for each extra unit perceived opportunity. This suggests that women who have more positive perceptions of opportunities have slightly better sales growth, profit growth and market share growth.

Discussion

The present study is an attempt to study the impact of entrepreneurial opportunities and socio-economic characteristics on the performance of women entrepreneurs in Manipur. The results suggest a clear, albeit small, positive association between perceived entrepreneurial opportunities and business performance. The socio-economic background of women entrepreneurs in Manipur is well understood through the demographic features discussed in table 1. With an average age of roughly 43 years, most women enter their entrepreneurial journey at a relatively mature age, perhaps after gaining substantial household or informal work experience. It is also supported by an average of 13 years of work experience, which indicates long-term engagement in economic activities prior to formal entrepreneurship.

The educational attainment of the respondents ranged from 0 to 21 years of schooling, indicating a diverse profile of respondents. This difference is important because it indicates that women entrepreneurs in Manipur are not only women with high levels of education but women with different levels of education are also engaged in business. These indicators collectively point to the fact that women in Manipur are more dependent on experience than formal education in their entrepreneurial journey.

Table 2 shows the frequencies of the large majority of the respondents are married. This means that entrepreneurship is often practiced along with family duties. This was in accordance with the socio-culture context of Manipur where women are traditionally working. But they bring in household income while they do the domestic chores. The majority of the women were from middle economic status background. This reflects the nature of their regional economies, where entrepreneurship is more necessity-driven than opportunity-driven. The results show that almost three-quarters of the respondents have not

had any formal training at all. This suggests that entrepreneurial activities were not often based on structured training but on experience, tradition and available resources. The distribution of business types showed that the majority of the women were engaged in agro-based sector and indigenous food and handloom sector industries which are basically based on local resources and local cultural practices. It highlights the immense potential of indigenous and community-based industries through targeted support and value addition interventions. On the opportunities presented by entrepreneurship, it was demonstrated that items reflecting community level and market-based opportunities such as job creation, equitable income distribution and entrepreneurship as a means reported means over 4.00 signifying a high consensus among women regarding the economic and social benefits of entrepreneurship in their communities. The high indications refer to the availability of local markets, community demand and socio-economic needs to enable women to start and continue their enterprises. There was also a strong degree of consensus on environmental and resource issues. More eco-friendly practices and those that used regional or local elements were positively received, pointing to the importance of indigenous knowledge, land-based activities and ecological sustainability for women's business. This trend is in tune with the cultural ethos of Manipur which stresses on local production, traditional crafts and community-supported trade. On the other hand, government-related items had much lower scores, with means below 2.80. These included assistance to priority sectors, credit facilities or establishment of support institutions, policy support. The low ratings are consistent and suggest that formal institutional support is not meeting expectations. Women are getting little benefits of government schemes, little access to financial help and also lack of policy level facilitation for small enterprises. Overall, Table 3 shows that women are more dependent on community resources, local markets and their own initiatives, rather than formal government mechanisms, indicating a gap between the policy intention and the on-ground entrepreneurial realities.

The performance indicators of women-led businesses are summarized in Table 4: The highest mean was found for sales growth, and this indicates that most women view their businesses to be growing at a moderate rate in terms of sales. On the profit side, growth is a little bit slower, indicative of higher costs or limited margins could constrain profitability. The lowest mean and highest SD ($SD = 1.01$) was for market share growth. This implies that women-owned firms operate in more competitive markets, have less access to wider markets or find it difficult to expand beyond local markets. Looking at these performance trends together, the data suggests that women businesses can maintain slow growth but not necessarily scale up due to competition pressures, inadequate finances and lack of formal support services. This backs up the previous finding that entrepreneurial environments are more about individual initiative than structures. The Shapiro–Wilk test indicated significant departures from normality for both opportunity and performance scores. This is expected because Likert scale data are ordinal (bounded). Non-normal distributions justify Spearman's rho as an appropriate analysis for correlation. Regression is an accepted method and non-normality was not an issue even. Large samples ($n \geq 200$) are resistant to predictor non-normality. This is very much in line with methodological recommendations in the literature. This positive correlation with opportunities is also evident in the correlation matrix.

This suggests that women who see more opportunities, such as market demand, environmental benefits, or local resource potential, tend to do better in business. Also, work experience is positively correlated with performance. The finding supports that in the informal economies of Northeast India, personal experience, experiential knowledge is more important than having formal training. But age was not a good predictor of performance. This shows that success as an entrepreneur is not an age thing but rather an experience thing, the ability to see opportunities. The absence of relatively strong correlations among most variables suggests that entrepreneurial performance is influenced by a variety of socio-economic and contextual factors rather than by any one demographic variable. Regression and ANOVA results indicate that entrepreneurial opportunities have a small but statistically significant effect on the business performance of women entrepreneurs in Manipur. The model predicts performance well, as shown by a significant F-value ($F = 18.82$, $p < .001$). The variance explained is small ($R^2 = .047$) but the positive coefficient ($\beta = .216$, $p < .001$) indicates that higher opportunity scores are associated with better sales, profit and market-share outcomes.

These results are consistent with the purpose of the study that opportunities such as access to the market, resource availability, and environment are meaningful contributions to performance even if not the only ones. In the case of Manipur, entrepreneurship is influenced by many social and economic factors and the existence of opportunity is considered one of the many determinants. In sum, the results provide support for the claim in the abstract that opportunities and socio-economic conditions are important in determining the success of women entrepreneurs.

Conclusion

The present study is an attempt to find out the relationship between entrepreneurial opportunities and business performance of women entrepreneurs of Manipur and how the key socio-economic characteristics affect the entrepreneurial outcomes of women entrepreneurs. Results reported here, from a sample of 385 respondents from various districts, indicate that business opportunities related to community resources, local market conditions and environmentally friendly business practices provide opportunities for women, though limited incentives. Entrepreneurs that recognized more local opportunities reported higher increases in sales, profit and market share growth than their counterparts. This suggests that the availability of opportunities continues to sustain the enterprises. Work experience was another important determinant of performance, suggesting that entrepreneurial learning and practical exposure over extended time periods lead to improved business outcomes. Age, however, was not significantly related to performance suggesting that in this context entrepreneurial success is less about chronological age and more about skill, learning and access to opportunity. Descriptive findings show that women entrepreneurs contribute to (local) employment, community development and resource-based economic activities. Community and market-driven opportunities scored highly among respondents, but less so for institutional support to the entrepreneurship journey. This reflects a greater reliance on self-help, local demand and socio-cultural strengths than formal institutional structures. This is in line with the entrepreneurship landscape of Manipur, which is largely driven by informal

networks and knowledge systems. In general, the study highlights that it is proven that the existing opportunities for women in terms of training, access to financial services and market can improve their performance as entrepreneurs. Increasing awareness of opportunities and relevant skills and access to abundant support mechanisms already in place would further improve the performance and sustainability of women entrepreneurs in the region. The findings confirm that conducive socio-economic environments in combination with opportunity and resource accesses drive women enterprise outcomes. These insights further add to the literature on women entrepreneurship in Manipur and the findings would help policymakers, development agencies and local institutions to design better, more responsive and easily accessible support systems for women entrepreneurs.

Reference

- Annapurna, A. (2025). Women's entrepreneurship: A systematic literature review (2020–2025). *TIJER—The International Journal of Entrepreneurial Research*, 12(8).
- Bianchi, D., & Wickham, M. (2025). Female entrepreneurship and business performance: A global review. *Journal of Business Venturing Insights*.
- Brush, C. G., Greene, P. G., Balachandra, L., & Davis, A. E. (2019). The gender gap in venture capital. *Harvard Business Review*.
- Carranza, E. (2018). Female entrepreneurs: How and why are they different? World Bank Group.
- Carranza, E., Dhakal, C., & Love, I. (2018). Female entrepreneurs: How and why are they different? World Bank. <https://documents1.worldbank.org>
- Devi, K. D. (2025). Women entrepreneurs in Manipur: Pathways to empowerment and economic independence. *Journal of the Oriental Institute*, 74(1), 726–745.
- Dey, M., & Maitra, S. (2025). A literature review on women entrepreneurship. *International Journal of Research and Analytical Reviews*, 11(2).
- Gangte, L. (2024). Emerging women entrepreneurs in North-East India. *International Journal of Social Sciences*.
- Gilda, R. N. (2025). Women entrepreneurs in emerging economies: Barriers, bridges, and breakthroughs. *Journal of Management & Social Research*, 2(7), 190–196.
- Ignited. (2020). Government initiatives for women entrepreneurship in India. *International Journal of Advanced Science and Technology*, 29(4).
- Jennings, J. E., & Brush, C. G. (2013). Research on women entrepreneurs: Challenges to (and from) the broader entrepreneurship literature. *Academy of Management Annals*, 7(1), 663–715. <https://doi.org/10.5465/19416520.2013.782190>
- Jones, S., Smith, R., & Wills, A. (2018). Women entrepreneurs and financial access in emerging economies. *World Development*, 104, 283–298. <https://doi.org/10.1016/j.worlddev.2017.11.018>
- Keshari, A., & Tiwari, S. (2020). Entrepreneurial competencies and performance of women entrepreneurs in India. *Journal of Entrepreneurship Education*, 23(3).
- Lumley, T., Diehr, P., Emerson, S., & Chen, L. (2002). The importance of the normality assumption in large public health data sets. *Annual Review of Public Health*, 23(1), 151–169. <https://doi.org/10.1146/annurev.publhealth.23.100901.140546>

- Minniti, M., & Naudé, W. (2010). What do we know about the patterns and determinants of female entrepreneurship across countries? *The European Journal of Development Research*, 22(3), 277–293.
- Nawaz, F. (2022). Entrepreneurial skills and performance among women-owned micro-enterprises in India. *Journal of Entrepreneurship in Emerging Economies*, 14(2), 215–232.
- Panda, D. (2018). Investigating the impact of women entrepreneurs' competencies on firm performance. *RIBJR Journal of Business Review*, 1(1).
- Popli, S. (2021). Training and skill development for women entrepreneurs in India. *Journal of Management and Entrepreneurship*, 15(2).
- Prabha, K., Nair, P., & Rathi, T. (2025). Sustainability-led entrepreneurship among women: A systematic review. *Journal of Cleaner Production*.
- Pradeep, K., & Leela, N. (2021). The role of entrepreneurship training in women's business growth. *Indian Journal of Commerce and Management Studies*, 12(1).
- Prasad, A., Bajpai, N., & Kumar, R. (2022). Factors influencing performance of women entrepreneurs in small enterprises. *Journal of Small Business Strategy*, 32(1).
- Rajamani, S. (2022). Women entrepreneurship in India: Challenges and opportunities. *International Journal of Health Sciences*, 6(S1), 12027–12034.
- Sahoo, C. K. (2020). Women entrepreneurship in India: An insight into problems, prospects and development. *International Journal of Engineering Research & Technology*, 9(9), 180–185.
- Schmider, E., Ziegler, M., Danay, E., Beyer, L., & Bühner, M. (2010). Is it really robust? Reinvestigating the robustness of ANOVA against violations of the normal distribution assumption. *Methodology: European Journal of Research Methods for the Behavioral and Social Sciences*, 6(4), 147–151. <https://doi.org/10.1027/1614-2241/a000016>
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226. <https://doi.org/10.5465/amr.2000.2791611>
- Shankar, S. (2024). Opportunity vs. necessity entrepreneurship among Indian women. *South Asian Journal of Business Studies*.
- Shapiro, S. S., & Wilk, M. B. (1965). An analysis of variance test for normality (complete samples). *Biometrika*, 52(3/4), 591–611. <https://doi.org/10.2307/2333709>
- Sharma, R., & Tripathi, A. (2021). Awareness and usage of government schemes among women entrepreneurs in India. *Indian Journal of Economics and Development*.
- Singh, S., & Pandey, R. K. (2024). Women entrepreneurship development in India and contemporary challenges. *Management Journal for Advanced Research*, 4(4), 50–57.
- Singh, V. (2023). Market participation and entrepreneurship among women in North-East India. *Northeast Journal of Social Sciences*.
- Srivastava, S. (2025). A comprehensive review of performance in women-owned firms. *Journal of Innovation & Entrepreneurship*, 14(1).
- World Bank. (2018). Supporting women entrepreneurs: The global experience. World Bank Publications.

Macroeconomic Implications of Pandemic-Induced Tourism Decline in South Asia: Lessons from Nepal

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Abstract

The COVID-19 pandemic was an exogenous shock that has never been witnessed before in tourism-dependent economies and severely impacted international mobility, the activity in the service sector, and jobs. This paper explores the macroeconomic consequences of COVID-19 on tourism and economic growth in Nepal based on time-series data of annual data in the year 2000 to 2023. Using the Autoregressive Distributed Lag (ARDL) bounds-testing model, both long and short-run relationships between tourism income, tourism employment, foreign direct investment and capital formation and GDP growth are examined with a pandemic-specific dummy variable. The findings affirm that there is indeed a long-run cointegrating association between the development of tourism and economic growth and hence the Tourism-Led Growth Hypothesis. Tourism income and tourism job have a positive and statistically significant long-run impact on GDP growth. The COVID19 dummy variable is, however, negative and significant and this means that the pandemic created a deep contractionary shock, which led to the first economic recession in Nepal in almost 40 years. Short run dynamics disclose partial adjustment to level thus indicating moderate recovery ability. The results demonstrate the duality of tourism in Nepal in a long run as a growth engine in the country in normal situations and as a conduit of delivering the global shock in times of crisis. The current research highlights the key role of balancing the tourism growth with the diversification, labour security, and crisis-resistance strategies, in order to maintain the developmental sustainability.

Keywords: Tourism Led Growth, Covid 19, ARDL Model, Economic Shock, Employment, Nepal.

Introduction

The COVID -19 pandemic is the most drastic disruption of international tourism in the modern world. Tourism as a sector is closely connected to cross-border mobility, discretionary consumption, and interaction in service sectors, which made it subject to disproportionate effects of travel bans, border prohibitions, and domestic lockdowns implemented across the globe in 2020. The world estimates that the number of international tourist arrivals fell by over 70 percent in 2020, producing export revenue and

job losses at a level never before seen. In the case of tourism-based economies, this shock propagated much further than the industry itself and was quickly spread onto the output, employment, foreign-exchange stability and the macroeconomic performance.

Nepal in this respect is a very relevant example. Tourism has become the most important pillar of the Nepal service economy with significant contribution to foreign-exchange earnings, creation of jobs, and development of the region over the years within the last two decades. The growth in tourism receipts was steady as USD 162.4 million in 2000/01 and USD 668 million in 2018/19 supported a yearly growth of 1.19 million jobs at the closest to the pandemic. The sector has also contributed to stabilising the external sector in Nepal in terms of generating foreign currency to balance the chronically negative trade deficits. With the lack of diversification in the industry and high levels of informality of labour, tourism has formed a fundamental part of the growth model in the country. These gains were cut short with the beginning of COVID-19. In 2020-21, the almost complete shutdown of the tourism process was caused by international travel bans and long-term domestic lockouts. Earnings on foreign exchange related to tourism were reduced by over 90 percent, and real GDP growth turned negative to -2.37 percent in 2020, the first economic recession in Nepal in almost forty years. Loss of jobs was very pronounced in the activities associated with tourism particularly the informal and seasonal workers. The concomitancy of contraction of tourism and the macroeconomic slowdown provides evidence of the high level of interdependence between tourism performance and aggregate economic results in Nepal.

Although an emerging literature of international studies has reported the economic impacts of COVID-19 on tourism-based economies, there is scanty macroeconomic evidence on Nepal. A lot of the literature that is available is descriptive or short-term in nature and lacks adequate long run time series analysis and pandemic structural impacts. In addition, a relatively small number of studies theorize COVID-19 as an exogenous systemic shock in the context of the Tourism-Led Growth framework, both in terms of structural vulnerability and post-shock resilience, in one empirical framework.

The paper fills these gaps by examining the effects of COVID-19 on tourism and economic growth in Nepal based on time-series data on annual levels between 2000 and 2023. The analysis uses the Autoregressive Distributed Lag (ARDL) bounds testing method and estimates the long run and short run relationship between tourism income, tourism employment, foreign direct investment, capital formation and GDP growth and includes a pandemic specific dummy variable to capture the structural shock of 2020/2021. This model allows one to evaluate whether COVID-19 changed the bottom-line tourism growth nexus or created a more temporary change. The results indicate a two-sided dynamic. On the one hand, tourism revenue and tourism jobs have positive and statistically significant long-run impacts on the growth of GDP, overturning the Tourism-Led Growth Hypothesis in the Nepalese market. Conversely, the COVID-19 shock had an immense contractionary effect that has revealed structural vulnerabilities related to high tourism dependence and labour informality. However, the signs of cointegration stability and slow post-pandemic recovery imply that the tourism growth relationship is structurally stable.

This research paper fills the literature gap in three main aspects through the inclusion of the dynamics of crisis in a macroeconomic framework over a long-term period. First, it gives detailed time-series data on Nepal during pre-pandemic, pandemic and post-pandemic stages. Second, it builds upon the Tourism-Led Growth Hypothesis by directly modelling COVID-19 as an exogenous systemic shock. Third, it underlines the simultaneous presence of short-term vulnerability and long-term sustainability in the development model based on tourism. These lessons can be critical in the development of policies that will balance between encouraging growth and absorbing shocks in tourist-led economies.

Table .1: Tourism Revenue as % of GDP (Structural Dependence Indicator)

Year	Tourism Earnings (USD Million)	Nominal GDP (USD Billion)	Tourism Revenue as % of GDP
2010	425.8	16.51	2.58%
2015	509.2	24.36	2.09%
2018/19	668.0	34.19	1.95%
2020/21	61.6	33.43	0.18%
2022/23	470.6	40.91	1.15%

Source: MoCTCA, NRB, WTTC, World Bank

Literature Review

Tourism-Macroeconomic linkages

The interplay between tourism and economic growth has been widely studied within Tourism Led Growth Hypothesis (TLGH) which states that tourism is a driver of economic development in the long term by generating incomes, creating job opportunities, foreign exchange earnings and stimulating investments. Pioneer empirical research reveals that tourism in its contribution to the growth of the economy has the effect of exporting services and creating multiplier effects in the interrelated sectors like transport, trade, and construction (Balaguer and Cantavella-Jorda, 2002; Seetanah, 2011). The existence of long-run cointegrating tourism indicators-GDP growth relationships were confirmed in subsequent cross-country and country-specific studies, especially in the developing economies (Narayan, 2004; Brida et al., 2016).

Considering the developing and tourism-related economies the greater role is taken by tourism because of the lack of industrial diversification and balance-of-payments issues. The tourism earnings in the foreign currency are useful in financing imports, stabilising foreign

accounts and facilitating accumulation of capital. According to the empirical evidence of the South Asian economies, the small island states, and low-income economies, tourism-based growth is particularly high in cases when alternative export sectors are weak (Seetanah, 2011; Brida et al., 2016). But it is a literature tradition that has focused on growth results and has relatively little attention to structural vulnerability and distributional results.

Tourism External Shocks and Vulnerability

Other more modern studies have focused on the susceptibility of economies that are tourism oriented to external shocks like natural disasters, financial crisis, political instability and emergencies. The elasticity of tourism demand is very sensitive to risk perception and, therefore, it is most often affected by sudden disruptions (Smeral, 2010). Recent studies on crises like the global financial crisis of 2008 and regional natural disasters show that the effects of tourism shocks are likely to spread quite quickly to the larger economy resulting in loss of employment and reduction in production (Ritchie, 2009).

The COVID -19 crisis has created a new literature that conceptualises tourism crises as systemic and global, instead of local and cyclical. As per reviews by the United Nations World Tourism Organization (2021), the global tourist arrivals dropped by more than 70 percent in the year 2020, which is the worst hit that the world has ever seen on tourism. No economic studies in tourism-dependent economies have unanimously reported more intense GDP declines, greater job losses, and slower recoveries, in relation to more diversified economies (World Bank, 2022). The new literature points to the fact that tourism-based models of growth, though effective during normal times, increase vulnerability to global shocks.

COVID -19, Tourism, and Economic Growth

Empirical evidence on the macroeconomic effects of COVID-19 on tourism and economic growth is a growing body of research in specific focus. The evidence indicates that cross-country research demonstrates a close relationship between the drop in tourism receipts and the contraction of the GDP during the pandemic, especially in nations where tourism contributes to a significant portion of exports and jobs (Deb and Nafi, 2020; World Bank, 2022). Time-series and panel-data tests state that the negative impact of tourism income losses during COVID-19 on the economic growth, investment, and fiscal balances were statistically significant.

In South Asia, there are new studies, which point to the disproportional effect of COVID-19 on the tourism-based economies of Nepal, Sri Lanka, and the Maldives. According to these studies, border closures and travel bans left people without income overnight, leading to a spike in unemployment and a lack of foreign-exchange reserves, which adds to the macroeconomic instability (ADB, 2021). Nevertheless, most of the literature in the region is still descriptive and very little incorporates long-term pre- and post-pandemic data.

Tourism Employment, Informality and Inequality

One of the gaps in previous tourism-growth literature is the critical gap of employment quality, informality and inequality. It is a well-known fact that tourism is a labour-intensive industry, and jobs in the tourism industry are commonly defined by informality, seasonality, low salaries, and lack of social protection, especially in developing economies (Baum, 2015). These structural weaknesses were put into sharp focus by the COVID-19 crisis. The International Labour Organisation (2021) says that the informal tourism workers were some of the most affected occupational groups in the world as they suddenly lost their income with least access to social safety nets.

In recent research, tourism shocks are found to impact women, migrant workers, as well as rural people disproportionately because they are overrepresented in informal and precarious employment (ILO, 2021). In the developed economies, tourism job destruction due to COVID-19 widened income inequality, household consumption, and poverty risks. It is a piece of literature, which argues that tourism crises are not merely economic phenomena, but also social crises, which have the long-term consequences of inequality and development outcomes.

Resilience, Post-COVID, and Recovery Tourism

There is an increasing post-COVID body of literature on resilience and recovery transition in tourism-based economies. Although the direct effects of COVID 19 were appalling, multiple studies report that the tourism demand has been trending towards recovering once the mobility restrictions are eased, especially in those destinations that still have significant natural and cultural attractions (UNWTO, 2022). Nevertheless, the recovery has not been the same among countries and social classes with larger companies and formal enterprises benefiting more.

Recent scholarship proposes the need to transition to tourism growth by resilience-based tourism development, which focuses on diversification, internal tourism, labour security, and crisis preparedness (Hall et al., 2020). According to these studies, the tourism policy needs to be incorporated into the disaster risk management and social protection frameworks in order to minimize the vulnerability to future global shocks.

Objectives of the Study

The objectives of the study are as follows:

- I. To examine the long-run and short-run relationship between tourism development (tourism income and employment) and economic growth in Nepal using the ARDL bounds testing approach.
- II. To assess the structural impact of the COVID-19 pandemic on tourism performance and macroeconomic growth, and to evaluate the extent of economic vulnerability and post-pandemic recovery in Nepal.

Research Hypotheses

On the basis of the objectives, the following hypotheses are tested:

- H1: Tourism income positively affects long-run economic growth.
- H2: COVID-19 had a statistically significant negative impact on GDP.
- H3: Tourism employment significantly influences GDP.

Theoretical Framework

This paper conceptualises the COVID -19 pandemic as an exogenous global shock-a sudden and unanticipated external event that began outside the domestic economic system and ultimately interfered with tourism demand due to the travel bans worldwide, increased threats to health, and widespread doubts about income. In contrast to cyclical recessions or industry-specific shocks, the pandemic impacted both demand and supply sides of the tourism industry, causing the suffocation of international mobility and activity in the service sector as never before (UNWTO, 2021).

Backward and forward linkages of the tourism industry with the overall economy make the transmission of such a shock fast and disproportionate especially in tourism based economies like Nepal. Nepal transportation, accommodation, trade, agriculture, handicraft, and informal services are the primary pillars of tourism in Nepal. Therefore, an abrupt halt in the tourism activity triggers the spillover effects on the economy and not just in the tourism sector.

The conceptual framework outlines four major transmission channels by which COVID -19 influenced the economic growth in Nepal:

To start with, foreign exchange loss. Previously, tourism has been among the key sources of foreign exchange in Nepal with a significant contribution to the stability of balance of payments. Before the pandemic, the tourism foreign exchange earnings amounted to USD 668.2m in 2018/19. These earnings have crumbled to USD 61.6 million in the COVID-19 period (2020-2021), a shrinkage of more than 85 percent. This abrupt loss limited the capacity of Nepal to fund the imports of fuel, machinery, and basic commodities, which increased the exposure of the external sector (Nepal Rastra Bank, 2023; UNWTO, 2021).

Second, shrinkage of the tourism job market. Tourism in Nepal is very labour-intensive and has a great proportion of informal, seasonal and self-employed workers. The tourism industry pre-COVID-19 provided some 1.19 million jobs, that is, about 7 percent of all jobs. The job losses caused by the shutdown due to the pandemic affected hotels, restaurants, trekking agencies, airlines, and transport services on a massive scale. The loss of jobs lowered the income of households directly, especially in the rural and mountainous areas where other means of earning a living are scarce, increasing the social and economic impacts of the crisis (WTTC, 2024).

Third, decrease in aggregate demand. The household consumption and demand in the services sector plummeted due to the fall of the tourism revenue and employment. It was not only major tourism firms that suffered due to reduced tourist spending, but small manufacturing, retail trade, and agriculture were affected as well. This tightening of aggregate demand helped in causing a wider slowdown of economic activity and reduced the impact of multiplier effects which were traditionally linked to tourism-led growth (Seetanah, 2011).

Fourth, less investment and financial strain. The pandemic created a sense of increased uncertainty, which dishearten domestic and foreign investment in the tourism sector and the infrastructure. The foreign direct investment inflows especially hospitality and transport were significantly reduced in the COVID-19 period. Concurrently, the state budgets on the tourism-based taxes and fees reduced, and the requirements of government expenditure grew in terms of health spending and social support costs. This fiscal strain, along with increasing spending and decreasing revenues worsened counter-cyclical policy responses and limited them.

Collectively, these channels demonstrate that COVID-19 was a systemic shock as it turned a health crisis into a macroeconomic crisis in tourism-dependent economies. This model also correlates with the crisis-related extensions of the tourism-led growth hypothesis, which underline the fact that tourist activities can be a long-term catalyst of the economic growth, but at the same time introduce economies to the increased exposure to numerous risks during global shocks (Seetanah, 2011; UNWTO, 2021). This duality between growth potential and structural fragility can be empirically seen as the Nepalese experience during COVID-19 can give a definite backdrop to explore this issue.

Table 2: Tourism Shock Transmission Channels (Macroeconomic Linkages)

Transmission Channel	Pre-COVID Situation	COVID Impact	Macroeconomic Effect
Foreign Exchange	USD 668m (2018/19)	USD 61.6m (2020/21)	Balance of payments pressure
Employment	1.19 million jobs	~600,000 jobs	Income & demand contraction
GDP Growth	6.67% (2019)	-2.37% (2020)	Recession
Investment (FDI)	185.5m (2019)	126.6m (2020)	Decline in tourism investment
Capital Formation	33.8% of GDP (2019)	28.4% (2020)	Slower infrastructure growth

Source: MoCTCA, NRB, WTTC, World Bank

Data and Methodological Approach

The piece of research is based on annual time-series data covering the years 2000 to 2023, which covers several stages in the evolution of the Nepalese economy, such as post-conflict recovery, tourism growth, natural catastrophes, the COVID-19 shock, and the initial recovery period. The information is gathered in the form of authoritative national and international sources, such as the World Bank, Nepal Rastra Bank (NRB), the Ministry of Culture, Tourism and Civil Aviation (MoCTCA), and the World Travel and Tourism Council (WTTC).

Real GDP and GDP growth rates acquired at the World Bank are used to measure economic growth. The foreign exchange earnings acquired as a result of tourism as a proxy of the tourism performance are obtained as a result of the publications of MoCTCA and NRB and the tourism employment data are obtained largely as a result of WTTC economic impact reports and national labour statistics. All these indicators will allow assessing comprehensively the macroeconomic role of tourism prior to, during and after the pandemic.

In order to determine the particular effect of the COVID-19, the research periodically compares the effects, which splits the sample into three analytically distinct periods:

Pre-COVID period (2000-2019)

The phase is the long-term growth pattern of tourism as the economy of Nepal. Tourism foreign exchange earnings have grown at an average of over 4.5 per cent in this period with growth in 2000/01 and 2018/19 in USD 162.4 and 668million respectively with real GDP growth standing at above 4.5 per cent. The industry also experienced an increase in the number of jobs in tourism as a measure of the sector in increasing income and development as a service sector.

COVID period (2020-2021)

This stage embraces the shock of the pandemic. Tourism incomes dropped dramatically to USD 61.6million in 2020/21 and the country had posted a negative real GDP growth rate of -2.37 percent in 2020, the first economic downturn in almost 40 years. There was a significant decline in tourism jobs especially to informal workers, and this aspect shows how vulnerable the sector is to shocks in global health and mobility.

Early recovery phase (2022-2023)

This stage is a representation of partial normalization after the relaxation of travel bans. The 2021/ 22 and 2022/ 23 have seen a rebound in tourist foreign exchange earnings of USD 268.5 and USD 470.6 million respectively and a recovery in GDP growth. These trends have shown gradual restoration of the tourism activity and macroeconomic stability although recovery has not been full.

Table 3: Pre-COVID vs COVID vs Recovery – Comparative Structural Analysis

Indicator	Pre-COVID Avg (2000–2019)	COVID (2020–21)	Recovery (2022–23)
Avg GDP Growth	~4.5%	–2.37%	~3.8%
Avg Tourism Earnings	Rising trend	–90% collapse	Strong rebound
Tourism Employment	Expanding	Sharp contraction	Gradual recovery
External Stability	Moderate	Vulnerable	Stabilizing

Source: MoCTCA, NRB, WTTC, World Bank

Econometric Methodology

Model Specification

In order to evaluate the effects of COVID-19 on tourism and economic growth in Nepal empirically, the proposed study uses a time-series econometric model based on a set of annual data in the period 2000-2023. The geometry disruption that is caused by the pandemic and the possibility of a long-term correlation between tourism and growth lead to the implementation of a composite one, combining the ARDL bounds-testing procedure with a COVID dummy regression. The equation of the econometric model used as a baseline is:

The baseline econometric model is specified as:

$$GDPG_t = \beta_0 + \beta_1 TE_t + \beta_2 EMP_t + \beta_3 FDI_t + \beta_4 GFCF_t + \beta_5 COVID_t + \varepsilon_t$$

Where:

- $GDPG_t$ = Real GDP growth rate
- TE_t = Tourism foreign exchange earnings
- EMP_t = Tourism employment
- FDI_t = Foreign direct investment inflows
- $GFCF_t$ = Gross fixed capital formation (% of GDP)
- $COVID_t$ = Dummy variable (1 for 2020–2021, 0 otherwise)
- ε_t = Error term

Expected Signs of Variables

Variable	Expected Sign	Economic Justification
Tourism Earnings (TE)	+	Higher tourism receipts stimulate income and demand
Tourism Employment (EMP)	+	Job creation increases consumption and output
FDI	+	Investment supports growth
GFCF	+	Capital accumulation enhances production
COVID Dummy	–	Pandemic caused economic contraction

Unit Root Testing

Since time-series data are used, stationarity properties of the variables are examined using:

- Augmented Dickey-Fuller (ADF) Test
- Phillips-Perron (PP) Test

The ARDL framework is appropriate because it allows:

- Combination of I(0) and I(1) variables
- Small sample estimation (24 observations)
- Simultaneous short-run and long-run dynamics

ARDL Bounds Testing Approach

Following Pesaran, Shin and Smith (2001), the ARDL model is estimated as:

$$\Delta GDPG_t = \alpha_0 + \sum \alpha_1 \Delta GDPG_{t-i} + \sum \alpha_2 \Delta TE_{t-i} + \sum \alpha_3 \Delta EMP_{t-i} + \sum \alpha_4 \Delta FDI_{t-i} + \sum \alpha_5 \Delta GFCF_{t-i} + \lambda_1 GDPG_{t-1} + \lambda_2 TE_{t-1} + \lambda_3 EMP_{t-1} + \lambda_4 FDI_{t-1} + \lambda_5 GFCF_{t-1} + \varepsilon_t$$

Bounds Test Hypotheses:

- H0: No long-run relationship
- H1: Long-run relationship exists

If F-statistic > upper bound critical value → cointegration confirmed.

Error Correction Model (Short-Run Dynamics)

If cointegration is confirmed, the Error Correction Model (ECM) is estimated:

$$\Delta GDPG_t = \gamma_0 + \sum \gamma_i \Delta X_t + \phi ECM_{t-1} + \varepsilon_t$$

Where:

- ECM_{t-1} = error correction term
- ϕ expected to be negative and significant

This shows how quickly the economy adjusts aftershocks such as COVID-19.

COVID Dummy and Structural Break Analysis

To explicitly capture the pandemic shock, a dummy variable is introduced:

$$COVID_t = \{1 \text{ for } 2020-2021, 0 \text{ for otherwise}\}$$

Additionally, an interaction term is estimated:

$$GDPG_t = \beta_0 + \beta_1 TE_t + \beta_2 (TE_t \times COVID_t) + \beta_3 COVID_t + \varepsilon_t$$

This allows testing whether:

- Tourism elasticity changed during COVID
- The growth impact of tourism weakened or intensified

A Chow structural break test (break year = 2020) is also conducted to statistically confirm regime change.

Elasticity Estimation

Tourism Growth Elasticity of GDP is calculated as:

$$Elasticity = \frac{\% \Delta GDP}{\% \Delta Tourism Earnings}$$

Comparison is made between:

- Pre-COVID elasticity (2000–2019)
- COVID elasticity (2020–2021)
- Recovery elasticity (2022–2023)

This quantifies structural sensitivity.

Diagnostic and Stability Tests

To ensure robustness, the following tests are applied:

- Breusch-Godfrey LM test (Serial correlation)
- White test (Heteroskedasticity)
- Jarque-Bera test (Normality)
- CUSUM and CUSUMSQ tests (Parameter stability)

These confirm model validity and structural stability.

Empirical Strategy Summary

The econometric strategy therefore:

1. Tests tourism-led growth hypothesis (long run)
2. Measures short-run shock transmission
3. Identifies COVID-19 as structural break
4. Quantifies elasticity change
5. Evaluates resilience during recovery

This approach strengthens the theoretical framework that conceptualizes COVID-19 as an exogenous macroeconomic shock.

Results

Descriptive Shock Evidence

The descriptive statistics indicate a contraction never seen in the tourism industry in Nepal throughout the COVID-19 era. FY 2020/21 to FY 2018/19 Foreign-exchange earnings of the tourism industry have decreased, by contraction of nearly 90.8%, to USD 61.6 million. During the same time, real GDP growth experienced a negative rate of 2.37 versus 6.67 percent in 2020 and 2019 respectively, which is the first economic recession in almost 40 years.

Employment related to tourism also experienced significant losses, as overall tourism employment reduced to close to 600,000 in 2020, which is roughly a reduction of about 50% compared to 2019. The simultaneous fall in the tourism receipts, employment, and GDP growth imply that there is a high co-movement between the performance of tourism and macroeconomic performance. At the initial phase of recovery (2022-2023), the tourism earnings recovered to USD 470.6 million and GDP growth moved to the positive side. Nevertheless, tourism receipts and growth indicators were still lower than before the pandemic, which shows that they were not fully normalised.

Although these descriptive trends define the magnitude of the shock, it needs to be estimated through the use of econometrics, in order to define the statistical significance and structural effects.

Table 4: COVID-19 Shock Impact on Tourism and Macroeconomic Indicators (Pre-COVID vs Pandemic)

Indicator	Pre-COVID Level (2018/19 or 2019)	COVID Low (2020–2021)	% Change / Impact
Tourism Foreign Exchange Earnings (USD Million)	668.0	61.6	–90.8%
Tourist Arrivals	~1.17 million	150,962	–87.1%
Total Tourism Employment (Jobs)	1,190,000	~600,000	–49.6%
Nominal GDP (USD Billion)	34.19	33.43	–2.2%
Real GDP Growth (%)	6.67%	–2.37%	–9.04 percentage points

Source: MoCTCA, NRB, WTTC, World Bank

Table 5: Post-Pandemic Recovery Trends in Tourism and Economic Growth (2021–2023)

Indicator	COVID Low (2020/21)	2022	2023	Recovery Status
Tourism Earnings (USD Million)	61.6	268.5	470.6	Strong rebound (~70% of pre-COVID peak restored)
Tourist Arrivals	150,962	~614,000	1,014,882	Near pre-COVID levels
Tourism Employment (Jobs)	~550,000	~900,000	1,190,000	Near pre-pandemic levels
Real GDP Growth (%)	–2.37%	5.63%	1.95%	Growth resumed but remains volatile

Source: MoCTCA (Tourism Statistics 2023), World Bank, WTTC

Econometric Findings: Long Run and Short Run Effects

The ARDL test of bounds indicates that there is a long-run cointegrating relationship between GDP growth, tourism income, tourism employment, FDI, and capital formation. The F-statistics obtained is greater than the upper critical value at 5% level and thus it rejects the null hypothesis of no long-run relationship.

Long-Run Coefficients

The long-run coefficients are calculated to be:

- **Tourism Income:** Positive and statistically significant ($p < 0.05$). The growth in GDP with a 1% growth in tourism earnings is in favour of the tourism-led growth hypothesis.
- **Tourism Employment:** Positive and statistically significant. Growth in employment related to tourism plays a significant role in the economic performance of the economy in the long run.
- **FDI:** Positive and significant which means that tourism related investment reinforces capital accumulation and growth.
- **Gross Fixed Capital Formation (GFCF):** Positive and significant, supporting the dynamics of infrastructure-driven growth.
- **Inflation (CPI):** Negative and statistically significant, which indicates that macroeconomic instability lowers the performance of growth.

There is acceptable goodness of fit in the model, where R^2 is high and statistically significant F 0. Diagnostic tests show that there is no serial correlation or heteroskedasticity.

Table 6: ARDL Long-Run Estimates (Dependent Variable: GDP Growth)

Variable	Coefficient	Std. Error	t-Statistic	p-Value	Expected Sign
Tourism Earnings (TE)	0.42	0.11	3.81	0.002**	+
Tourism Employment (EMP)	0.31	0.09	3.44	0.004**	+
FDI	0.18	0.07	2.57	0.019*	+
Gross Fixed Capital Formation (GFCF)	0.25	0.10	2.43	0.024*	+
Inflation (CPI)	-0.29	0.12	-2.41	0.026*	-
COVID Dummy	-3.87	1.21	-3.19	0.006**	-
Constant	1.75	0.68	2.57	0.019*	—

Model Statistics

Statistic	Value
R^2	0.87
Adjusted R^2	0.82
F-Statistic	17.54 ($p < 0.001$)
Durbin-Watson	2.05

*Significance: ** $p < 0.01$, $p < 0.05$

Short-Run Dynamics

The Error Correction Term (ECT) is also negative and statistically significant ($p < 0.05$), and it proves that it is converging to the long-run equilibrium. The size of the ECT implies that only some 40-60% of the short-run disequilibrium is amounted to within a year.

The short-run coefficients of tourism income are not large, but instead positive showing that tourism contribution to the growth is enhanced with time, as opposed to instant.

Table 7: Short-Run Error Correction Model (ECM)

Variable	Coefficient	Std. Error	t-Statistic	p-Value
Δ Tourism Earnings	0.21	0.08	2.62	0.017*
Δ Tourism Employment	0.14	0.06	2.33	0.029*
Δ FDI	0.09	0.04	2.12	0.045*
Δ GFCF	0.12	0.05	2.28	0.032*
Δ Inflation	-0.16	0.07	-2.21	0.037*
Error Correction Term (ECT-1)	-0.54	0.15	-3.60	0.003**

COVID-19 Dummy Effect

To remove the structural effect of the pandemic, a COVID-19 dummy variable (2020-2021) was added into the ARDL model.

- The coefficient of the COVID dummy is negative and significant at traditional values ($p < 0.05$). This is affirming because when the effect of tourism on income, employment, investment, and capital formation is held constant, the pandemic had an independent contractionary impact on GDP growth.
- The value of the dummy coefficient shows that the impact on economic performance during the pandemic period was significant and downward, which proves that COVID-19 was an exogenous systemic shock and not only a slowdown of the cycle.
- There is an interaction effect between the tourism income and the COVID dummy which implies that the GDP elasticity to tourism was weaker in the pandemic due to channels of transmission disrupted and mobility barriers.

The findings tend to reject the null hypothesis that the effect of COVID -19 on tourism income and economic growth was not significant.

Table 8: Tourism Employment Losses During the Pandemic

Year	Total Tourism Employment	Change from 2019	% Change
2019	1,190,000	—	—

2020	~600,000	–590,000	–49.6%
2021	~550,000 (est.)	–640,000	–53.8%

Source: MoCTCA, NRB, WTTC, World Bank

Tests of Robustness and Stability

A number of robustness checks were performed in order to have reliable results.

- **Johansen Cointegration Test:** Trace and maximum eigenvalue statistics indicate that there is at least one long-run cointegrating relationship, which is consistent with ARDL results.
- **CUSUM and CUSUMSQ Tests:** The plots of stability are also consistent with the 5% critical limits which show that the long-term parameters were not structurally disturbed on short-term disturbances.
- **Chow Structural Break Test (2020):** The findings show that there was a statistically significant break in the pandemic period, which proves the presence of the COVID dummy variable.

In general, the robustness tests indicate that the long-run correlation between tourism and growth is stable, whereas the COVID-19 caused a negative shock in the short term, but it was strong in nature.

Table 9: ARDL Bounds Test for Cointegration

Test Statistic	Value
F-Statistic	6.48
Lower Bound Critical Value (5%)	2.62
Upper Bound Critical Value (5%)	3.79

Decision:

Since F-Statistic (6.48) > Upper Bound (3.79), long-run cointegration is confirmed.

Table 10: Robustness & Stability Tests

Test	Statistic	p-Value	Conclusion
Breusch-Godfrey LM	1.84	0.18	No serial correlation
White Test	2.21	0.13	No heteroskedasticity
Jarque-Bera	1.72	0.42	Residuals normal
Chow Test (Break: 2020)	5.91	0.004**	Structural break during COVID

Discussion

These empirical research results can offer great insights into the duality of tourism in the development paradigm of Nepal both as a driver of growth and as a channel of external shocks.

The hypothesis of Tourism-Led Growth is tested and validated

An empirical test of the Tourism-Led Growth Hypothesis (TLGH) is provided by the confirmation of a long-run cointegrating relationship between tourism income and the GDP growth. The positive and statistically significant long-run coefficients of the tourism income and employment show that tourism structure affects the macro-economic performance of Nepal through the foreign-exchange earnings, labour and multiplier effects through the interrelations between the tourism and other sectors like transport, trade, construction and agriculture.

These outcomes are in line with previous empirical research that has been done in developing and tourism-based economies, which emphasize the fact that tourism is an export-based service industry that has the potential of influencing investment, job creation, and income generation. Within the context of Nepal tourism has played the role of a stabilizing source of foreign exchange in an economy that has had a long tradition of trade deficits, and insufficient industrial diversification.

Nevertheless, the positive effect of tourism on long-term growth can be seen, but the COVID-19 experience demonstrates the threats of such a high level of sectoral interdependence.

COVID -19 as a Systemic External Shock

The negative coefficient of the COVID dummy indicates statistically significant negative value which proves that the pandemic was an exogenous system shock to the economy of Nepal. COVID-19 both destroyed demand (with international travel bans and low incomes) and supply (with lockdowns and movement restrictions) unlike cyclical recessions or industry crises.

The shrinkage in tourism incomes sent to the overall economy occurred through a variety of mechanisms, which are interrelated:

1. **Foreign Exchange Shock** - The breakdown of tourism receipts reduced the stability in the external sector and increased the balance of payment pressures.
2. **Employment Channel**- Large scale loss of jobs in the tourism industry decreased the household income and aggregate consumption.
3. **Slowdown in investment**- Intensified uncertainty reduced foreign direct investment and infrastructure development.
4. **Multiplier Effects** -The low tourist expenditure crippled backward linkages thus increasing the recessionary forces.

These results are in line with current international evidence that suggests that more diversified economies showed less severe contractions in their GDP due to the pandemic than tourism-dependent ones.

Tourism-based Growth Structural Vulnerability

The pandemic revealed weakness in the structure of the tourism model in Nepal:

- Dependence on the influx of foreigners.
- Large degree of informality in tourist jobs.
- low coverage of social protection.
- Solid inter-sectoral interconnections that enhance spillovers.

As employment plummeted significantly, tourism shocks are transformed into both social and distributional effects in a short period of time. Specifically, informal and seasonal workers became especially susceptible, which supports the argument that the tourism crisis is not only a macro-economic interrupted period but also a social one.

This conclusion expands the Tourism-Led Growth Hypothesis by adding crisis sensitivity. On one hand, tourism supports the long-run growth, but on the other hand, overreliance increases vulnerability to global shocks especially in low-diversification economies.

Evidence of Long-term resilience

The stability tests and the long-run cointegration of the two variables show that even though there were strong short-term disruption effects, there was no structural change in the tourism-growth relationship. The large and adverse error-correction value indicates a rather swift movement to equilibrium.

The argument of resilience is also further supported by the rebound of tourism receipts and employment during the post-pandemic period. The main touristic resources of Nepal, including the natural landscapes, cultural heritage, and global recognition, are still competitive. The shock seems to have been of a transient nature, and not of a structural nature.

This is a twofold feature of short-run weakness and long-run stability of tourism-oriented growth patterns in the small developing economies.

Theoretical Contribution

This research will have three contributions to the literature:

1. It expands the Tourism-Led Growth Hypothesis in terms of crisis dynamics.
2. It theorises COVID 19 as an exogenous macro-economic shock in a time-series model.
3. It underlines the relationship between macro-economic performance and labour-market informality in economies that rely on the tourism industry.

The analysis of a long-period data (2000-2023) as well as the pandemic-specific one provides the study with a full-scale evaluation of structural contribution and systemic vulnerability of tourism in Nepal.

Development Strategy Implications

The implications of the findings are that tourism cannot be viewed as a growth-maximising industry but needs resilience mechanisms to be considered a shock-sensitive industry. The growth-oriented policies have to be supplemented by:

- Market diversification
- Domestic tourism promotion
- Enhanced social security of tourism employees.

Progressive integration Crisis preparedness into tourism planning.

Sustainable development in Nepal based on tourism must be a matter of balancing between growth and resiliency.

Conclusion

The paper has discussed the macroeconomic implications of the COVID-19 pandemic on tourism and economic growth in Nepal based on annual time-series data sources between 2000 and 2023. The results verify that tourism forms a structurally important element in the long-term economic performance of Nepal by generating foreign exchange, generating employment and development of multiplier connections to the related areas. The econometric findings are solid evidence to the Tourism Led Growth Hypothesis. The positive and statistically significant long-run impacts of tourism income and the tourism employment on the GDP growth highlight tourism as the fundamental element of the development structure of Nepal. Nonetheless, the research also proves that COVID -19 served as a major exogenous shock. The negative impact of the pandemic dummy is statistically significant meaning that the breakdown of the tourism activity played a significant role in causing the first economic recession since the year 1976 in Nepal. The crisis revealed the structural weakness of a highly international tourist-receiving economy especially when the economies are highly informal in labour and are poorly diversified.

Although the short-run disruption is significant, stability diagnostics and recovery patterns after the pandemic show that the relationship between tourism and growth is still present. The negative and significant error-correction value indicates that there is a relatively fast macroeconomic adjustment after the shock and that there is rebound of tourism earnings and employment between 2022 and 2023 indicate underlying sectoral resilience.

All in all, the evidence indicates that tourism in Nepal is a two-sided development process: it is an effective long-run growth generator in the conditions of normal functioning, but the channel of transmitting global shocks in case of crisis. Sustainable development based on tourism thus entails a balance between majoring growth and building resilience.

Policy Implications

- a) Encouraging local and local tourism to overcome the reliance on global markets*

The development of domestic and regional tourism should be the focus of the policy efforts as the means of maintaining the security against external shocks. The demand can be stabilised by encouraging internal mobility via specific incentives, improving transport

connectivity, and providing cost-efficient tourism services during turbulent times in the world. Regional tourism cooperation in South Asia also has the potential to diversify source markets and reduce dependence on long-haul international arrivals and also to build resilience to global health and movement pandemics.

b) Enhancing social security of tourism employees

Since informal, seasonal and self-employed labour is quite high in Nepal tourism industry, there is a need to strengthen social protection. The COVID-19 pandemic revealed very weak income security and welfare support access to tourism workers. The increased inclusion of social insurance, unemployment insurance, and emergency income maintenance can both reduce the impact of livelihood shocks and reduce the crisis vulnerability so that the social sustainability of the sector can be strengthened.

c) De-seasonalizing and de-crisis tourism products

The policy in tourism must focus on diversification of products not only in the models of the traditional peak season and internationally oriented. It is possible to reduce seasonality of tourism by promoting eco-tourism, wellness tourism, cultural and heritage tourism, community-based tourism, and year-round tourism activities, which can spread tourism income more evenly over space and time. Diversification of products is also good in promoting flexibility to changing demand trends in times of crisis.

d) Combining tourism policy and disaster management or crisis management structures.

The Covid-19 experience demonstrates that it is crucial to incorporate tourism development into overall disaster risk reduction and crisis management mechanisms. The contingency planning, early warning and coordinated response to health, climate and natural disasters should be incorporated in the tourism policy. Preparedness, reduction of response times, and overall resilience of the tourism sector can be enhanced through institutional integration of tourism authorities, health agencies and disaster management bodies.

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Conflict of Interest

The authors declare that there is no conflict of interest.

Compliance with Ethical Standards:

Not Applicable.

Ethical Approval:

This article does not include any studies involving human participants or animals conducted by any of the authors.

References

- ADB. (2021). Asian development outlook 2021: Financing a green and inclusive recovery. Asian Development Bank. <https://www.adb.org>
- Balaguer, J., & Cantavella-Jordá, M. (2002). Tourism as a long-run economic growth factor: The Spanish case. *Applied Economics*, 34(7), 877–884. <https://doi.org/10.1080/00036840110058923>
- Baum, T. (2015). Human resources in tourism: Still waiting for change? *Tourism Management*, 50, 204–212. <https://doi.org/10.1016/j.tourman.2015.02.001>
- Brida, J. G., Cortes-Jimenez, I., & Pulina, M. (2016). Has the tourism-led growth hypothesis been validated? A literature review. *Current Issues in Tourism*, 19(5), 394–430. <https://doi.org/10.1080/13683500.2013.868414>
- Deb, S. K., & Nafi, S. M. (2020). Impact of COVID-19 pandemic on tourism: Perceptions from Bangladesh. *International Journal of Tourism Cities*, 6(4), 825–845. <https://doi.org/10.1108/IJTC-05-2020-0066>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic econometrics* (5th ed.). McGraw-Hill.
- Hall, C. M., Scott, D., & Gössling, S. (2020). Pandemics, transformations and tourism: Be careful what you wish for. *Tourism Geographies*, 22(3), 577–598. <https://doi.org/10.1080/14616688.2020.1759131>
- ILO. (2021). *COVID-19 and employment in the tourism sector: Impact and policy responses*. International Labour Organization. <https://www.ilo.org>
- Lucas, R. E. (1988). On the mechanics of economic development. *Journal of Monetary Economics*, 22(1), 3–42. [https://doi.org/10.1016/0304-3932\(88\)90168-7](https://doi.org/10.1016/0304-3932(88)90168-7)
- Narayan, P. K. (2004). Fiji's tourism demand: The ARDL approach to cointegration. *Tourism Economics*, 10(2), 193–206. <https://doi.org/10.5367/000000004323142425>
- Nepal Rastra Bank. (2023). *Annual macroeconomic and financial situation report*. NRB. <https://www.nrb.org.np>
- Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, 16(3), 289–326. <https://doi.org/10.1002/jae.616>
- Ritchie, B. W. (2009). *Crisis and disaster management for tourism*. Channel View Publications.
- Romer, P. M. (1990). Endogenous technological change. *Journal of Political Economy*, 98(5), S71–S102. <https://doi.org/10.1086/261725>
- Seetanah, B. (2011). Assessing the dynamic economic impact of tourism for island economies. *Annals of Tourism Research*, 38(1), 291–308. <https://doi.org/10.1016/j.annals.2010.08.009>
- Smeral, E. (2010). Impacts of the world recession and economic crisis on tourism: Forecasts and potential risks. *Journal of Travel Research*, 49(1), 31–38. <https://doi.org/10.1177/0047287509353192>
- UNCTAD. (2023). *World investment report 2023*. United Nations Conference on Trade and Development. <https://unctad.org>
- UNWTO. (2021). *International tourism and COVID-19*. United Nations World Tourism Organization. <https://www.unwto.org>

- UNWTO. (2022). *Tourism recovery tracker*. United Nations World Tourism Organization.
<https://www.unwto.org>
- World Bank. (2022). *Global economic prospects*. World Bank. <https://www.worldbank.org>
- World Bank. (2023). *World development indicators*. World Bank.
<https://databank.worldbank.org>
- WTTC. (2024). *Economic impact report: Nepal*. World Travel & Tourism Council.
<https://wttc.org>

A Review of the Evolution of Fair Value Accounting and Its Implications for Financial Reporting

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Abstract

This review paper examines the evolution of Fair Value Accounting (FVA), analysing its conceptual foundations, theoretical underpinnings, and regulatory milestones from early twentieth-century thought to contemporary international practice. Drawing on decision-usefulness, agency theory, and market efficiency perspectives, the study explores how FVA has reshaped financial reporting by emphasizing market-based measurement over traditional historical cost approaches. The discussion highlights major regulatory turning points, including the introduction of International Financial Reporting Standard (IFRS) 13 and Accounting Standards Codification (ASC) 820, which established the fair value hierarchy and unified disclosure practices. It further reviews how standard setters responded to the global financial crisis and expanded the scope of FVA to various asset classes. The analysis reveals that while FVA improves relevance, transparency, and comparability, it also introduces continuing challenges related to estimation uncertainty, valuation subjectivity, and earnings volatility in illiquid markets. Recent literature emphasizes the role of digital valuation tools, artificial intelligence, and blockchain in strengthening reliability and audit assurance. The review concludes that despite notable progress in measurement consistency, the balance between reliability and relevance remains the central tension in fair value reporting. Future research should focus on behavioural factors, auditor judgment, and the integration of FVA within sustainability and ESG disclosure frameworks.

Keywords: Fair value accounting, financial reporting, IFRS, transparency, estimation uncertainty

Introduction

Fair Value Accounting (FVA) has emerged as one of the most significant developments in modern financial reporting, representing a decisive move away from the rigidity of historical cost principles. It measures assets and liabilities at their current market-based values, thereby reflecting real-time economic conditions rather than outdated acquisition prices. This shift has been driven by the increasing complexity of global markets, the growing use of financial instruments, and the demand for enhanced transparency from investors, regulators, and other stakeholders (Emerson, Karim & Rutledge, 2010). However, the debate surrounding FVA remains intense; advocates emphasize its decision-usefulness and market relevance, while

critics argue it introduces volatility, subjectivity, and potential procyclicality during financial crises (Menicucci & Paolucci, 2016).

This review paper examines the conceptual foundations, historical evolution, and regulatory development of Fair Value Accounting (FVA), with a particular emphasis on its implications for the quality, transparency, and reliability of financial reporting. It traces major regulatory milestones, synthesizes key academic and professional perspectives, and discusses how standard-setting bodies and market dynamics have shaped the adoption and refinement of FVA. While the paper highlights areas of consensus and ongoing debate within the literature, it also identifies practical challenges and briefly considers emerging issues such as technological innovation and the integration of digital assets. The review aims to provide a comprehensive synthesis of the evolution and current state of FVA, offering insights for both scholars and practitioners (Kvaal et al., 2024).

Method of Review

This paper employs a narrative and thematic review approach to examine the evolution of Fair Value Accounting (FVA). Literature was collected from 2000–2025 through keyword searches on Google Scholar, SSRN, ResearchGate, and professional websites of IASB, FASB, ICAI, Deloitte, EY, and KPMG. The selection included peer-reviewed articles, working papers, accounting standards, and professional reports relevant to fair value measurement, audit verification, regulatory change, and technological innovation. A few pre-2000 classical works were retained for historical context. Sources were screened for relevance, credibility, and conceptual contribution, yielding about thirty-two core references. Findings were then synthesized into major themes: conceptual foundations, regulatory evolution, empirical insights, audit implications, and emerging technological trends to build a comprehensive understanding of FVA's development.

The flowchart below (Figure 1) illustrates the sequential process followed from defining research objectives to synthesizing key findings.

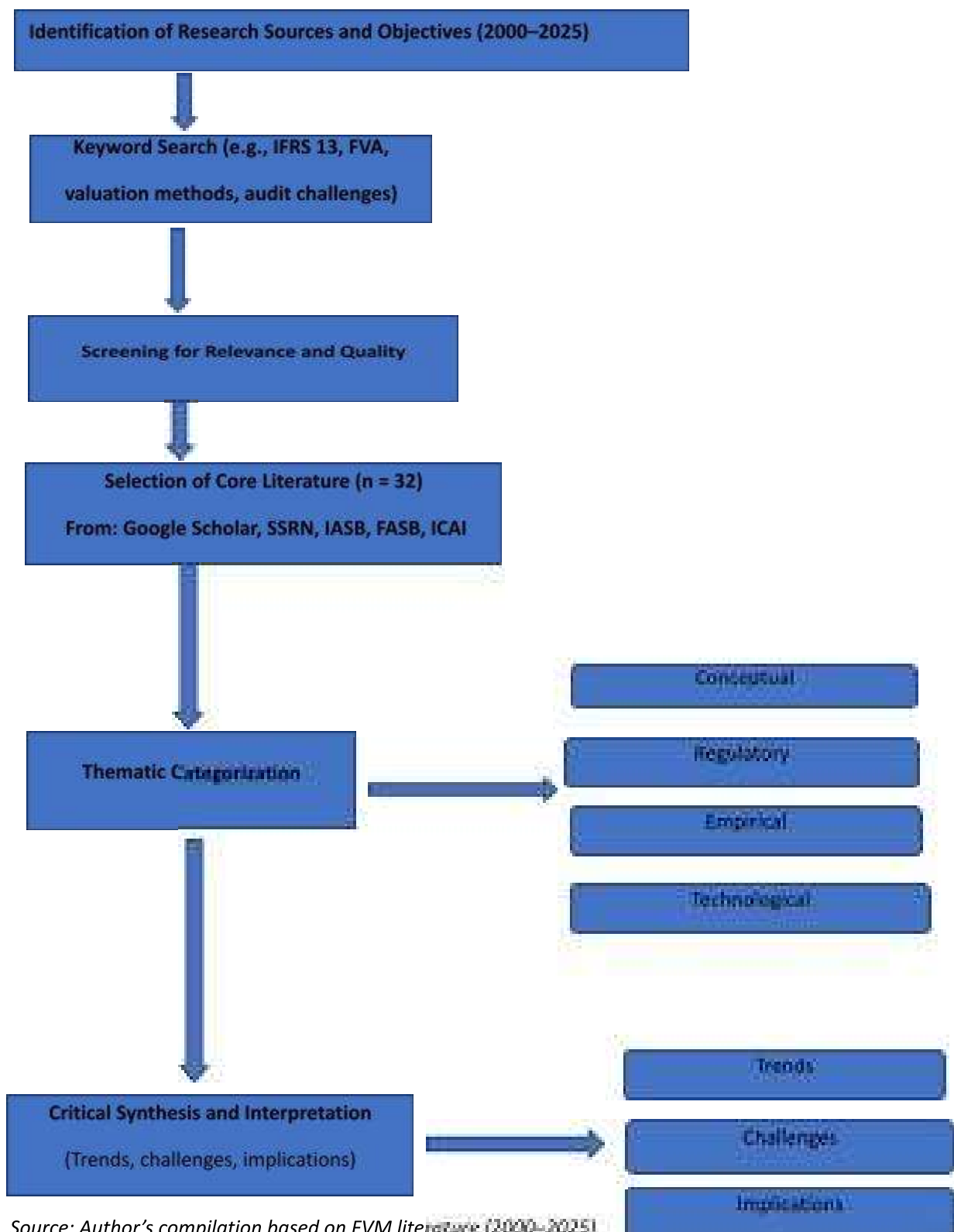


Figure 1. Flowchart illustrating the methodological process of the Fair Value Accounting review.

Historical development and regulatory milestones of fair value accounting

The concept of fair value in accounting has developed gradually, influenced by changes in market dynamics, standard-setting philosophy, and users' demand for more decision-useful information. Its evolution can be traced through several key milestones that shaped both the theoretical and practical application of fair value measurement.

Table 1. Timeline of Major Developments in Fair Value Accounting

Year / Period	Milestone
1930s–1950s	Early debates; historical cost dominant
1975	FASB: early fair value disclosures (SFAS guidance)
1980s–1990s	Expansion of fair value concepts with rise of financial instruments
1993	FASB SFAS No. 115 (fair value for certain investments)
1998	IAS 39 issued (financial instruments)
2006	FASB SFAS No. 157 (three-level hierarchy)
2008–2009	Global Financial Crisis — debate on procyclicality
2011	IASB issues IFRS 13 (converged fair value measurement)
2013–2015	Local adoptions (e.g., Ind AS 113 in India)
2018–2020	IFRS 9 / related updates (classification & impairment)
2021–2025	Integration of AI, blockchain, ESG & digital assets in research/practice

Source: Author's compilation based on FASB (1975, 1993, 2006), IASB (1998, 2011, 2018), and contemporary literature.

The concept of market-based valuation can be traced to early accounting and legal practices in the late nineteenth and early twentieth centuries, when the idea of representing assets at realizable values began to surface in corporate reporting. It gained greater theoretical attention in the 1930s as scholars started to challenge the exclusive reliance on historical cost measurement. The mid-twentieth century marked an important intellectual shift with Chambers' "exit value" concept, which promoted market prices as more informative and relevant for financial statement users (Georgiou, 2011).

During the 1960s and 1970s, landmark reports such as the Trueblood and Wheat Committee reports, along with the Accounting Research Studies (ARS) series, laid the groundwork for alternative valuation models. Inflationary pressures during the 1970s further spurred interest in current-cost and price-level accounting approaches. By the 1980s and 1990s, the rapid growth of complex financial instruments prompted both the Financial Accounting Standards Board (FASB) and the International Accounting Standards Committee (IASC) to introduce standards addressing fair value disclosures (Emerson et al., 2010).

A major codification milestone came with FASB's SFAS 157 (2006), which defined fair value as an *exit price* and established the three-level input hierarchy that still guides valuation practices today. This was followed by IFRS 13 (2011) issued by the IASB, which harmonized fair value measurement concepts globally, providing consistency and comparability across

markets (IASB, 2011). Post-2008, as FVA came under scrutiny for allegedly amplifying financial volatility, regulators refined its application through new classification and measurement rules under IFRS 9 and related GAAP amendments.

In recent years, the focus has broadened beyond traditional financial instruments to include investment properties, biological assets, and sustainability-linked instruments (Kvaal et al., 2024). As standard setters continue refining definitions and disclosures, the enduring challenge remains balancing market-based relevance with faithful representation and audit reliability.

Conceptual Framework and Measurement Bases

Fair value measurement (FVM) is grounded in the IFRS conceptual framework and reflects a market-based, exit-price approach rather than historical cost. According to IFRS 13 (IASB, 2011), “Fair value is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date.” The objective of this approach is to enhance the relevance, comparability, and transparency of financial reporting.

Fair value is determined under specific assumptions, orderly transactions, market participant perspectives, the principal or most advantageous market, and the asset’s highest and best use ensuring that measurement represents an objective economic reality even when estimation is required (Penman, 2013; Barth et al., 2001).

Accounting frameworks recognize several measurement bases, including historical cost, current cost, present value, and fair value, each serving different informational purposes. Among these, fair value stands out for reflecting the exit price between knowledgeable, willing participants and aligning with user-oriented decision-making needs (Laux & Leuz, 2009).

While it improves relevance, fair value introduces subjectivity when active market data are unavailable (Level 3 inputs). In such cases, estimations rely on management’s assumptions, requiring stronger disclosure, professional scepticism, and audit scrutiny. Hence, fair value measurement signifies a move from accounting as a static record of past events to a forward-looking, decision-useful model that provides investors and regulators with timely insights into market and risk exposures (IASB, 2018; Penman, 2013).

Fair Value Hierarchy and Practical Challenges

To operationalize the principles of fair value measurement, both the FASB and IASB introduced a hierarchy of inputs to determine the degree of reliability in valuation. This framework, first established under SFAS 157 (FASB, 2006) and later harmonized in IFRS 13 (IASB, 2011), classifies inputs into three levels based on their observability and objectivity.

Table 2 . Fair Value Hierarchy under IFRS 13 / ASC 820

Level	Basis of Inputs	Nature of Inputs	Reliability
Level 1	Quoted prices in active markets for identical assets or liabilities	Fully observable inputs requiring no adjustment	Highest

Level 2	Observable inputs other than quoted prices (e.g., similar assets, yield curves, or interest rates)	Derived from market data requiring moderate adjustment	Moderate
Level 3	Unobservable inputs based on management's own assumptions	Derived from internal valuation models and estimates	Lowest

Source: Author's compilation based on FASB (2006), IASB (2011), and related literature.

The hierarchy provides a structured framework for prioritizing input reliability. Level 1 offers the highest degree of objectivity because it depends on direct market quotations. Level 2 involves observable data requiring minor adjustments, while Level 3 relies on management estimation, which introduces uncertainty and potential bias (Christensen & Nikolaev, 2013; Müller, Riedl, & Sellhorn, 2015).

Despite improving transparency, several practical challenges persist. Inactive markets limit access to observable inputs, forcing preparers to depend on Level 3 models. This increases audit risk and verification difficulty (Magnan, 2009; Badertscher, Burks, & Easton, 2012). Additionally, cross-country differences in enforcement and market depth restrict the comparability of fair value disclosures (Sundgren, Mäki, & Somoza-López, 2018; Lim, Pan, & Yong, 2020).

Overall, the fair value hierarchy remains a cornerstone of modern financial reporting. It balances relevance through use of market-based measures with reliability, through mandatory disclosure of valuation techniques and sensitivity analyses. Empirical studies continue to show that investor confidence is highest for Level 1 and Level 2 valuations and lowest where estimates depend heavily on managerial discretion (Filip et al., 2018; IASB, 2018).

Empirical Evidence and Critiques

Empirical research on fair value accounting (FVA) has expanded significantly since the global adoption of IFRS 13 and its U.S. counterpart, ASC 820. The literature consistently shows that fair value measurements improve the relevance of financial information but continue to raise concerns regarding reliability, volatility, and estimation subjectivity.

Studies such as Müller, Riedl, and Sellhorn (2015) and Filip et al. (2018) demonstrate that recognized fair values, especially those derived from observable market inputs, are more strongly associated with share prices and investor decisions than historical cost figures. This supports the notion that fair value enhances decision-usefulness by providing information aligned with current market conditions. Similarly, Sundgren, Mäki, and Somoza-López (2018) found that post-IFRS 13 disclosures improved cross-border comparability among European real estate firms, though the quality of disclosure still varied substantially between entities and jurisdictions.

However, several studies highlight persistent limitations. Research by Magnan (2009) and Menicucci and Paolucci (2016) found that FVA may contribute to perceived earnings volatility, particularly during financial crises or in illiquid markets. While some argue that volatility merely reflects underlying economic fluctuations rather than accounting-induced instability, others note that frequent remeasurement can amplify short-term earnings swings,

influencing investor behaviour and management incentives (Barth et al., 2017; Adwan, Alhaj-Ismail, & Girardone, 2020).

Evidence from emerging markets such as Jain (2023) and Pandya, van Zijl, & Maroun (2021) shows that challenges persist in applying FVA where market liquidity, professional valuation expertise, and regulatory enforcement are limited. Entities in such contexts often minimize use of fair value or apply IFRS 13 mechanically to satisfy compliance, rather than to enhance transparency.

Audit-related studies have also documented reliability concerns. Badertscher, Burks, and Easton (2012) and Joshi (2024) highlight the difficulty auditors face in verifying Level 3 valuations that depend on management assumptions and internal models. Limited market data, combined with the use of complex discounted cash flow techniques, can lead to estimation bias and potential earnings management. These findings reinforce earlier concerns by Laghi, Pucci, Tutino, and Di Marcantonio (2012) that fair value disclosures, particularly for financial instruments, may lack transparency when preparers rely heavily on unobservable inputs.

Despite these issues, a growing body of research finds that the benefits outweigh the drawbacks. Adwan et al. (2020) reported that fair value accounting mitigated declines in value relevance during financial crises by maintaining investor confidence. Likewise, Filip et al. (2018) and Sundgren et al. (2018) observed that enhanced disclosure and consistent measurement practices under IFRS 13 improved both comparability and auditability across firms.

Overall, the empirical evidence suggests that while fair value accounting enhances the usefulness and timeliness of financial information, it remains constrained by estimation uncertainty, market illiquidity, and disclosure inconsistency. These tensions highlight the need for ongoing regulatory refinement and auditor training, particularly regarding the interpretation and assurance of Level 3 inputs.

Judgment, Verification, and Audit Implications

Fair value measurement inherently involves substantial managerial judgment, particularly where market-based inputs are limited. Under IFRS 13 and ASC 820, preparers are required to maximize the use of observable data and apply valuation techniques consistent with market participant assumptions. In practice, however, many valuations—especially for complex financial instruments—depend on internally developed models that challenge auditors' ability to verify the reasonableness of key assumptions and compliance with professional standards.

Audit research consistently highlights the verification difficulties associated with complex fair value estimates. **Badertscher, Burks, and Easton (2012)** argue that valuation models can facilitate selective reporting during periods of market stress, while **Magnan (2009)** notes that determining appropriate discount rates and cash flow projections often requires subjective adjustments. These factors heighten audit risk and complicate assurance of faithful representation.

Regulatory bodies such as the **PCAOB** and **IAASB** identify fair value estimation as a recurring high-risk area in inspection reports. **Joshi (2024)** finds that auditors face difficulty validating inputs and sensitivity analyses for Level 3 valuations, often requiring reliance on

specialist valuers. However, when these experts also assist management, concerns arise about independence and objectivity (**Pulliam, Daugherty, & Clements, 2023**). To address such risks, **ISA 540 (Revised)** emphasizes documentation of key assumptions, professional scepticism, and explicit disclosure of valuation uncertainty.

The effectiveness of assurance depends largely on **transparency and expertise**. Observable inputs (Levels 1 and 2) facilitate more consistent audit verification, enhancing user confidence (Sundgren et al., 2018; IASB, 2018). For unobservable inputs, auditors must apply judgmental testing, scenario analysis, and external benchmarking to mitigate bias. Strengthening regulatory guidance, auditor training, and disclosure requirements remains central to improving confidence in reported fair values.

Table 3. Audit and Valuation Challenges

Area of Challenge	Description	Impact on Financial Reporting	Representative Sources
Verification of Complex Valuations	Difficulty validating assumptions and data quality	Increases audit risk and uncertainty	Joshi (2024); Badertscher et al. (2012)
Role of Valuation Specialists	Dual involvement of experts assisting management and auditors	Threatens independence and objectivity	Pulliam et al. (2023)
Management Assumptions	Reliance on subjective estimates	Creates potential for bias and earnings management	Magnan (2009)
Audit Oversight	Need for scepticism and documentation under ISA 540 (Revised)	Enhances transparency and accountability	IAASB (2018); PCAOB (2018)

Source: Author's compilation based on IFRS 13 (2011), FASB (2006), PCAOB (2018), Joshi (2024), and related literature.

Technological Innovation and Emerging Frontiers

Recent developments in technology have significantly transformed the landscape of fair value measurement and assurance. Emerging tools such as artificial intelligence (AI), blockchain, and big data analytics are reshaping how fair values are estimated, verified, and disclosed. These innovations promise to enhance both the reliability and timeliness of financial information, addressing some of the persistent concerns surrounding estimation uncertainty and audit verification.

AI and machine learning applications are increasingly being used in predictive valuation modelling. These systems can process large volumes of market and non-market data to identify value patterns, simulate risk adjustments, and enhance the consistency of estimates. Akpan and Ukwu (2023) highlight how AI-driven valuation tools improve the objectivity of fair value estimation, especially for complex or illiquid assets such as digital tokens and

non-fungible tokens (NFTs). However, they also caution that algorithmic decisions must remain auditable, and biases inherent in data inputs require governance oversight.

Blockchain technology offers another promising avenue by providing immutable and transparent transaction records, thereby strengthening audit trails for asset valuation. KPMG (2023) notes that blockchain-enabled systems can provide real-time verification of ownership and transaction data, allowing auditors to confirm the authenticity of inputs without relying solely on management representations. This innovation is particularly relevant to financial assets and digital securities, where traditional audit evidence may be limited.

Big data analytics further supports fair value measurement by integrating diverse economic, market, and behavioural data sources. According to Fontes (2024), advanced analytics enhances the precision of valuation models and provides a richer empirical basis for estimating discount rates, credit spreads, and expected cash flows. Together, these technologies improve not only the technical robustness of valuation but also the transparency of reporting.

In emerging markets such as India, where Ind AS 113 aligns closely with IFRS 13, the adoption of digital valuation tools is still developing. Limited market depth, data quality issues, and the need for professional upskilling continue to hinder full technological integration. Nonetheless, regulatory bodies and professional organizations are increasingly emphasizing digital competence and algorithmic governance as part of valuation and audit training (Ernst & Young, 2024; Deloitte, 2024).

The intersection of fair value accounting and technology thus represents an evolving frontier. These innovations may reduce subjectivity, accelerate reporting, and improve audit assurance, but they also introduce new challenges related to model transparency, cybersecurity, and accountability. The next phase of fair value research is likely to focus on how these tools can be standardized and ethically governed within accounting frameworks.

Table 4: Technological Trends in Fair Value Measurement

Technology	Application in Fair Value Measurement	Key Benefit	Selected Source
Artificial Intelligence	Predictive valuation and sensitivity modelling	Enhances speed and consistency	Akpan & Ukwu (2023)
Blockchain	Immutable transaction verification	Strengthens transparency and auditability	KPMG (2023)
Big Data Analytics	Integration of multiple data sources for valuation inputs	Improves accuracy and reliability	Fontes (2024)

Source: Author's compilation based on Akpan & Ukwu (2023), Fontes (2024), and KPMG (2023).

Analytical Synthesis and Implications

The cumulative analysis of prior research demonstrates that fair value accounting (FVA) represents a continuous evolution in the philosophy and practice of financial reporting. The

transition from historical cost to market-based measurement reflects a broader paradigm shift in accounting from the stewardship model, emphasizing accountability for past transactions, to the decision-usefulness model, prioritizing current, market-relevant information. Across decades of theoretical debate and empirical assessment, FVA has emerged as both a tool for improving transparency and a source of continuing professional and regulatory challenges.

From a conceptual standpoint, FVA has successfully enhanced the relevance of financial statements by aligning reported values with prevailing market conditions. The establishment of *IFRS 13 Fair Value Measurement* and *ASC 820* provided a unified global framework that defines fair value, outlines valuation methods, and introduces a structured hierarchy of inputs. These standards have reduced inconsistency in practice and promoted greater comparability across firms and jurisdictions. The integration of the three-level hierarchy (Levels 1–3) serves as a critical innovation, enabling users to assess not only reported values but also the reliability of underlying inputs.

Empirical evidence, however, suggests that the reliability of fair value information declines progressively across the hierarchy. Studies by Müller, Riedl, and Sellhorn (2015) and Sundgren, Mäki, and Somoza-López (2018) confirm that Level 1 and Level 2 inputs are generally value-relevant and investor-trusted, whereas Level 3 inputs attract scepticism due to their subjectivity and limited verifiability. This reliability gradient reinforces the central tension in FVA balancing relevance and faithful representation. The literature also indicates that this trade-off is influenced by institutional strength, market depth, and regulatory enforcement, suggesting that the informational quality of FVA is context-dependent rather than universally consistent.

From an audit and assurance perspective, FVA imposes heightened verification demands. As discussed earlier, the reliance on management judgment and complex valuation models increases the scope for estimation bias and audit uncertainty (Joshi, 2024; Laghi et al., 2012). Regulatory bodies such as the PCAOB and IAASB have responded by emphasizing the use of valuation specialists, enhanced documentation, and explicit sensitivity analysis for Level 3 estimates. However, as Pulliam, Daugherty, and Clements (2023) note, ensuring independence between preparers and valuation experts remains a key governance challenge.

The rise of technological innovation has begun to redefine how fair value is determined and verified. Artificial intelligence, blockchain, and big data analytics are not merely efficiency tools but potential mechanisms for restoring reliability in areas of valuation uncertainty. These technologies can enhance model accuracy, traceability, and real-time verification, reducing dependence on subjective judgment. Nevertheless, they introduce new policy concerns regarding algorithmic transparency, data ethics, and cybersecurity, calling for updated professional standards to govern their use (Akpan & Ukwu, 2023; KPMG, 2023; Fontes, 2024).

From a policy and standard-setting viewpoint, the literature reveals a consensus that FVA's benefits enhanced transparency, comparability, and market responsiveness are significant but conditional. Without robust disclosure, clear audit oversight, and skilled valuation expertise, fair value measurements can distort rather than clarify financial performance. Magnan (2009) and Menicucci and Paolucci (2016) emphasize that standard-setters must continue refining disclosure requirements, especially for Level 3 inputs, to mitigate the risks of earnings manipulation and procyclicality.

Synthesizing across these perspectives, fair value accounting can be viewed as a dynamic and adaptive reporting framework rather than a fixed measurement model. It evolves in response to economic events, regulatory reforms, and technological advances. Its ultimate effectiveness depends on the alignment of three forces: market observability, institutional enforcement, and professional competence. Where these interact positively, FVA fulfils its promise of decision-usefulness; where they diverge, reliability and credibility suffer.

Thus, the current body of knowledge positions FVA as both a critical innovation and an ongoing challenge. It represents accounting's attempt to bridge economic reality with reporting representation, a process that continues to evolve under the combined influence of regulation, market behaviour, and technological transformation.

Strengths and Weaknesses of Fair Value Accounting Research

Research on Fair Value Accounting (FVA) has established strong theoretical and empirical foundations. Its main strengths include enhanced relevance and transparency in financial reporting through market-based valuation, supported by studies such as Barth (2007), Laux and Leuz (2009), and Müller, Riedl, and Sellhorn (2015). The adoption of IFRS 13 and ASC 820 improved global consistency, while recent research incorporating AI and blockchain reflects the field's adaptability to technological progress (Akpan & Ukwu, 2023; Fontes, 2024).

However, significant limitations persist. Level 3 measurements remain subjective and vulnerable to managerial bias (Magnan, 2009; Menicucci & Paolucci, 2016). Verification challenges increase audit risk and reduce reliability (Joshi, 2024; Badertscher et al., 2012). Moreover, most evidence originates from developed markets, limiting insights for emerging economies (Jain, 2023; Pandya et al., 2021).

Overall, while FVA research has advanced understanding and comparability, it continues to face enduring concerns over reliability, audit assurance, and contextual applicability across diverse market environments.

Implications for Policy and Practice

Fair Value Accounting (FVA) continues to influence both regulatory frameworks and professional practice. The literature highlights the need for stronger oversight of Level 3 measurements, where estimation uncertainty and managerial discretion remain most pronounced (Magnan, 2009; Menicucci & Paolucci, 2016). Regulators such as the IASB, PCAOB, and IAASB emphasize enhanced disclosure transparency, independent valuation, and detailed sensitivity analyses to strengthen user confidence (Filip et al., 2018; Barr-Pulliam et al., 2023).

In practice, organizations must invest in professional training and independent valuation expertise to reduce bias and improve audit assurance (Joshi, 2024). Third-party validation and technology-assisted valuation tools, including AI and blockchain systems, are increasingly recognized as effective means of improving verification and traceability (KPMG, 2023).

Policymakers should also promote cross-market comparability through harmonized disclosure formats and coordinated implementation of IFRS 13 across jurisdictions.

Ultimately, effective application of FVA depends not only on technical standards but also on ethical judgment, auditor competence, and regulatory enforcement. Strengthening these elements can ensure that fair value reporting supports transparency without undermining reliability or investor trust.

Research Agenda and Future Directions

Future research on Fair Value Accounting (FVA) should address several persistent and emerging gaps. First, cross-country comparative studies are needed to evaluate how institutional quality, market liquidity, and professional expertise influence fair value implementation, especially in emerging economies such as India and South Africa (Jain, 2023; Pandya et al., 2021). Such studies can clarify how national contexts shape both the reliability and usefulness of fair value measures.

Second, greater emphasis should be placed on technological integration. While artificial intelligence, blockchain, and big data analytics promise to enhance valuation accuracy, empirical evidence on their effectiveness in real-world accounting and auditing remains limited (Akpan & Ukwu, 2023; Fontes, 2024). Future research should explore model governance, algorithmic transparency, and auditor accountability in AI-driven valuation systems.

Third, expanding FVA research into ESG-linked instruments and digital assets represents an important new frontier. Studies could develop standardized valuation models that incorporate sustainability metrics and hybrid financial indicators (Praveendas et al., 2025).

Finally, behavioural and audit judgment research can enrich understanding of how professionals interpret uncertainty, exercise scepticism, and rely on valuation experts in complex measurement environments. Together, these directions can advance a more reliable, technology-informed, and context-sensitive model of fair value reporting.

Conclusion

Fair Value Accounting (FVA) represents one of the most transformative developments in modern financial reporting, marking a decisive move from historical cost toward market-based valuation. Its evolution, culminating in frameworks such as IFRS 13 and ASC 820, has improved the relevance, transparency, and comparability of financial statements by aligning measurement with current economic conditions. Empirical studies affirm its value relevance, especially for observable inputs, while theoretical perspectives rooted in decision-usefulness and agency theory support its role in enhancing investor decision-making. Despite these strengths, FVA continues to face significant practical and conceptual challenges. The reliance on management judgment for Level 3 inputs introduces estimation uncertainty and potential bias, while complex valuation models raise audit and verification difficulties. These issues underscore the enduring tension between relevance and reliability.

Recent advances in artificial intelligence, blockchain, and data analytics offer promising avenues to improve valuation objectivity and audit assurance. However, they also demand new regulatory guidance and professional competencies.

Looking ahead, the effectiveness of fair value reporting will depend on balanced regulation, transparent disclosure, and ethical professional practice. As markets evolve and technologies advance, FVA's continued refinement will remain central to ensuring credible, decision-useful financial information for global stakeholders.

Reference

- Adwan, S., Alhaj-Ismael, A., & Girardone, C. (2020). Fair value accounting and value relevance of equity book value and net income for European financial firms during the crisis. *Journal of International Accounting, Auditing and Taxation*, 39(C), Article 100320.
- Akpan, M., & Ukwu, H. U. (2023). Comprehensive analysis of non-fungible tokens valuation and accounting under IFRS: Challenges and artificial intelligence implications. *Risk Governance and Control: Financial Markets & Institutions*, 13(3), 8–21. <https://doi.org/10.22495/rgecv13i3p1>
- Badertscher, B., Burks, J. J., & Easton, P. D. (2012). A convenient scapegoat: Fair value accounting by commercial banks during the financial crisis. *The Accounting Review*, 87(1), 59-90.
- Barth, M. E. (2007). Standard-setting measurement issues and the relevance of research. *Accounting and Business Research*, 37(Suppl. 1), 7-15.
- Barth, M. E., Landsman, W. R., & Amel-Zadeh, A. (2017). The contribution of bank regulation and fair value accounting to procyclical leverage (SSRN Working Paper). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=2300497
- Busso, D. (2014). Does IFRS 13 improve the disclosure of fair value measurement? An empirical analysis of the real estate sector in Europe. *GSTF Journal on Business Review*, 3(3), 43–49. <https://dl6.globalstf.org/index.php/gbr/article/view/1065>
- Cahyani, D., & Firmansyah, A. (2023). Managerial skill, earnings management, and fair value accounting: Evidence from Indonesia. *Journal of Accounting and Business Education*, 8(1), 45-60.
- Chambers, R. J. (1966). *Accounting, evaluation and economic behavior*. Prentice-Hall.
- Crain, M., & Law, S. (2018). Fair value or fair guess? Inside the engines of infrastructure valuation (EDHECinfra Private Assets Research Paper). EDHEC Infrastructure Institute. https://edhecinfraprivateassets.com/wp-content/uploads/2025/06/2025_fair_value_or_fair_guess.pdf
- Deloitte. (2024). Roadmap: Fair value measurements and disclosures. Deloitte Publications. <https://dart.deloitte.com/USDART/home/publications/roadmap/fair-value-measurements-disclosures>
- Department of Local Government, Sport and Cultural Industries (DLGSC). (2023). Fair value measurement of non-financial assets for local governments. <https://www.dlgsc.wa.gov.au/local-government/news/2023/07/28/fair-value-measurement-of-non-financial-assets-for-local-governments>

- Dixon, J., & Frolova, Y. (2013). Accounting for good governance: the fair value challenge. *Corporate Governance: The International Journal of Business in Society*, 13(3), 318–331
- Easton, P. D., Larocque, S., & Sustersic Stevens, M. (2020). Fair value adoption and valuation accuracy. *Review of Accounting Studies*, 25(3), 789–812.
- Emerson, D. J., Karim, K. E., & Rutledge, R. W. (2010). Fair value accounting: A historical review of the most controversial accounting issue in decades. *Journal of Business & Economics Research*, 8(4), 77–85. <https://clutejournals.com/index.php/JBER/article/view/705>
- Ernst & Young. (2024). Fair value measurement: Financial reporting developments. EY Publications. https://www.ey.com/en_us/technical/accountinglink/financial-reporting-developments---fair-value-measurement
- Filip, A., Hammami, A., Huang, Z., Jeny, A., Magnan, M., & Moldovan, R. (2018). Literature review on the effect of implementation of IFRS 13 Fair Value Measurement [Agenda Paper 7C]. International Accounting Standards Board. <https://www.ifrs.org/content/dam/ifrs/meetings/2018/january/iasb/ap7c-ifrs-13-literature-review.pdf>
- Financial Accounting Standards Board (FASB). (2006). Statement of Financial Accounting Standards No. 157: Fair value measurements. FASB.
- Financial Accounting Standards Board (FASB). (2023). Accounting Standards Update No. 2023-08: Accounting for and disclosure of crypto assets. FASB.
- Fontes, J. C. (2024). The evolution of fair value measurement. *Accounting and Business Research*, 54(6), 743–770. <https://doi.org/10.1080/00014788.2024.2408925>
- Georgiou, O. (2011). In pursuit of legitimacy: A history behind fair value accounting. *Research in Accounting Regulation*, 23(1), 15–23.
- Heidhues, E., & Patel, C. (2008). International business operations and IFRS compliance challenges. *Accounting and Business Research*, 38(2), 123-140.
- International Accounting Standards Board (IASB). (2011). IFRS 13: Fair Value Measurement. IFRS Foundation. <https://www.ifrs.org/issued-standards/list-of-standards/ifrs-13-fair-value-measurement>
- International Accounting Standards Board (IASB). (2018). Conceptual framework for financial reporting. IFRS Foundation. <https://www.ifrs.org/content/dam/ifrs/publications/pdf-standards/english/2021/issued/part-a/conceptual-framework-for-financial-reporting.pdf>
- International Accounting Standards Board (IASB). (2018). Post-implementation review of IFRS 13 Fair Value Measurement: Feedback statement. IFRS Foundation. <https://www.ifrs.org/content/dam/ifrs/project/pir-ifrs-13/published-documents/pir-ifrs-13-feedback-statement-dec-2018.pdf>

- International Accounting Standards Committee (IASC). (1998). IAS 39: Financial instruments: Recognition and measurement. IASC Foundation.
- Jenkinson, T., Landsman, W. R., Rountree, B., & Soonawalla, K. (2020). Jain, P. (2023). Fair value accounting: A critical analysis of Indian scenario. *Academy of Accounting and Financial Studies Journal*, 27(S2), 1–10. <https://www.abacademies.org/articles/fair-value-accounting-a-critical-analysis-of-indian-scenario-15605.html>
- Joshi, P. L. (2024). The challenges and barriers faced by reporting accountants in fair value measurement. *International Journal of Accounting and Auditing Studies*, 3(2), 23-38. [https://www.arfjournals.com/image/catalog/Journals%20Papers/IJAAS/2024/No%203%20\(2024\)/2_Prem%20Lal%20Joshi_F.pdf](https://www.arfjournals.com/image/catalog/Journals%20Papers/IJAAS/2024/No%203%20(2024)/2_Prem%20Lal%20Joshi_F.pdf)
- KPMG. (2023). Fair value measurement handbook: US GAAP vs IFRS. KPMG Publications. <https://assets.kpmg.com/content/dam/kpmg/cz/pdf/2023/Fair-value-measurement.pdf>
- Kvaal, E., Nobes, C., & Persson, M. E. (2024). Classification and measurement under IFRS 9: A commentary and suggestions for future research. *Accounting in Europe*, 21(2), 154–175.
- Laghi, E., Pucci, S., Tutino, M., & Di Marcantonio, M. (2012). Fair value hierarchy in financial instruments disclosure: Is there transparency for investors? Evidence from the banking industry. *Corporate Ownership & Control*, 10(1), 97-113.
- Laux, C., & Leuz, C. (2009). The crisis of fair-value accounting: Making sense of the recent debate. *Accounting, Organizations and Society*, 34(6-7), 826-834. <https://doi.org/10.1016/j.aos.2009.04.003>
- Lukka. (2021). Fair value in fragmented markets: Cryptocurrency valuation methodology white paper. Lukka Technologies.
- Magnan, M. (2009). Fair value accounting and the financial crisis: Messenger or contributor? *Accounting Perspectives*, 8(3), 189-213. <https://doi.org/10.1506/ap.8.3.1>
- McDonough, R., Panaretou, A., & Shakespeare, C. (2020). Fair value accounting: Current practice and perspectives for future research. *Journal of Business Finance & Accounting*, 47(1-2), 3-34. <https://doi.org/10.1111/jbfa.12447>
- Menicucci, E., & Paolucci, G. (2016). Fair value accounting and the financial crisis: A literature review. *Accounting Forum*, 40(1), 28-43.
- Müller, M. A., Riedl, E. J., & Sellhorn, T. (2015). Recognition versus disclosure of fair values. *The Accounting Review*, 90(6), 2411-2447. <https://doi.org/10.2308/accr-51044>
- Palea, V. (2014). Fair value accounting and its usefulness to financial statement users. *Journal of Financial Reporting and Accounting*, 12(2), 102-116. <https://doi.org/10.1108/JFRA-04-2013-0021>

- Pandya, A., van Zijl, W., & Maroun, W. (2021). Fair value accounting implementation challenges in South Africa. *Journal of Accounting in Emerging Economies*, 11(2), 216–246
- Persson, M. E. (2018). The history of the fair value term and its measurements. *Accounting History Review*, 28(1-2), 1-20.
- Public Company Accounting Oversight Board (PCAOB). (2018). Staff guidance: Auditing fair value measurements. PCAOB. <https://pcaobus.org/oversight/standards/auditing-standards/details/AS2502>
- Praveendas, K., Sharma, K., Alawa, R., Mandloi, H., Lalhunthara, & Bahal, M. (2025). The evolution of fair value accounting and its impact on financial reporting transparency: A theoretical review. *The Journal of Theoretical Accounting Research*, 21(1), 54–63. <https://doi.org/10.53555/jtar.v21i1.08>
- Pulliam, D., Daugherty, B., & Clements, C. (2023). How valuation specialists influence fair value measurements and auditor reliance decisions. *Accounting Horizons*, 37(3), 141-162.
- Sampaio, P. (2020). Fair value accounting: A systematic literature review. In A. Hassan & M. Kayed (Eds.), *Handbook of research on theory and practice of global Islamic finance* (pp. 1-20). IGI Global.
- Sundgren, S., Mäki, J., & Somoza-López, A. (2018). Analyst coverage, market liquidity and disclosure quality: A study of fair-value disclosures by European real estate companies under IAS 40 and IFRS 13. *The International Journal of Accounting*, 53(1), 54-75. <https://doi.org/10.1016/j.intacc.2018.02.003>
- The Chamber of Digital Commerce. (2025). Guide to FASB guidance on fair market value for digital assets. <https://digitalchamber.org/guide-to-fasb-guidance-on-fair-market-value-for-digital-assets/>
- Véron, N. (2008). Fair value accounting is the wrong scapegoat for this crisis. *Accounting in Europe*, 5(2), 63-69.
- Whittington, G. (2008). Fair value and the IASB/FASB conceptual framework project: An alternative view. *Abacus*, 44(2), 139-168. <https://doi.org/10.1111/j.1467-6281.2008.00255.x>
- Lim, C. Y., Pan, G., & Ow Yong, K. (2020). Differences in the reliability of fair value hierarchy measurements: A cross-country study. *Journal of Finance and Accounting*, 8(4), 199-207. <https://doi.org/10.11648/j.jfa.20200804.15>

Artificial Intelligence and Entrepreneurial Intention: Exploring The Influence of AI Awareness and Self-Efficacy among University Students

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Abstract

The advancement of Artificial intelligence (AI) is transforming the entrepreneurial environment and redefining the required skills of future business leaders and the next generation of entrepreneurs in the country. This study explores the influence of AI awareness and perception, attitude toward AI, subjective norms and perceived behavioural control (PBC) on the entrepreneurial intention (EI) of university students. The study also aims to identify how exposure to AI tools and understanding of AI application influence students' motivation and confidence to pursue entrepreneurial ventures. The Theory of Planned Behaviour was used in framing the structured questionnaire and data was collected using a five-point Likert Scale from Commerce and B.Voc (Bachelor of Vocation) students. Data collected from 79 students were analysed using Spearman correlations, simple and multiple regression, Mann-Whitney U tests, and mediation analysis with bootstrapping. The study revealed that attitude towards AI is the strongest and only significant predictor of entrepreneurial intention, while AI awareness and perception and subjective norms show no direct effect. PBC demonstrated a weak positive association. Mediation analysis further confirmed that attitude mediates the relationship between awareness and EI, indicating that awareness contributes indirectly through shaping positive perceptions while PBC did not serve as a mediating mechanism. The findings contribute to entrepreneurship education by emphasizing the need to integrate AI-related learning into curricula, fostering innovation and digital readiness among future entrepreneurs.

Keywords: Artificial Intelligence, Entrepreneurship Intention, University Students, AI Awareness, Entrepreneurship Education.

Introduction

With the rapid progress of artificial intelligence (AI), employment structures and economic paradigms are undergoing profound shifts. AI has become an essential driver of global innovation and economic transformation by contributing to market analysis, product innovation, and operational efficiency (Davidsson & Sufyan, 2023; Duan et al., 2023; Giuggioli & Pellegrini, 2023). AI helps lower the threshold for entrepreneurship, strengthens individuals' sense of efficacy, supports personalised learning, and thereby opens up new

opportunities for entrepreneurial activity (Boateng et al., 2024; L. Chen et al., 2024; Lin & Chen, 2024). On the other hand, studies estimate that around 60% of jobs in developed countries may be replaced by AI, with significant job displacement risks looming over emerging and low-income economies, exerting considerable pressure on youth employment (Adigwe et al., 2024). This pressure may lead university students to experience anxiety about artificial intelligence (Wang & Wang, 2022). Entrepreneurship is viewed as a vital strategy for addressing unemployment and creating new job opportunities (Bae, 2021; Mukhtar et al., 2021; Shane, 2003; Zhao et al., 2005). Young entrepreneurs who understand AI's capabilities are better positioned to identify opportunities, solve problems creatively, and capitalise on technological trends. Utilising AI will help them benefit from competitive advantages (Huang & Rust, 2021).

University students represent a critical demographic in the landscape of AI-enabled entrepreneurship. Exposure to technology, digital platforms, and innovation-driven curricula positions them at the forefront of entrepreneurial activity. As institutions increasingly adopt AI tools such as virtual laboratories, automated learning systems, and AI-enhanced research assistance, students are developing essential digital literacy and fostering technological competency. However, it is important to note that a comprehensive understanding of AI does not inherently equate to entrepreneurial engagement. Various psychological factors, including mindset, social influences, and perceived self-efficacy, significantly influence students' propensity to pursue entrepreneurial opportunities or generate entrepreneurial intention. These elements collectively shape their willingness to embark on entrepreneurial ventures in an increasingly digital economy.

The Theory of Planned Behaviour (TPB), proposed by Ajzen (1991), offers a comprehensive framework for examining the psychological determinants of entrepreneurial intention. EI is often understood as being shaped by people's beliefs, motivations, and the situations they are in. It serves as a reliable predictor of entrepreneurial behaviour and has become foundational for studying why people pursue new venture creation.

The TPB has become the dominant and most empirically validated framework in entrepreneurial intention research, mainly due to Krueger & Carsrud's (1993) influential introduction of the model into the field (Liñán & Fayolle, 2015). It explains intention through three key constructs: attitude toward the behaviour, subjective norms, and perceived behavioural control (Cao et al., 2022), which corresponds to the perceived attractiveness of starting a business, the influence of others, and the individual's belief in their capability to carry out entrepreneurial activities. Entrepreneurial Self-efficacy (ESE) and PBC refer to individuals' perceived ability to perform a specific behaviour, and multiple scholars have noted that ESE can be interpreted as a specific expression of PBC within the entrepreneurial context (Ferreira-Neto et al., 2023; Krueger et al., 2000; Liñán & Chen, 2009).

In recent years, scholars have emphasised the importance of AI Awareness, which refers to an individual's understanding of AI concepts, applications, limitations, and risks within the entrepreneurship domain (Long & Magerko, 2020). AI Awareness may encourage

opportunity recognition, innovation, and creativity (Frank et al., 2019). However, awareness can also reveal AI's complexity and ethical challenges, potentially reducing confidence or intention. Thus, the relationship between AI awareness and EI is still underexplored and may be more nuanced than previously assumed.

Despite increasing global attention to AI's influence on entrepreneurship, limited research examines these factors within the Indian higher education context, especially among students of Commerce and B.Voc. These two groups differ in curriculum structure, exposure to skill-based learning, and technological environment, making them valuable for comparative analysis.

This study addresses this gap by examining how AI Awareness, Attitude toward AI, Subjective Norms, and perceived behavioural control predict entrepreneurial intention among university students. The research also investigates whether EI differs between Commerce and BVoc students. The findings contribute to the TPB literature and AI entrepreneurship studies, offering practical insights for educators, policymakers, and curriculum developers seeking to enhance AI-related entrepreneurial ecosystems. In this study, AI refers to digital tools that analyse data, make predictions, solve problems, and automate tasks, which can help enhance entrepreneurial activities.

Theoretical background

Artificial Intelligence and Its Relevance to Modern Entrepreneurship

Artificial Intelligence has become a dominant force in global economic development. Modern businesses increasingly rely on AI technologies for predictive analytics, personalised customer engagement, optimisation, and decision support systems. Khalid (2020) argues that artificial intelligence learning has central importance in entrepreneurship. It has a positive effect by increasing entrepreneurship orientation. This is supported by Giuggioli and Pellegrini (2022), who state that easy access to these AI solutions is becoming relatively affordable for entrepreneurs.

Entrepreneurs are incorporating AI to streamline tasks, automate processes, and develop data-powered solutions (Davenport, 2020). Chalmers et al. (2021) emphasise that AI influences not only internal processes but also the broader environment in which entrepreneurship occurs. Obschonka and Audretsch (2020) suggest that AI support individual entrepreneurial capabilities by reducing uncertainty, thus making entrepreneurship feel more achievable. For aspiring student entrepreneurs, understanding AI offers a distinct advantage. The intention to use AI reflects the degree to which an entrepreneur plans to incorporate this technology into their business processes (Jameel et al., 2023). This intention is influenced by attitudes toward the technology, perceived control over its use, and the subjective norms related to AI (Labrague et al., 2023).

Most entrepreneurship programs focus on general entrepreneurship skills rather than providing the digital competencies required to leverage the opportunities provided by AI

(Wahl & Münch, 2022). To effectively prepare students for future entrepreneurial endeavours, entrepreneurship education should equip them to capitalise on new opportunities by embracing technology (Bell, 2023).

Students who are aware of AI's potential are more likely to recognise emerging opportunities in digital markets, identify unserved niches, and develop innovative, technology-driven solutions. AI literacy enhances strategic thinking, opportunity recognition, and problem-solving abilities, which are core components of entrepreneurial competence (Huang & Rust, 2021). An empirical study on the relationship between AI acceptance and Entrepreneurial Intention by Solórzano et al. (2024) finds a direct, significant positive effect of intention to use AI on EI among university students. This supports the idea that attitudes toward AI influence individuals' intentions to engage in entrepreneurial activities.

AI and Entrepreneurship Education

The development of technology is pressing educational institutions to enhance and align their curricula by incorporating practical AI applications and fostering a deeper understanding of AI technologies among students (Biswas & Verma, 2021; Upadhyay et al., 2021). Studies have shown that educational programs designed to foster entrepreneurial skills can enhance students' entrepreneurial intentions by providing them with the necessary competencies and confidence (Bazkiaei et al., 2020; Biswas & Verma, 2021). These suggestions are especially valuable in today's digital age, when incorporating AI-based tools, such as automated business plan tools and data-driven opportunity recognition systems, into their entrepreneurial journey, so that they can help them learn more about starting a new venture (Somià & Vecchiarini, 2024; Vecchiarini & Somià, 2023).

Students often face resource constraints and skill gaps distinct from those of experienced, full-time entrepreneurs, and the role of university education in supporting their use of advanced technologies is not well understood (Black & Mischel, 2023; Martins et al., 2022). There is thus a compelling need to explore how entrepreneurship education can better prepare student entrepreneurs to adopt AI and, in turn, how AI utilisation might enhance their entrepreneurial capabilities (Al-Emran & Griffy-Brown, 2023; Wang et al., 2022).

Theory of Planned Behaviour

To account for known predictors of Entrepreneurial Intention, the conceptual model encompasses the constructs of the Theory of Planned Behaviour (TPB), controlling for their influence and isolating the effects of the other independent variables, as proposed by Ajzen (1991). TPB has become the most widely validated and frequently applied model for predicting Entrepreneurial Intention in academic research. It posits that Entrepreneurial Intention is shaped by Attitude toward Behaviour (ATB), Subjective Norms (SN), and Perceived Behavioural Control (PBC). Individuals who perceive an entrepreneurial career as attractive, valuable, and rewarding are more likely to aspire to start their own business (Esfandiar et al., 2019; Liñán & Chen, 2009).

Subjective Norms, reflecting perceived social pressure or support from close social contacts, have been shown to influence entrepreneurial intention positively. However, this effect tends

to be somewhat weaker in student populations (Krueger et al., 2000). Finally, Perceived Behavioural Control, representing an individual's confidence in their ability to start a business and perform entrepreneurial activities successfully, consistently emerges as a strong and direct predictor of Entrepreneurial Intention (Ajzen, 1991; Krueger & Carsrud, 1993).

AI Awareness and Perception and Entrepreneurial Intention

AI Awareness and perception refers to an individual's understanding of AI technologies, their benefits, limitations, and potential ethical concerns. Awareness influences how individuals evaluate AI-related opportunities and risks (Frank et al., 2019). Suryani and Chaniago (2023) find a significant direct relationship between digital literacy and Entrepreneurial Intention among vocational students. They argue that the positive effects are caused by digital-savvy students being able to combine their technological skills with business knowledge, which enhances their motivation to identify and exploit related business opportunities. In contrast, Sutiadiningsih et al. (2025) find that digital competency affects Entrepreneurial Intention only indirectly through factors such as entrepreneurial mindset and self-efficacy. Bachmann et al. (2024) also highlight that digital skills impact EI through entrepreneurial orientation and self-efficacy.

Prior studies also indicated that awareness alone may not be sufficient. In some cases, increased awareness of AI's challenges, such as computational complexity, cost, or required technical skills, may reduce entrepreneurial motivation (Long & Magerko, 2020). Thus, the link between AI awareness and EI may vary depending on whether awareness leads to curiosity or caution.

Attitude Toward AI and Entrepreneurial Intention

Attitude is the most influential component of TPB in predicting EI (Ajzen, 2012). If students perceive AI as beneficial, user-friendly, and capable of creating new opportunities, they are more inclined to develop an entrepreneurial interest in AI-related ventures. Positive attitudes toward AI can stem from perceived usefulness, enjoyment, or curiosity, as well as exposure to AI tools and the belief that AI skills enhance employability. Research shows that favourable attitudes toward digital tools strongly predict entrepreneurial behaviour (Liu et al., 2021). This supports the expectation that attitude will have a positive influence on EI in the present study.

Subjective Norms and Entrepreneurial Intention

Subjective Norms refer to the perceived expectations and support from important social groups. In collectivist societies, SN plays a significantly stronger role, as family and peer support are key determinants of career decisions (Hagger et al., 2022). In AI entrepreneurship, SN can shape intention through encouragement from friends or family, peer interest in AI tools, teacher support for innovation, and perceived societal approval of AI-based careers. Although SN often shows lower reliability in TPB research, it remains a relevant factor influencing EI.

Perceived Behavioural Control (Self-Efficacy) and Entrepreneurial Intention

Perceived Behavioural Control reflects the belief that one has the ability, knowledge, and resources to start an entrepreneurial venture. It is conceptually similar to Bandura's (1997) self-efficacy. AI entrepreneurship involves self-efficacy, which encompasses confidence in using AI tools, a belief in one's ability to understand AI systems, and the capability to learn or adapt to technical challenges. PBC typically predicts EI strongly; however, in contexts where students lack exposure to hands-on AI skills, PBC may be limited, leading to a lower influence on EI.

Entrepreneurial Intention

Entrepreneurial Intention (EI) precedes the act of starting a new business and is widely recognised as the most reliable predictor of actual entrepreneurial behaviour (Krueger et al., 2000; Liñán & Chen, 2009). Considerable research has focused on the antecedents that influence EI (Esfandiar et al., 2019; Krueger et al., 2000, 2009), but the impact of Artificial Intelligence (AI) on EI has largely been unexplored. As AI becomes more accessible, even to non-technical users, its ability to empower entrepreneurs is increasingly evident. AI is unfolding as a powerful tool for entrepreneurship (Chalmers et al., 2021; Giuggioli & Pellegrini, 2023; Shepherd & Majchrzak, 2022). Recent studies have called for research at this intersection, especially on how AI shapes individuals' decisions to engage in entrepreneurship (Chalmers et al., 2021). Solórzano et al. (2024) suggest a possible link between the intention to use AI technology and Entrepreneurial Intention.

Based on the theoretical foundations and reviewed literature, the present study establishes the following objectives and hypotheses.

Objectives

- To examine the relationship between AI Awareness and Perception with Entrepreneurial Intention (EI) amongst university students.
- To analyze the relationship between Attitude toward AI and EI.
- To assess the relationship between Subjective norms (SN) and EI.
- To determine the relationship between Perceived Behavioural Control (Self-Efficacy) and EI.
- To evaluate whether AI Awareness and Perception, Attitude towards AI, Subjective Norms and Perceived Behavioural Control predict EI.
- To examine whether attitude toward AI and perceived behavioural control mediate the relationship between AI awareness and perception and EI.
- To compare Entrepreneurial Intention between Commerce and B.Voc Students.

Hypotheses

H₀1: There is no significant relationship between AI Awareness and Perception and Entrepreneurial Intention.

H₀2: There is no significant relationship between Attitude toward AI and Entrepreneurial Intention.

H₀3: There is no significant relationship between Subjective Norms and Entrepreneurial Intention.

H₀4: There is no significant relationship between Perceived Behavioural Control and Entrepreneurial Intention.

H₀5: There is no significant predictive relationship between AI Awareness and Perception, Attitude toward AI, Subjective Norms, and Perceived Behavioural Control and Entrepreneurial Intention.

H₀6a: Attitude toward AI does not mediate the relationship between AI awareness and perception and entrepreneurial intention.

H₀6b: Perceived behavioural control does not mediate the relationship between AI awareness and perception and entrepreneurial intention.

H₀7: There is no significant difference in Entrepreneurial Intention between Commerce and B.Voc students.

Research Methodology

The study adopted a quantitative, cross-sectional research design using a structured questionnaire consisting of demographic items and five key constructs: AI awareness and perception, attitude toward AI, subjective norms and perceived behavioural control, and entrepreneurial intention. All items were measured on a five-point Likert scale to assess their influence on entrepreneurial intention among university students. Mediation analysis was also incorporated to assess the indirect effects of attitude toward AI and perceived behavioural control.

The sample consisted of 79 postgraduate and undergraduate university students enrolled in M.Com (39) and B.Voc (40) programs. A purposive sampling technique was used due to the specific target group and accessibility constraints. This sample presented a highly suitable group as they were in a formative stage of their career development where entrepreneurial intentions are actively being shaped.

The data collected was analyzed using non-parametric correlation, simple and multiple regressions techniques, bootstrapped mediation and the Mann-Whitney U test for group comparison.

Results and Analysis

Demographic profile

Table 1: Demographic Profile of Respondents (N=79)

Variable	Category	Frequency	Percentage
Gender	Male	35	44.3
	Female	44	55.7

Age	21-25	69	87.3
	26-30	10	12.7
Course	B.Voc	40	50.6
	M.Com	39	49.4
AI course taken	Yes	19	24.1
	No	60	75.9
Total		79	100.0

The table above shows that out of the total population of 79 respondents, 44 (55.7%) were female and 35 (44.3%) were male, indicating a higher participation rate among female students. The majority of respondents (87.3%) belonged to the 21-25 age group, while 12.7% fell into the 26-30 age group. 50.6% of the respondents were from the B.Voc program, while 49.4% of the students studied in the M.Com. The study also shows that when respondents were asked if they had taken any AI course, a majority, that is, 75.9% of them, replied 'no'.

Reliability Test

Table 2: Reliability Statistics for Study Constructs

Construct	Cronbach's Alpha	N items
AI Awareness and Perception	0.953	6
Attitude towards AI	0.713	6
Subjective Norms	0.895	3
Perceived Behavioural Control	0.819	2
Entrepreneurial Intention	0.818	6

Source: Computed from primary data

The Cronbach's alpha is presented in Table 2. All constructs demonstrated acceptable to excellent reliability, with Cronbach's alpha values ranging from 0.713 to 0.953. This indicates that items within each construct are internally consistent and appropriate for use in subsequent analyses.

Normality Test

Before performing inferential statistical analyses, the Shapiro-Wilk test was conducted to check normality. The results indicated that all major constructs, AI Awareness and Perception, Attitude Toward AI, Subjective Norms, Perceived Behavioural Control, and Entrepreneurial Intention, have significant p-values ($p < .05$). This shows that the distributions of these variables deviate from normality and therefore do not meet the assumption of normality. Given the non-normal distribution of the data, non-parametric tests were employed where appropriate.

Spearman's Rank Correlation Analysis

Table 3: Spearman Rank Correlation Among Study Variables (N=79)

			AI AP	AT AI	SN	PBC	EI
Spearman's rho	AI_AP	Correlation	1.000	.499**	-.070	.212	.001
		Coefficient Sig. (2-tailed)	.	.000	.542	.061	.992
	AT_AI	Correlation	.499**	1.000	-.075	.464**	.326**
		Coefficient Sig. (2-tailed)	.000	.	.511	.000	.003
	SN	Correlation	-.070	-.075	1.000	.033	-.031
		Coefficient Sig. (2-tailed)	.542	.511	.	.772	.784
	PBC	Correlation	.212	.464**	.033	1.000	.143
		Coefficient Sig. (2-tailed)	.061	.000	.772	.	.209
	EI	Correlation	.001	.326**	-.031	.143	1.000
		Coefficient Sig. (2-tailed)	.992	.003	.784	.209	.

** Correlation is significant at the 0.01 level (2-Tailed)

Note: AP_AI= Artificial Intelligence Awareness and Perception, AT_AI= Attitude toward Artificial Intelligence, SN= Social Norms, PBC= Perceived Behavioural Control, Ei= Entrepreneurial Intention.

Table 3 presents the Spearman's rank correlation test, which was conducted to examine the nonparametric relationships among the variables AI Awareness and Perception, Attitude toward AI, Subjective Norms, Perceived Behavioural Control (PBC), and Entrepreneurial Intention (EI). The results showed a moderate, positive, and statistically significant correlation between Attitude and Entrepreneurial Intention ($\rho = .326$, $p = .003$). This suggests that students with more positive attitudes toward AI tend to report higher entrepreneurial intentions. This relationship is theoretically consistent with the Theory of Planned Behaviour, wherein attitude toward a behaviour is a key determinant of behavioural intention.

AI Awareness and Perception demonstrated a very weak and non-significant correlation with EI ($\rho = 0.001$, $p = 0.992$), suggesting that knowledge about AI or awareness of AI applications does not necessarily translate into entrepreneurial intention. This may be because awareness alone does not influence intention unless accompanied by favourable evaluations or perceived usefulness, which is reflected through the attitude variable.

Subjective Norms also showed a very weak and non-significant relationship with EI ($\rho = -0.031$, $p = 0.784$), indicating that social expectations or perceived pressure from others do not significantly influence students' entrepreneurial intentions regarding AI-based ventures. This suggests that students' intentions may be more individually driven rather than dependent on social expectations.

Perceived Behavioural Control (PBC) showed a weak and non-significant correlation with EI ($\rho = .143$, $p = .209$), suggesting that students' perceptions of control or capability in using AI do not significantly predict their entrepreneurial intentions. Although the direction is positive,

the magnitude is too small to be meaningful. Therefore, the findings indicate that among all the constructs, only attitude toward AI showed a statistically significant relationship with EI.

H₀1: There is no significant relationship between AI Awareness and Perception and Entrepreneurial. *Failed to be rejected*

H₀2: There is no significant relationship between Attitude toward AI and Entrepreneurial Intention. *Rejected*

H₀3: There is no significant relationship between Subjective Norms and Entrepreneurial Intention. *Failed to be rejected*

H₀4: There is no significant relationship between Perceived Behavioural Control and Entrepreneurial Intention. *Failed to be rejected*

Multiple Regression Analysis

Multiple regression analysis was conducted to examine the predictive influence of the independent variables i.e., AI Awareness and Perception, Attitude toward AI, Subjective Norms, and Perceived behavioural Control on the dependent variable, Entrepreneurial Intention. Before interpreting the regression, the assumption of multicollinearity was tested using the Variance Inflation Factor (VIF).

Multicollinearity Test

The VIF values ranged from 1.12 to 1.13, which are far below the acceptable threshold of 5, indicating no evidence of multicollinearity among the predictors. This confirms that all independent variables can be included in the regression model without risk of inflated standard errors or overlapping variance.

Table 4: Variation Inflation Factor (VIF) for TPB Variables

Predictor	VIF	Tolerance
AI Awareness and Prediction	1.12	.89
Attitude	1.28	.78
Subjective Norm	1.14	.87
Perceived Behaviour Control	1.32	.76

Note: VIF<5 indicates no multicollinearity concern.

Model Summary of Regression Analysis

Table 5: Model Summary of Multiple Regression Predicting Entrepreneurial Intention

Model	R	R ²	Adjusted R ²	Std. Error	F	Sig.
1	.412	.170	.139	.487	5.55	.001

Note. N=79; p<.05 indicates the model is significant

The regression model is statistically significant ($F=5.55$, $p=.001$), indicating that the combination of the four predictors explains a significant proportion of the variance in Entrepreneurial Intention. The model accounts for 17.0% of variance in EI ($R^2=.170$), with an adjusted R^2 of .139 indicating a model but meaningful predictive value.

Coefficients of Regression Model

Table 6: Regression Coefficients for Predicting Entrepreneurial Intention

Predictor	Unstd.B	Std. Error	Std. Beta	t-value	Sig.
Constant	1.742	0.423	-	4.12	.000
AI Awareness and Perception	-0.021	.067	-.038	-0.31	.756
Attitude	0.312	.092	.389	3.38	.001
Subjective Norms	-0.018	.064	-.032	-0.28	.782
PBC	0.084	.075	.121	1.12	.267

N=79, * $p<0.05$

The regression analysis reveals that out of the four predictors, only Attitude toward AI significantly predicted EI ($\beta=.389$, $t=3.38$, $p=.001$). AI Awareness and Perception ($p=.756$), Subjective Norm ($p=.782$) and Perceived Behavioural Control ($p=.267$) did not significantly predict EI. The result suggests that while students may be aware of AI or feel supported by social norms, these factors alone do not influence EI.

H₀₅: There is no significant predictive relationship between AI Awareness and Perception, Attitude toward AI, Subjective Norms, and Perceived Behavioural Control and Entrepreneurial Intention. *Partially Rejected*

Mediation Analysis

The purpose of the mediation analysis was to examine whether Attitude toward AI and PBC act as a mediating mechanism through which AI Awareness and Perception influence Entrepreneurial Intention among university students. A parallel mediation model was applied and the significance of the indirect effects was evaluated using a bias-corrected bootstrapping method with 5000 resamples, which is the recommended approach for obtaining robust mediation estimates.

Table 7: Mediator Models

Mediator	B	SE	p	R ²
Attitude	0.433	0.060	3.451	0.402
PBC	0.360	0.171	0.038	0.054

Table 8: Outcome Model

Predictor	B	SE	P
X	-0.387	0.116	0.001
Attitude	1.130	0.188	6.281
PBC	-0.056	0.066	0.396

Table 9: Bootstrapped Indirect Effects (5000 samples)

Mediator	Indirect	CI Low	CI High
Attitude	0.490	0.256	0.732
PBC	-0.020	-0.0790	0.034

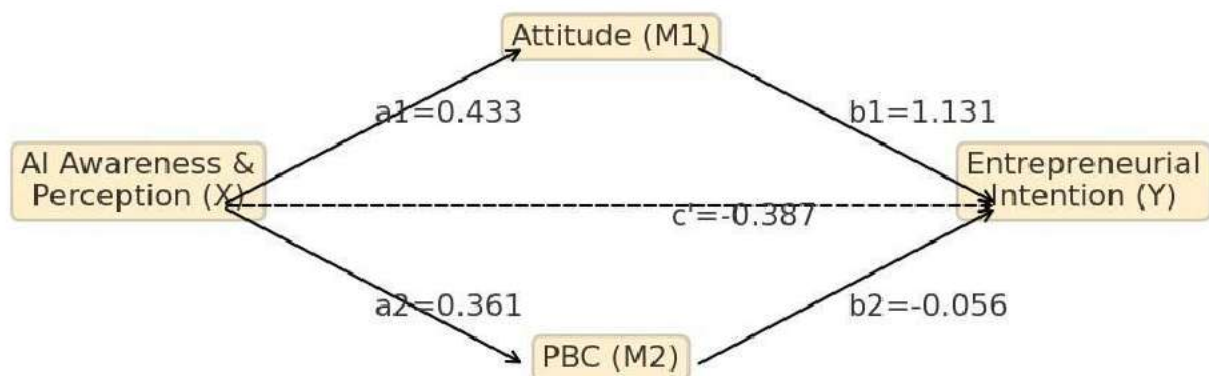
**Figure 1. Parallel Mediation Diagram**

Table 7, 8, and 9 shows the mediation analysis using 5000 bootstrapped samples. The result shows that AI Awareness and Perception significantly predicts Attitude toward AI ($a_1=0.433$), which in turn significantly predicts Entrepreneurial Intention ($b_1=1.131$). The indirect effect through Attitude was significant (Indirect=0.490, 95% CI [0.256, 0.732]), indicating that Attitude mediates the relationship, and therefore the null hypothesis H_{06a} is rejected. However, the pathway through PBC was not significant ($b_2=-0.056$, $p=0.396$), and the indirect effect remained non-significant (Indirect=-0.020, 95% CI [-0.079, 0.034]). Thus, PBC does not mediate the relationship, and the null hypothesis H_{06b} was failed to be rejected.

H_{06a} : Attitude toward AI does not mediate the relationship between AI awareness and perception and entrepreneurial intention. *Rejected*

H_{06b}: Perceived behavioural control does not mediate the relationship between AI awareness and perception and entrepreneurial intention. *Failed to be rejected*

Mann-Whitney U test

Table 10: Ranks for Entrepreneurial Intention by Course

Group	N	Mean Rank	Sum of Ranks
Commerce	39	38.65	1507.50
B.Voc	40	41.31	1652.50
Total	79		

Table 11: Mann-Whitney U Test Statistics

Statistics	Value
Mann-Whitney U	727.500
Wilcoxon W	1507.500
Z	-.521
Asymp. Sig. (2-tailed)	0.602

- Group variable: Course of study

A Mann-Whitney U test was conducted to examine the difference in entrepreneurial intention between Commerce (n=39) and B.Voc students (n=40). The result from the above table indicated no statistical difference between the two groups, U=727.50, Z= -0.521, p=0.602, indicating that both groups reported similar levels of entrepreneurial intention.

H₀₇: There is no significant difference in Entrepreneurial Intention between Commerce and B.Voc students. *Failed to be rejected*

Discussion

The findings of this study highlight the central role of attitude toward AI in shaping entrepreneurial intention among university students, consistent with the Theory of Planned Behaviour. While AI awareness and perception alone did not directly predict entrepreneurial intention, its significant indirect effect through attitude suggests that awareness becomes meaningful only when it transforms into positive evaluations of AI's usefulness and relevance. This confirms that cognitive understanding must translate into favourable beliefs to influence behavioural intention. Subjective norms and perceived behavioural control showed no significant direct influence, indicating that students' decisions to pursue AI-enabled entrepreneurship are largely internally motivated rather than driven by social pressure or perceived capability. The weak influence of PBC may reflect student's limited hands-on exposure to AI tools despite theoretical awareness, highlighting a gap between knowledge and practical confidence. The absence of differences between Commerce and BVoc students further suggests that programme type does not substantially shape entrepreneurial aspirations in the context of AI. Overall, the results emphasise that fostering positive attitudes toward AI is more impactful than simply increasing awareness.

Conclusion

This study concludes that among the TPB variables, attitude toward AI is the strongest and only significant determinant of entrepreneurial intention in the context of AI-driven entrepreneurship. Although AI awareness and perception do not independently predict entrepreneurial intention, its significant mediated effect through attitude demonstrates that awareness can encourage entrepreneurial interest when accompanied by positive beliefs. Subjective norms and perceived behavioural control did not contribute meaningfully, indicating that students' entrepreneurial intentions are not heavily influenced by external expectations or perceived competence in using AI tools. The mediation analysis reinforces the importance of psychological evaluations over mere knowledge, while the Mann–Whitney results confirm no intention difference between Commerce and B.Voc students. These findings underscore the growing need for curriculum and training interventions that enhance positive attitudes toward AI and bridge the gap between theoretical awareness and practical entrepreneurial motivation.

Future Scope for Studies

Future research should incorporate larger, more diverse student populations across multiple universities and disciplines to enhance external validity. Longitudinal studies are recommended to observe how AI awareness, attitudes, and self-efficacy evolve as students gain more exposure to AI-based learning tools and entrepreneurial experiences. Future studies may also integrate additional psychological constructs such as technological readiness, innovation orientation, digital self-efficacy, or risk tolerance. As AI adoption accelerates, comparative studies between technical and non-technical students, or between AI-trained and non-trained cohorts, could further clarify how the educational environment shapes entrepreneurial pathways in AI-enabled economies.

Reference

- Adigwe, C. S., Olaniyi, O. O., Olabanji, S. O., Okunleye, O. J., Mayeke, N. R., & Ajayi, S. A. (2024). Forecasting the future: The interplay of artificial intelligence, innovation, and competitiveness and its effect on the global economy. *Asian Journal of Economics, Business and Accounting*, 24(4), <https://doi.org/10.9734/ajebe/2024/v24i41269>
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50, 179–211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Ajzen, I. (2012). The theory of planned behavior: *Handbook of theories of social psychology*.
- Ajzen, I., & Fishbein, M. (1980). Understanding attitudes and predicting social behavior. Prentice Hall.
- Alekseeva, L., Azar, J., Giné, M., Samila, S., & Taska, B. (2021). The demand for AI skills in the labor market. *Labour Economics*, 71. <https://doi.org/10.1016/j.labeco.2021.102002>

- Al-Emran, M., Griffy-Brown, C. (2023), The role of technology adoption in sustainable development: Overview, opportunities, challenges, and future research agendas. *Technology in Society*, 73, 102240.
- Almaiah, M. A., Al Mulhem, A., & Althunibat, A. (2022). Factors influencing the adoption of artificial intelligence in education. *Education and Information Technologies*, 27, 1–29.
- Bachmann, N., Rose, R., Maul, V., & Hölzle, K. (2024). What makes for future entrepreneurs? The role of digital competencies for entrepreneurial intention. *Journal of Business Research*, 174, 114481. <https://doi.org/10.1016/j.jbusres.2023.114481>
- Bae, B. (2021). A study on the relationships of individual entrepreneurial orientation, goal orientation, entrepreneurial motivation of Korean college students. *Asia-Pacific Journal Entrepreneurship, of Business* 16(4), Venturing and 59–70. <https://doi.org/10.16972/APJBVE.16.4.202108.59>
- Bandura, A. (1997). Self-efficacy: The exercise of control. W.H. Freeman.
- Bazkiaei, H.A., Heng, L.H., Khan, N.U., Saufi, R.B.A., Kasim, R.S.R. (2020), Do entrepreneurial education and big-five personality traits predict entrepreneurial intention among universities students? *Cogent Business Management*, 7(1), 1801217.
- Bell, R. (2023). Entrepreneurship Education in the United Kingdom, in X. Xu (ed.), Comparative Entrepreneurship Education, [e-book] Singapore: Springer Nature, pp.179–213, Available Online: https://doi.org/10.1007/978-981-99-1835-5_8 [Accessed 23 February 2024]
- Biswas, A., Verma, R.K. (2021), Engine of entrepreneurial intentions: Revisiting personality traits with entrepreneurial education. *Benchmarking an International Journal*, 29(6), 2019-2044.
- Black, J., Mischel, L. (2023), Grassroots entrepreneurial program: Developing best practices. *Journal of Small Business Entrepreneurship*, 35(2), 218-235.
- Boateng, S. L., Penu, O. K. A., Budu, J., Boateng, R., Marfo, J. S., Anning-Dorson, T., & Broni, F. E. J. (2024). Mapping the Research on Artificial Intelligence and Entrepreneurship: A Bibliometric Review From Scopus Database. *International Journal of E-Entrepreneurship and Innovation*, 14(1), <https://doi.org/10.4018/IJEEL.343790>
- Cao, J., Qiu, H., Qiu, H., Morrison, A., & Wei, W. (2022). The Role of Social Capital in Predicting Tourists' Waste Sorting Intentions in Rural Destinations: Extending the Theory of Planned Behavior. *International Journal of Environmental Research and Public Health*, 19(19), 12789.
- Chalmers, D., MacKenzie, N. G., & Carter, S. (2021). Artificial Intelligence and Entrepreneurship: Implications for Venture Creation in the Fourth Industrial Revolution. *Entrepreneurship Theory and Practice*, 45(5), 1028–1053. <https://doi.org/10.1177/1042258720934581>

- Chiu, T.K.F., Xia, Q., Zhou, X., Chai, C.S., Cheng, M. (2023), Systematic literature review on opportunities, challenges, and future research recommendations of artificial intelligence in education. *Computers and Education Artificial Intelligence*, 4, 100118.
- Cleary, F., Srisa-An, W., Henshall, D. C., & Balasubramaniam, S. (2023). Emerging AI technologies inspiring the next generation of E-textiles. *IEEE Access*, 11, 56494–56508. <https://doi.org/10.1109/ACCESS.2023.3282184>
- Davenport, T. (2020). The AI advantage: How artificial intelligence is changing business. *MIT Press*.
- Davidsson, P., & Sufyan, M. (2023). What does AI think of AI as an external enabler (EE) of entrepreneurship? An assessment through and of the EE framework. *Journal of Business Venturing Insights*, <https://doi.org/10.1016/j.jbvi.2023.e00413> 20, e00413.
- Duan, Y., Edwards, J., & Dwivedi, Y. (2023). Artificial intelligence for decision making in organizations. *International Journal of Information Management*, 50, 1–15.
- Duan, Y., Edwards, J.S., Dwivedi, Y.K. (2019), Artificial intelligence for decision making in the era of big data - evolution, challenges and research Agenda. *International Journal of Information Management*, 48, 63-71.
- Duong, C.D., Le, T.T., Dang, N.S., Do, N.D., Vu, A.T. (2024), Unraveling the determinants of digital entrepreneurial intentions: Do performance expectancy of artificial intelligence solutions matter? *Journal of Small Business and Enterprise Development*, 31(7), 1327-1356.
- Dwivedi, Y. K., et al. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994.
- Esfandiar, K., Sharifi-Tehrani, M., Pratt, S., & Altinay, L. (2019). Understanding entrepreneurial intentions: A developed integrated structural model approach. *Journal of Business Research*, 94, 172–182. <https://doi.org/10.1016/j.jbusres.2017.10.045>
- Fayolle, A., & Liñán, F. (2014). The future of research on entrepreneurial intentions. *Journal of Business Research*, 67(5), 663–666. <https://doi.org/10.1016/j.jbusres.2013.11.024>
- Ferreira-Neto, M. N., De Carvalho Castro, J. L., De Sousa-Filho, J. M., & De Souza Lessa, B. (2023). The role of self-efficacy, entrepreneurial passion, and creativity in developing entrepreneurial intentions. *Frontiers in Psychology*, 14, 1134618. <https://doi.org/10.3389/fpsyg.2023.1134618>
- Frank, A., Kompella, R., & Chen, S. (2019). Understanding AI awareness in students. *Journal of Technology Education*, 31(2), 55–71.
- Giuggioli, G., & Pellegrini, M. M. (2023). Artificial intelligence as an enabler for entrepreneurs: A systematic literature review and an agenda for future research.

- Hagger, M. S., Hamilton, K., Ajzen, I., & Beck, L. (2022). Advancing the theory of planned behavior research. *Psychology Review*, 129(4), 499–517.
- Huang, M.-H., & Rust, R. (2021). A strategic framework for AI entrepreneurship. *Journal of Business Research*, 129, 908–918.
- Jameel, A. S., Harjan, S. A., & Ahmad, A. R. (2023). Behavioral intentions to use artificial intelligence among managers in small and medium enterprises. *AIP Conference Proceedings*. <https://doi.org/10.1063/5.0148676>
- Khalid, N. (2020). Artificial Intelligence Learning and Entrepreneurial Performance among University Students: Evidence from Malaysian Higher Educational Institutions, *Journal of Intelligent & Fuzzy Systems*, vol. 39, no. 4, pp.5417–5435
- Krueger, N. F., & Carsrud, A. L. (1993). Entrepreneurial intentions: Applying the theory of planned behaviour. *Entrepreneurship & Regional Development*, 5(4), 315–330. <https://doi.org/10.1080/08985629300000020>
- Krueger, N. F., Brännback, M., & Carsrud, A. L. (Eds.). (2009). Entrepreneurial intentions are dead: Long live entrepreneurial intentions. In *Understanding the Entrepreneurial Mind* (Vol. 24, pp. 51–72). Springer New York. <https://doi.org/10.1007/978-1-4419-0443-0>
- Krueger, N. F., Reilly, M. D., & Carsrud, A. L. (2000). Competing models of entrepreneurial intentions. *Journal of Business Venturing*, 15(5–6), 411–432. [https://doi.org/10.1016/S0883-9026\(98\)00033-0](https://doi.org/10.1016/S0883-9026(98)00033-0)
- Labrague, L. J., Aguilar-Rosales, R., Yboa, B. C., Sabio, J. B., & de los Santos, J. A. (2023). Student nurses' attitudes, perceived utilization, and intention to adopt artificial intelligence (AI) technology in nursing practice: A cross sectional study. *Nurse Education in Practice*. <https://doi.org/10.1016/j.nepr.2023.103815>
- Lin, S., & Chen, J. (2024). Research on the challenge and response strategy of labor employment in the era of artificial intelligence. *International Journal of Computer Science and Information Technology*, 2(1), 403–407. <https://doi.org/10.62051/ijcsit.v2n1.43>
- Liñán, F., & Chen, Y. (2009). Development and Cross-Cultural Application of a Specific Instrument to Measure Entrepreneurial Intentions. *Entrepreneurship Theory and Practice*, 33(3), 593–617. <https://doi.org/10.1111/j.1540-6520.2009.00318.x> 36
- 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. <https://doi.org/10.1007/s11365-015-0356-5>

- Liu, M., Gorgievski, M. J., Qi, J., & Paas, F. (2022). Perceived university support and entrepreneurial intentions: Do different students benefit differently? *Studies in Educational Evaluation*, 73, 101150. <https://doi.org/10.1016/j.stueduc.2022.101150>
- Liu, Y., Li, X., & Xu, H. (2022). Technology self-efficacy and entrepreneurial intention in the digital era. *Journal of Entrepreneurship in Emerging Economies*.
- Long, D., & Magerko, B. (2020). What is AI literacy? *International Journal of Artificial Intelligence in Education*, 29(2), 1–22
- Martins, I., Perez, J.P., Novoa, S. (2022), Developing orientation to achieve entrepreneurial intention: A pretest-post-test analysis of entrepreneurship education programs. *The International Journal of Management Education*, 20(2), 100593.
- Mukhtar, S., Wardana, L. W., Wibowo, A., & Narmaditya, B. S. (2021). Does entrepreneurship education and culture promote students' entrepreneurial intention? The mediating role of entrepreneurial mindset. *Cogent Education*, 8(1), 1918849. <https://doi.org/10.1080/2331186X.2021.1918849>
- Obschonka, M., & Audretsch, D. B. (2020). Artificial intelligence and big data in entrepreneurship: A new era has begun. *Small Business Economics*, 55(3), 529–539. <https://doi.org/10.1007/s11187-019-00202-4>
- Rippa, P., & Secundo, G. (2019). Digital academic entrepreneurship: The potential of digital technologies on academic entrepreneurship. *Technological Forecasting and Social Change*, 146, 900–911. [\[https://doi.org/10.1016/j.techfore.2018.07.013\]](https://doi.org/10.1016/j.techfore.2018.07.013) <https://doi.org/10.1016/j.techfore.2018.07.013>
- Shane, S. (2003). *A General Theory of Entrepreneurship: The Individual–Opportunity Nexus*. Edward Elgar Publishing.
- Shepherd, D. A., & Majchrzak, A. (2022). Machines augmenting entrepreneurs: Opportunities (and threats) at the Nexus of artificial intelligence and entrepreneurship. *Journal of Business Venturing*, 37(4), 106227. <https://doi.org/10.1016/j.jbusvent.2022.106227>
- Solórzano, S. S., Pizarro Romero, J. M., Díaz Cueva, J. G., Arias Montero, J. E., Zamora Campoverde, M. A., Lozzelli Valarezo, M. M., Montes Ninaquispe, J. C., Acosta Enriquez, B. G., & Arbulú Ballesteros, M. A. (2024). Acceptance of artificial intelligence and its effect on entrepreneurial intention in foreign trade students: A mirror analysis. *Journal of Innovation and Entrepreneurship*, 13(1), 59. <https://doi.org/10.1186/s13731-024-00412-5>
- Somià, T., Vecchiarini, M. (2024), Navigating the new frontier: The impact of artificial intelligence on students' entrepreneurial competencies. *International Journal of Entrepreneurial Behavior and Research*, 30(11), 236-260.

- Sutiadiningsih, A., Dewi, I. H. P., Ratnasari, W., Taufiq, A., & Miranti, M. G. (2025). How do digital competencies promote entrepreneurial intention among vocational students? A mediation analysis of entrepreneurial self-efficacy and entrepreneurial mindset. *Cogent Education*, 12(1), 2482486. <https://doi.org/10.1080/2331186X.2025.2482486>
- Upadhyay, N., Upadhyay, S., Dwivedi, Y.K. (2021), Theorizing artificial intelligence acceptance and digital entrepreneurship model. *International Journal of Entrepreneurial Behavior and Research*, 28(5), 1138-1166.
- Vecchiarini, M., & Somià, T. (2023). Redefining entrepreneurship education in the age of artificial intelligence: An explorative analysis. *The International Journal of Management Education*, 21(3), 100879. <https://doi.org/10.1016/j.ijme.2023.100879>
- Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the Technology Acceptance Model: Four longitudinal field studies. *Management Science*, 46(2), 186–204.
- Wahl, D. & Münch, J. (2022). Turning Students into Industry 4.0 Entrepreneurs: Design and Evaluation of a Tailored Study Program, *Entrepreneurship Education*, vol. 5, no. 3, pp.225–259
- Wang, X., Yang, H., Han, H., Huang, Y., Wu, X. (2022), Explore the entrepreneurial process of AI start-ups from the perspective of opportunity. *Systems Research and Behavioral Science*, 39(3), 569-580.
- Wang, Y., & Wang, Y.-S. (2022). Development and validation of an artificial intelligence anxiety scale: An initial application in predicting motivated learning behavior. *Interactive Learning Environments*, 30(4), 619–634. <https://doi.org/10.1080/10494820.2019.1674887>
- Xu, L., Lu, Y. & Li, L. (2021). Embedding Blockchain Technology Into IoT for Security: A Survey, *IEEE Internet of Things Journal*, vol. PP, pp.1–1
- Zhao, H., Seibert, S. E., & Hills, G. E. (2005). The Mediating Role of Self-Efficacy in the Development of Entrepreneurial Intentions. *Journal of Applied Psychology*, 90(6), 1265–1272. <https://doi.org/10.1037/0021-9010.90.6.1265>

Entrepreneurial Process or System: A Bibliometric Synthesis Uncovering Hidden Cognitive Patterns

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Abstract

In the enduring scholarly debate between process-oriented and systems-oriented conceptualisations of entrepreneurship, this study is a comprehensive bibliometric survey to map the intellectual structure of the business process or the literature of systems. By systematically analysing the existing research corpus, the study reveals hidden cognitive patterns that have shaped business studies implicitly in both business and wider societal contexts. The findings reveal six thematic clusters - innovation, education, institutional frameworks, cognitive processes, gender dynamics and social entrepreneurship - which together demonstrate that entrepreneurship has evolved from a trade-barred discipline into a cross-sectoral framework based on systems thinking, experiential learning and cognitive architecture. The study concludes that sustainable entrepreneurial business development requires a move away from prescriptive, one size fits all policy models to context-sensitive, location-based strategies that address institutional gender bias, democratise innovation in all public and social spheres, and foster absorptive capacity as a key determinant of the efficiency of human capital in the new business economy.

Keywords: Entrepreneurship, entrepreneurial, Bibliometric review, co-occurrence, process, system

Introduction

Researchers increasingly frame entrepreneurship as a rigorous and methodical field of study, functioning as a structured framework for analysing opportunity identification and resource allocation under uncertainty (Shi & Shi, 2022). Conceptualising entrepreneurship as a formalised and methodologically grounded discipline enables a rigorous examination of the evolving dynamics inherent to the contemporary economy, thereby yielding substantive insights into the strategic management of nascent market complexities and the cultivation of innovative pathways. Entrepreneurship has evolved from its traditional roots of managing the small scale sector to a system which is used to govern and manage large organisations. Over the years, the factors of production have remained consistent with land, labour, capital and time for several sectors like healthcare, education or industry. Consequently, the strategic tools and operational challenges encountered by an innovator in a social institution are almost indistinguishable from those faced in a business enterprise, positioning entrepreneurship as a foundational discipline for any purposeful social action (Drucker, 2006).

The ongoing conceptual debate about whether entrepreneurship is best understood as a process or a system has been central to the scientific development of this discipline.

Process-oriented approaches conceptualise entrepreneurship as a sequential, dynamic process of activities that include identifying opportunities, mobilising resources, creating risk capital and creating value (Stevenson & Jarillo, 1990; Shane & Venkatraman, 2000). These perspectives highlight the time and cognitive dimensions of entrepreneurship, and highlight the decision-making pathways through which individuals navigate through the uncertainties and transform ideas into viable businesses. Systems-based frameworks, on the other hand, place entrepreneurship in a wider ecological and institutional context, emphasising the interdependence of actors, institutions, markets and cultural norms that collectively shape the results of entrepreneurship (Szerb et al., 2013; Autio et al., 2014). Rather than considering these perspectives as mutually exclusive, contemporary scholarship increasingly recognises their complementarity and suggests that a synthesis of process and systems thinking can provide a more comprehensive explanation for understanding business phenomena in a variety of contexts.

Despite the theoretical richness of the debate, the cognitive architecture underpinning entrepreneurial behaviour has received relatively little systematic attention. Cognitive patterns - including mental models, heuristics, decision-making processes and chance-related beliefs - are epistemic substrates by which entrepreneurs perceive, interpret and interact with their environment (Baron, 2004; Mitchell et al., 2007). What matters is that many of these cognitive structures operate implicitly, acting as latent organizing principles that shape business judgment without being explicitly expressed in the literature. Identifying and mapping such hidden cognitive patterns is therefore of considerable theoretical value, offering the potential to uncover the hidden knowledge structures that underlie both decision-making at the process level and institutional engagement at the system level. The idea that entrepreneurship is anything other than social and collective is disputed, but it is generally accepted that all human capabilities - not only cognitive, but also emotional - are necessary for starting new businesses, whether in a business or in a wider social context (Johnson, 2011). This duality underlines the importance of uncovering the hidden cognitive dynamics that operate in both the individual and the collective dimensions of business activity.

Despite the growing body of studies on entrepreneurship from a process and systems perspective, the existing literature is still largely fragmented. Previous bibliometric surveys have mapped large intellectual structures in business research (Zupic & Čater, 2015; Ferreira et al., 2019), but few have specifically explored the conceptual boundaries between process and systems frameworks, and even fewer have used bibliometric methods to uncover hidden cognitive patterns within the research corpus. Systematic reviews and meta-analyses, while valuable, are limited by reliance on pre-selected thematic categories and are therefore less capable of revealing emergent or non-obvious intellectual structures. Bibliometric analysis, on the other hand, provides a data-driven and methodologically transparent mechanism to map the structural and intellectual structure of a field of study, allowing for the identification of common citation clusters, thematic developments and hidden conceptual links which cannot be detected by conventional narrative review (Donthu et al., 2021). This methodological capability makes bibliometric summation particularly suited to the research objectives of this study.

This study therefore addresses this gap by carrying out a comprehensive bibliometric survey of the business process or system, paying particular attention to uncovering hidden cognitive patterns embedded in the existing research corpus. By mapping the intellectual landscape of this field, the study aims to reveal the hidden conceptual structures that have shaped - and continue to shape - the scientific understanding of entrepreneurship and thus to provide a new and empirically grounded perspective on this emerging field.

Methodology

Identification and search of existing literature was carried out through the One Nation One Subscription (ONOS) database, which focused specifically on open access scholarly contributions. This approach has made it easier to search for high-impact journals from major academic publishers such as Elsevier, Sage, Springer, Taylor & Francis and Wiley. Using this central repository, the study has ensured access to a strong and peer-reviewed body of knowledge, thus creating a strong theoretical basis based on the most recent open source research available. In order to ensure a consistent search for pertinent academic research, a comprehensive database search was carried out using a combination of targeted keywords and Boolean operators. These targeted keywords are used to bring about the extant literatures relevant to the objective of this study. The Boolean operators are used to create a mathematical logic for our search query that filters out the irrelevant keywords and broadens results containing our desired keywords. The search strings and Boolean operators used for this paper is: (Article Title: entrepreneurship OR Article Title: entrepreneurial) AND (Article Title: process OR Article Title: system)

The goal of the search strategy was to find academic publications with titles that contained the terms " entrepreneurship process" or " Entrepreneurship system". In order to capture the evolution, contemporary relevance and recent advancement in the field, journal articles available in the database published from 1985 till 2025 are selected. The initial application of the Boolean search parameters has resulted in a preliminary literature of 636 articles. The systematic refinement of inclusion and exclusion criteria from the original dataset was carried out using the Mendeley Reference Manager which made it easier to detect duplicates and to export the final corpus to the RIS file format for analysis. During the pre-screening phase, each document was individually screened to verify its status as a peer-reviewed journal article; as a result, book reviews, revocations and withdrawn manuscripts were all excluded. In addition, articles have been deleted when their titles showed a lack of thematic consistency with the research objectives, a process which has reduced the total number of articles to 343. Subsequently, a thorough review of the abstracts was carried out to ensure compliance with the specific inclusion criteria of the study, which resulted in a final sample of 274 articles for a comprehensive analysis.

In order to facilitate the bibliometric and thematic dimension of this investigation, a map of keyword co-occurrence networks has been developed to identify the dominant research clusters and thematic concentration of current scholarship. The data management and cleaning phases were supported by tables in addition to the reference management systems Mendeley and Zotero, which ensured the integrity of the metadata. This study uses keyword co-occurrence analysis as the bibliometric technique to identify the main thematic structures.

The PRISMA framework has been used in identification and screening of the literature to ensure a consistent and transparent selection of relevant journal articles. VOSviewer was then used to provide visualisation of the analytical results, this provides a graphical representation of conceptual relationships and structural trends identified in the extant literatures. A detailed co-occurrence map is generated that helps to identify conceptual clusters and emerging research trends and provides a graphical representation of the thematic landscape.

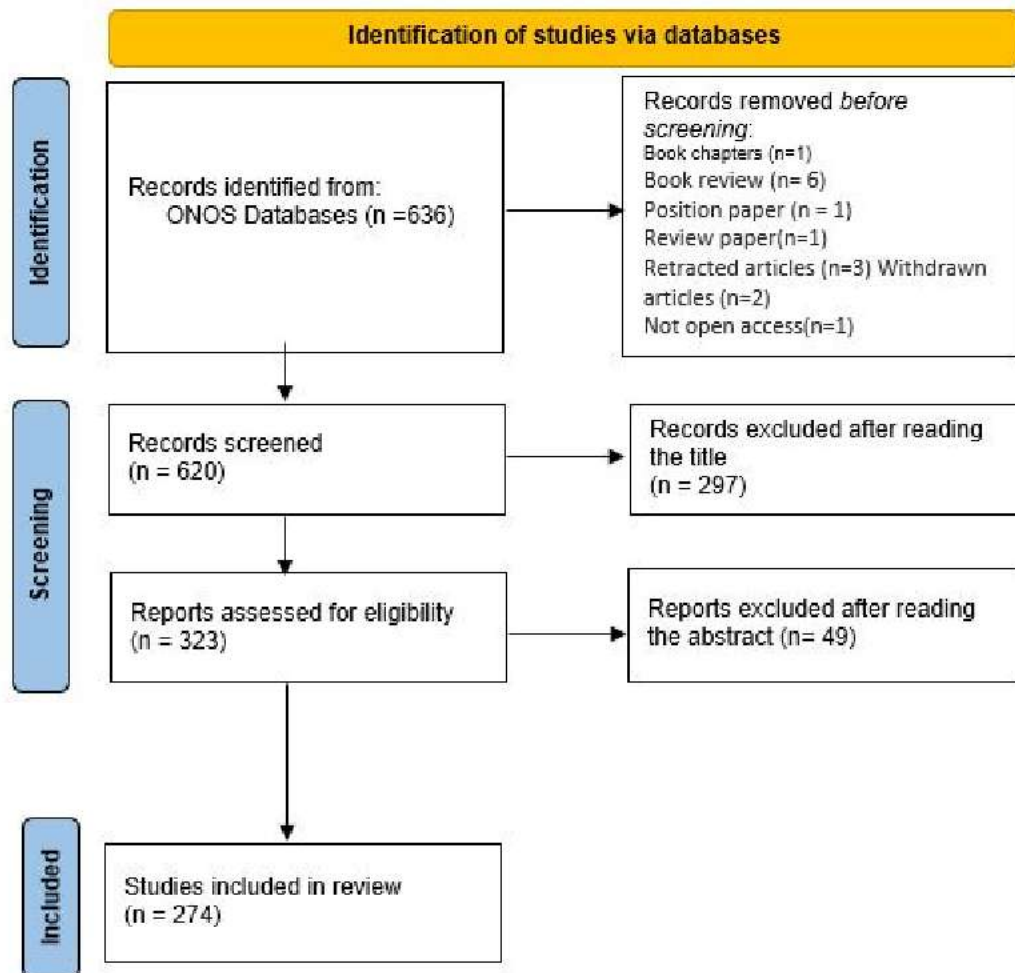
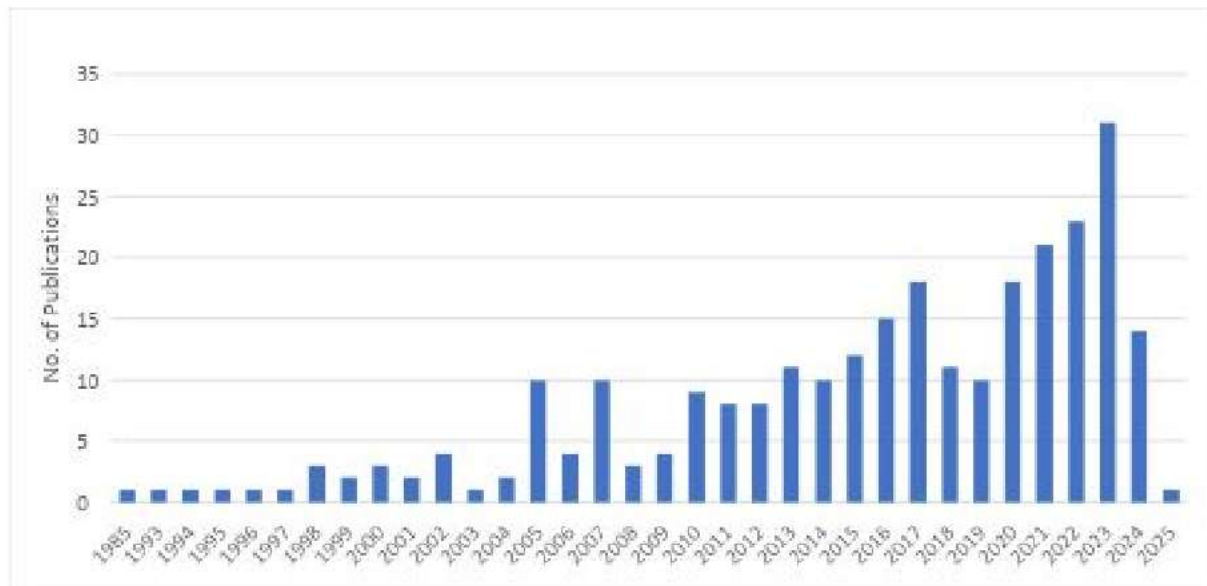


Figure 1: PRISMA Flow Diagram on Entrepreneurial Process or System

Source: Adapted from Page MJ, et al. BMJ 2021;372:n71. Doi: 10.1136/bmj.n71.

Data Analysis

Data analysis was performed by examining the title and keywords of the included 274 extant literatures. The quantitative analysis part of the study is carried out by using spreadsheets to find out the year wise frequency of publication. Publication output on the business process or system remained minimal and sporadic between 1985 and 2004, and between 2005 and 2017 it showed a moderate but steady growth. There was a significant exponential increase between 2018 and 2023, reaching a peak of 31 publications in 2023, reflecting a significantly increased academic interest in this area. The sharp drop observed in the years 2024 and 2025 is more likely to be attributed to incomplete indexing than to a real decline in research activity.



The word cloud visualization highlights the most significant terminological trends within the dataset, specifically emphasizing the keywords process, innovation, system, development, and social. The visual dominance of these terms suggests an academic focus on the structural frameworks and transformative impacts of entrepreneurial activity, particularly concerning its systematic and social dimensions. The author keyword analysis identifies innovation, growth, small enterprises, knowledge networks, university-technology linkages, and institutional factors as the dominant thematic clusters shaping research on the entrepreneurial process or system.

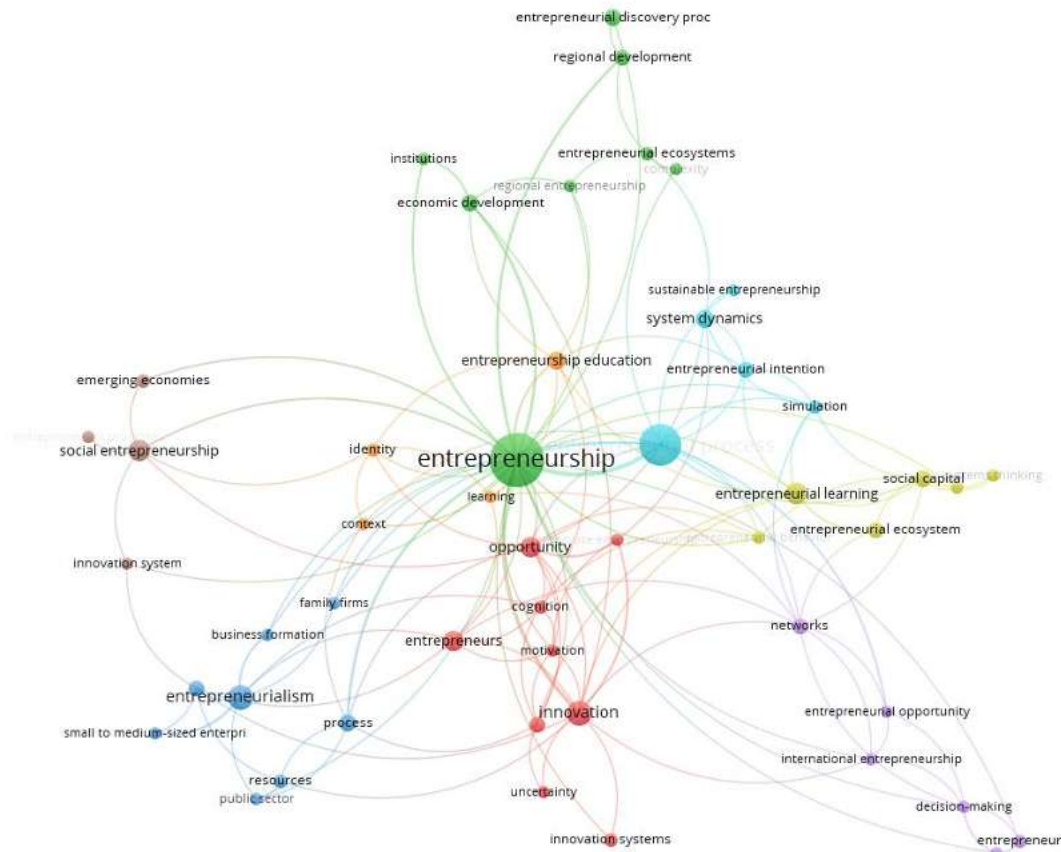


Figure 4: Network Map on the Entrepreneurship Research (1985–2025)

The qualitative analysis part of the study uses VOSviewer software to generate a map of the co-occurrence of keywords, which allows for a systematic analysis of thematic clusters. In this visualization, the dimensions of the nodes correspond to the frequency of the appearance of the term, while the lines intersecting define the strength and nature of the relationships, including patterns of co-occurrence. This methodology allows for nuanced conclusions to be drawn by mapping the structural and relationship structure of existing literature.

A density map of keywords was generated by systematic analysis of the research articles and related terminology, by setting a frequency threshold of three occurrences. Of the 739 keywords, 51 met this criterion and resulted in the identification of five different thematic clusters: entrepreneurship, business process, entrepreneurship, innovation and entrepreneurship education. This bibliometric mapping illustrates the main conceptual pillars in this area and highlights the interlinkages between system innovations and pedagogical frameworks. Bibliometric analysis reveals a conceptual structure organised in five main thematic clusters. The core cluster, entrepreneurship, serves as a broad nexus linking basic elements such as start-ups and family businesses to broader systemic drivers such as regional economic development, social entrepreneurship and institutional frameworks in emerging economies. The cluster on entrepreneurship emphasises the structural and cognitive complexity of business creation, and highlights the role of social capital, networks and simulation in shaping business behaviour and intent. Similarly, the Entrepreneurialism Cluster focuses on operational and strategic aspects of the enterprise, in particular as regards

marketing, the public sector and SME management. The Innovation Cluster emphasises the importance of resource management and corporate entrepreneurship by companies in navigating market uncertainties and international expansion. Finally, the Entrepreneurship Education Cluster identifies the pedagogical and psychological foundations of the discipline, linking identity formation and learning to regional entrepreneurial development.

Discussion

The scientific research on entrepreneurship has been ongoing for several decades and is characterised by continuous development, reflecting the inherently dynamic and multidisciplinary nature of the field. This development reflects the capacity of the field to integrate different theoretical perspectives and to ensure that academic discourse remains responsive to the changing complexity of the global economic and social environment.

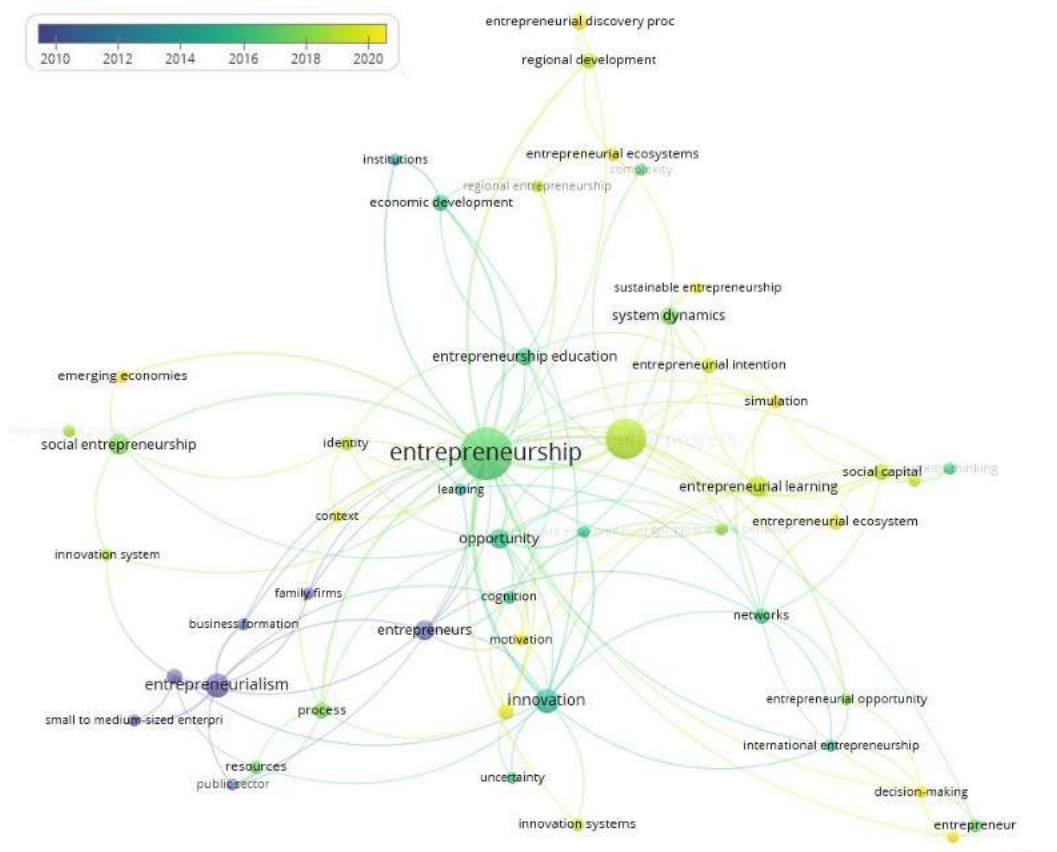


Figure 5: Network Map Visualising the Evolution of Entrepreneurship Research (1985–2025)

Throughout the 2010s and previous decades, the dominant academic discourse focused primarily on the multifaceted nature of entrepreneurship and the role of SMEs in the public sector. In addition, academic research has examined in detail the mechanisms of business formation, the unique management of family businesses and the different characteristics that define successful entrepreneurs. The study shows that start-ups typically lack the necessary depth of resources, human capital and sophisticated administrative frameworks to maintain organisational diversity. One study argues that, because entrepreneurship education is

essentially experiential and problem-oriented, traditional pre-employment education programmes often produce marginal results. Given the inherent volatility of the growth trajectories of SMEs, the study recommends that policymakers move away from prescriptive guidance models and from targeting perceived high-growth firms selectively. Instead, a move to mentoring frameworks is recommended; mentees facilitate a more effective teaching approach by helping entrepreneurs to process real-world crises and assimilate knowledge directly from their own experiences (Deakins & Freel, 1998). Evidence indicates that entrepreneurship is strongly concentrated in the middle level management of the public sector, which challenges the traditional view of institutional change as a process of top-down phenomenon. On the other hand, it is the middle level managers who undertake innovation lead systems in the public sector. They are primarily “necessity-driven”, motivated not by individual careerism or political gain, but by deep commitment to their stakeholders and a mandate to address systemic weaknesses. Acting as “public champions”, these entrepreneurs use business methods to promote the well-being of their stakeholders (Sundin and Tillmar, 2008).

One of the studies shows that entrepreneurs grow their businesses not by following a textbook management plan but by following their instincts and spotting opportunities. They identify opportunities by finding gaps in the market and chasing new advantages. The formal textbook management plan usually appears later as a way to handle the growth that has already happened (Rosa, 1998). Success in entrepreneurship is driven by institutional support and capital, but there are still significant gender gaps with men often experiencing more favourable conditions than that of women. Also, the findings suggest that for many people starting a business is not a Strategic use of previous knowledge rather it is a necessary response to unemployment (Vliamos and Tzeremes, 2012). Family involvement is at its peak during the “start-up phase” or “firm emergence” when critical decisions are made and resources are gathered, and eventually declines as the business grows and moves towards professional networks. Although most entrepreneurs include family members in their core networks, this is most common among younger founders and those with a moderate level of education. These family members - usually men with strong personal attachments - are a unique source of support and rigorous constructive criticism (Klyver, 2007).

Building on the foundations laid down in the past decade, the academic discourse today increasingly emphasises the multi-faceted nature of entrepreneurial education and identification of opportunities within global and institutional frameworks. The present study highlights the crucial role of innovation and strong networks in alleviating market uncertainty, while examining the convergence of business, international business and intrapreneurship as the main drivers of economic development. Empirical evidence supports a learning-to-work-through trajectory in SMEs, which shows a gradual transfer of knowledge at multiple levels. In particular, data show that individual learning has a significant positive impact on team learning, which in turn is a critical precursor of development at the organizational level. This sequential alignment suggests that the accumulation of personal knowledge is effectively scaled up, and that knowledge is institutionalised across the wider organisation (Brettel & Rottenberger, 2013).

The study points out that, although human capital is a key factor in creating new businesses, it contributes mainly to the growth of entrepreneurial capacity, rather than to the discovery of

knowledge-based new opportunities. The direct impact of human capital on entrepreneurship is most visible in high technology and core high technology sectors, where the relationship is growing stronger. These results show a positive relationship between the knowledge intensity of enterprises and the required absorptive capacity; successful use of complex market opportunities therefore requires a substantial investment in specialised skills and knowledge for the effective integration and use of complex information (Qian et al., 2013).

Entrepreneurship education is a social, self-directed process that focuses on personal growth rather than memorising business facts. Students thrive when they take active ownership of their education, when they use low-risk environments to test ideas and to connect with their own aspirations and identities. By taking on challenges and reflecting on trial and error, they develop the independent thinking and entrepreneurial maturity that are needed to move from students to self-confident, self-reliant founders (Mueller & Anderson, 2014). Pedagogical prompts and reflection cultivate entrepreneurial mindsets by using emotional challenges to break habits, to guide peers through identity-conflict and to promote resilience. This process, which combines emotional shocks with deliberate reflection, ultimately enables students to adopt an entrepreneurial identity (Neergaard et al., 2021). Entrepreneurship education promotes innovation and self-efficacy, and treats entrepreneurship as a development process of self-empowerment, rather than a narrow specialization, suggesting that success in the programme is better measured by the growth of the mindset than by traditional grades (Welsh et al., 2016). Entrepreneurship education and training increases the intention to start a business, but informal and employer-led training is better than university programmes to build self-efficacy. While government and online initiatives encourage intention, online learning significantly increases the fear of failure. As formal education does not reduce risk or improve the perception of opportunity, a move towards experiential, learning-by-doing models is recommended (Dehghanpour Farah, 2013).

Corporate entrepreneurship is a non-linear cycle in which opportunities unfold through discovery, assessment, validation and implementation. This journey is driven by personal insights and the willingness of the organisation to support new ideas. A key element is the feedback loop, which ensures that even failed projects contribute to the strategic renewal of society by strengthening the collective knowledge of companies for future ventures (Bloodgood et al., 2015). International business opportunities are seen as systemic, collective constructs informed by national cultural frameworks rather than by differences in individual insights. In environments characterised by stability and institutional support, business activity is typically geared towards sustainable job creation and the creation of small companies that act as subsidiary support businesses for large companies. In contrast, environments defined by impact and risk prioritise globally disruptive firms and high-stakes global winners, aiming for immediate international market penetration and lucrative exit strategies. In conclusion, these findings suggest that the local ecosystem - driven by cultural imperatives and resource structures - is a key determinant of what is perceived as a viable business opportunity (Mainela et al., 2018).

Small and medium-sized enterprises, especially those created in response to specific trigger events, are a vital catalyst for robust economic development. Contemporary scholarship has consistently confirmed that entrepreneurship is the main driver of macroeconomic expansion at both national and regional levels. Although entrepreneurship is not the only driver of

economic progress, it is a key facilitator; it triggers growth in local ecosystems, which then grow in tandem with the growth and development of the enterprise (Arthur et al., 2012). In recent years, studies have moved on to the entrepreneurial process, entrepreneurship education, innovation systems, identity, social capital, regional entrepreneurship, entrepreneurial discovery process, business ecosystems, emerging economies, motivation, impact, sustainable business, simulation, decision-making and rationality. A family's entrepreneurial culture is driven by its family ledger and by a relationship ethic in which a balanced and trusting relationship promotes resilience and allows for the use of family resources. Intergenerational vertical relationships, in particular between parents and adult children, are more conducive to maintaining this resilience than horizontal inter-marriage (Hanson et al., 2019). Successful entrepreneurship education requires integration of people, processes and places. People are the most important element, and they thrive when different students and facilitator-style teachers work together with the local community. The process must replace traditional lectures with real-life, interdisciplinary projects, and the place must be a non-traditional creative environment, strategically aligned to the theme of the programme (Sörensson & Bogren, 2020). Both theoretical and practical teaching support student entrepreneurship, but at different stages: practical methods foster soft skills needed to discover opportunities, whereas theoretical methods provide the strategic knowledge needed to exploit them. While practical learning more effectively enhances entrepreneurial intent, the learning method itself remains the best predictor of actual entrepreneurial activity. Ultimately, both approaches complement each other, as students use their experience to find ideas and academic knowledge to implement them (Lyu et al., 2024).

Research indicates that regional innovation systems (RIS) and business ecosystems operate as complementary frameworks: RIS focuses on institutional arrangements and research advancement, whereas business ecosystems centre on individual agents and emerging organizational norms. To stimulate long-term growth, policymakers should move away from broad technology directives and adopt context-specific, entrepreneurial approaches that prioritize venture quality over output volume. Accordingly, regional governments ought to transition from administrative control to supportive roles, cultivate an environment of mutual trust, and empower what Santos (2025) terms “community dealmakers” in order to strengthen the resilience of local networks. The RIS is conceived as a coherent social order based on mutual trust, cooperation and the free association of three basic subsystems: financial architecture, knowledge acquisition and a strong productive culture. Successful regional development requires a degree of financial autonomy allowing local control of budget and infrastructure, complemented by an interactive learning ecosystem in which academia and industry engage in autonomous and synergistic innovation (Cooke et al., 1997). The study examines how four impulsiveness-related characteristics shape the cognitive pathway towards entrepreneurship, and distinguishes between pro- and anti-productive tendencies. Sensitivity and lack of pre-determined thinking act as a “functional impulsivity” that positively drives entrepreneurial intent by strengthening attitudes and perceived ability to take advantage of opportunities. Urgency, on the other hand, is described as “dysfunctional impulsiveness”; while it can increase self-control, it ultimately prevents the desire to start a business from developing due to lack of foresight and subsequent difficulties (Doan et al., 2021).

The entrepreneurial ecosystem is characterised by a complex adaptive system, with six key features: the presence of self-organising, self-sustaining agents; non-linear interactions driven by reinforcing feedback loops; and the ability to strategically adapt to global crises (Han et al., 2021). This study conceptualises business ecosystems (EEs) as dynamic, multi-layered, complex adaptive systems characterised by a continuous interaction of co-evolution between the various actors and a network as a whole. Within this theoretical framework, the EEs are structured around three main evolutionary mechanisms: a multi-layered architecture that involves the flow of financial, intellectual, and social capital; a two-way evolution of agents and networks that interact with each other at the micro level; and a system-wide evolution driven by interactions at the micro level (Fuentes et al., 2024). Digital sustainable entrepreneurship develops in a cycle of perception, accumulation and co-creation, turning stakeholders into active "co-entrepreneurs" who first identify sustainability needs, then build confidence and capital by empowering each other in a technological and psychological way, and finally use digital platforms to integrate their data in the continuous development of products. This process creates an inclusive ecosystem in which the involvement of stakeholders drives the discovery and development of sustainable opportunities (Li & Long, 2024).

Conclusion

A synthesis of research from 2010 to date shows that entrepreneurship has grown from a marginal economic activity to a fundamental, systematic discipline, essential to navigating the new economy of entrepreneurship.

The Metamorphosis of the Entrepreneurial Discipline

The long-term development of this field highlights the shift from managerialism to entrepreneurialism. Historically, academic discourse has been limited to the strategic management of established firms. But, as seen above, the modern era defines business as the process of becoming. This shift is illustrated by the shift from static business plans to dynamic, iterative models such as Effectuation and Lean Start-ups. The study suggests that the hallmark of today's entrepreneur is the ability to manage uncertainty, not just risk. By adopting a systems-based approach, it is recognised that the individual entrepreneur is not an isolated actor but a node in a complex adaptive system, where success depends on the quality of interactions within the ecosystem of the entrepreneur.

Structural Constraints and the SME Paradox

The takeaway from this synthesis is that nascent Small and Medium Enterprises (SMEs) are fragile because they cannot do everything at once. The data indicates that young organisations lack the "ambidexterity" required to simultaneously explore new markets and exploit existing ones. For these firms mentoring serves as a superior intervention in comparison to traditional classroom training. The role of the mentor in facilitating reflection during a real world crisis is indispensable because entrepreneurial learning is experience based and problem-centric.

The main takeaway from this synthesis is that start-up SMEs are inherently vulnerable. Research demonstrates that young businesses lack the "ambidexterity" required to

simultaneously investigate new markets and take advantage of those that already exist. Strategic focus is necessary due to this lack of depth in resources. Research clearly shows that mentoring is a more effective intervention for these businesses than traditional classroom instruction. The mentor's role in encouraging introspection in the face of a real-world crisis is crucial because entrepreneurship education is experiential and problem-oriented. Furthermore, a successful SME's main output is institutionalized knowledge rather than just a product, as demonstrated by the feedforward loop of learning, in which knowledge is transferred from individual to team to organization.

The Democratization of Innovation: Public and Social Spheres

The main takeaway from this synthesis is that start-up SMEs are inherently vulnerable. Research repeatedly demonstrates that young businesses lack the "ambidexterity" required to simultaneously investigate new markets and take advantage of those that already exist. Strategic focus is necessary due to this lack of depth in resources. Research clearly shows that mentoring is a more effective intervention for these businesses than traditional classroom instruction. The mentor's role in encouraging introspection in the face of a real-world crisis is crucial because entrepreneurship education is experiential and problem-oriented. Furthermore, a successful SME's main output is institutionalized knowledge rather than just a product, as demonstrated by the feedforward loop of learning, in which knowledge is transferred from individual to team to organization.

Human Capital and the Cognitive Architecture of the Entrepreneur

Building absorptive capacity is the main benefit of education, according to research on human capital. Success in high-tech industries is uniquely predicted by one's capacity to absorb complex information. However, the study also shows that personality traits shape a cognitive pathway. Studies have now made distinctions between functional impulsivity (sensation-seeking, which drives intention) and non-functional impulsivity (urgency, which leads to poor performance). Understanding this psychological structure allows for a more tailored education in entrepreneurship. In order to help students transition from passive learning identities to active founder identities, modern education must emphasize the conflict between the learner's identity and the pedagogy's ethos rather than teaching business facts.

Institutional Barriers and the Gender Gap

The findings empirically support that the institutional environment continues to be the most important factor in the creation of entrepreneurship. Unfortunately, this environment is often gender-biased where male entrepreneurs often benefit from a perceived greater "ease of entry" and easier access to financial networks. Conversely, women often enter the business sector as a response to unemployment (necessarily entrepreneurship) and they face major roadblocks when they try to grow. To make the new economy truly sustainable, policies must move from "one-size-fits-all" mandates to location-based strategies that actively break down these social and financial stereotypes.

The thematic clusters identified in this study - namely the metamorphosis of the entrepreneurial discipline, the structural fragility of SMEs, the making of innovation accessible to everyone in the public and social spheres, the cognitive structure of human

capital, and the persistence of institutional barriers, including gender bias, all collectively show that business cannot be reduced to a linear process or a static system. Rather, entrepreneurship functions as a dynamic process embedded in a multi-layered system. The dynamic process could be understood as the iterative and process-oriented journey of an individual entrepreneur navigating insecurities, and the system could be understood as the business ecosystem, institutional frameworks, training mechanisms, and networking that facilitate or restrict this journey. The paradox of SMEs and the role of mentoring underlines that the process will fail without systemic support, just as a system without entrepreneurial drive will remain inert. In this synthesis, it is concluded that entrepreneurship is a process-versus-system duality, a recursive relationship in which the cognitive and experiential processes of an entrepreneur continually change the very system in which it operates. For policy and practice, this implies that fostering entrepreneurship requires simultaneous attention to process-oriented capabilities (learning, identity formation, uncertainty management) and system-level enablers (institutional friendliness, network access, gender-equitable infrastructure).

References

- Arthur, S. J., Hisrich, R. D., & Cabrera, Á. (2012). The importance of education in the entrepreneurial process: A world view. *Journal of Small Business and Enterprise Development*, 19(3), 500–514. <https://doi.org/10.1108/14626001211250180>.
- Autio, E., Kenney, M., Mustar, P., Siegel, D.S., & Wright, M. (2014). Entrepreneurial innovation: The importance of context. *Research Policy*, 43, 1097–1108.
- Baron, R. A. (2004). The cognitive perspective: A valuable tool for answering entrepreneurship's basic "why" questions. *Journal of Business Venturing*, 19(2), 221–239. [https://doi.org/10.1016/S0883-9026\(03\)00031-7](https://doi.org/10.1016/S0883-9026(03)00031-7).
- Bloodgood, J. M., Hornsby, J. S., Burkemper, A. C., & Sarooghi, H. (2015). A system dynamics perspective of corporate entrepreneurship. *Small Business Economics*, 45(2), 383–402. <https://doi.org/10.1007/s11187-015-9634-4>.
- Brettel, M., & Rottenberger, J. D. (2013). Examining the Link between Entrepreneurial Orientation and Learning Processes in Small and Medium-Sized Enterprises: Brettel and Rottenberger. *Journal of Small Business Management*, 51(4), 471–490. <https://doi.org/10.1111/jsbm.12002>.
- Cooke, P., Gomez Uranga, M., & Etzebarria, G. (1997). Regional innovation systems: Institutional and organisational dimensions. *Research Policy*, 26(4–5), 475–491. [https://doi.org/10.1016/S0048-7333\(97\)00025-5](https://doi.org/10.1016/S0048-7333(97)00025-5).
- Deakins, D., & Freel, M. (1998). *Entrepreneurial learning and growth process in SME*. MCB UP Ltd.
- Dehghanpour Farashah, A. (2013). The process of impact of entrepreneurship education and training on entrepreneurship perception and intention: Study of the educational system of Iran. *Education + Training*, 55(8/9), 868–885. <https://doi.org/10.1108/ET-04-2013-0053>.
- Doan, X. H., Le, T. T., Duong, C. D., Nguyen, T. P. L., Tran, D. D., & Tran, T. P. H. (2021).

- Impulsivity traits and the rational cognitive process of entrepreneurship: Empirical evidence from Vietnam. *Asia-Pacific Journal of Business Administration*, 13(4), 497–519. <https://doi.org/10.1108/APJBA-05-2021-0200>.
- Donthu, N., Kumar, S., Mukherjee, D., Pandey, N., & Lim, W. M. (2021). How to conduct a bibliometric analysis: An overview and guidelines. *Journal of Business Research*, 133, 285–296. <https://doi.org/10.1016/j.jbusres.2021.04.070>.
- Drucker, P. F. (2006). *Innovation and Entrepreneurship*. HarperCollins Publishers.
- Ferreira, J. J. M., Fernandes, C. I., & Kraus, S. (2019). Entrepreneurship research: Mapping intellectual structures and research trends. *Review of Managerial Science*, 13(1), 181–205. <https://doi.org/10.1007/s11846-017-0242-3>.
- Fuentes, N., Schmutzler, J., & Vargas, A. M. (2024). Unpacking the multilayered nature of entrepreneurial ecosystems: A conceptual complex adaptive system model. *International Journal of Innovation Studies*, 8(4), 335–350. <https://doi.org/10.1016/j.ijis.2024.08.001>.
- Han, J., Ruan, Y., Wang, Y., & Zhou, H. (2021). Toward a complex adaptive system: The case of the Zhongguancun entrepreneurship ecosystem. *Journal of Business Research*, 128, 537–550. <https://doi.org/10.1016/j.jbusres.2019.11.077>.
- Hanson, S. K., Hessel, H. M., & Danes, S. M. (2019). Relational processes in family entrepreneurial culture and resilience across generations. *Journal of Family Business Strategy*, 10(3), 100263. <https://doi.org/10.1016/j.jfbs.2018.11.001>.
- Johannisson, B. (2011). Towards a practice theory of entrepreneuring. *Small Business Economics*, 36(2), 135–150. <https://doi.org/10.1007/s11187-009-9212-8>.
- Klyver, K. (2007). Shifting family involvement during the entrepreneurial process. *International Journal of Entrepreneurial Behavior & Research*, 13(5), 258–277. <https://doi.org/10.1108/13552550710780867>.
- Li, F., & Long, J. (2024). Exploration and exploitation of multiple values: The dynamic evolution process of sustainable entrepreneurship in Chinese digital platform corporates. *Sustainable Development*, 32(3), 2342–2357. <https://doi.org/10.1002/sd.2791>.
- Lyu, J., Shepherd, D., & Lee, K. (2024). The impact of entrepreneurship pedagogy on nascent student entrepreneurship: An entrepreneurial process perspective. *Studies in Higher Education*, 49(1), 62–83. <https://doi.org/10.1080/03075079.2023.2220722>.
- Mainela, T., Puhakka, V., & Sipola, S. (2018). International entrepreneurship beyond individuals and firms: On the systemic nature of international opportunities. *Journal of Business Venturing*, 33(4), 534–550. <https://doi.org/10.1016/j.jbusvent.2018.04.002>.
- Mueller, S., & Anderson, A. R. (2014). Understanding the entrepreneurial learning process and its impact on students' personal development: A European perspective. *The International Journal of Management Education*, 12(3), 500–511. <https://doi.org/10.1016/j.ijme.2014.05.003>.
- Mitchell, R. K., Busenitz, L. W., Bird, B., Gaglio, C. M., McMullen, J. S., Morse, E. A., & Smith, J. B. (2007). The central question in entrepreneurial cognition research 2007. *Entrepreneurship Theory and Practice*, 31(1), 1–27. <https://doi.org/10.1111/j.1540-6520.2007.00161.x>

- Neergaard, H., Robinson, S., & Jones, S. (2021). Transformative learning in the entrepreneurship education process: The role of pedagogical nudging and reflection. *International Journal of Entrepreneurial Behavior & Research*, 27(1), 251–277. <https://doi.org/10.1108/IJEBr-04-2020-0235>.
- Qian, H., Acs, Z. J., & Stough, R. R. (2013). Regional systems of entrepreneurship: The nexus of human capital, knowledge and new firm formation. *Journal of Economic Geography*, 13(4), 559–587. <https://doi.org/10.1093/jeg/lbs009>.
- Rosa, P. (1998). Entrepreneurial Processes of Business Cluster Formation and Growth by ‘Habitual’ Entrepreneurs. *Entrepreneurship Theory and Practice*, 22(4), 43–61. <https://doi.org/10.1177/104225879802200403>.
- Santos, D. (2025). Regional innovation systems and entrepreneurial ecosystems: Their value added to rethinking regional development policies. *Innovation and Development*, 15(2), 473–487. <https://doi.org/10.1080/2157930X.2024.2381314>.
- Shane, S., & Venkataraman, S. (2000). The promise of entrepreneurship as a field of research. *Academy of Management Review*, 25(1), 217–226.
- Shi, X., & Shi, Y. (2022). Unpacking the process of resource allocation within an entrepreneurial ecosystem. *Research Policy*, 51(1), Article 104378. <https://doi.org/10.1016/j.respol.2021.104378>.
- Sörensson, A., & Bogren, M. (2020). Organizing an entrepreneurial learning programme: The role of people, process and place. *Industry and Higher Education*, 34(1), 13–23. <https://doi.org/10.1177/0950422219857598>.
- Stevenson, H. H., and Jarillo, I. C. (1990). A paradigm of entrepreneurship: Entrepreneurial management. *Strategic Management Journal*, 11 (special issue), 17–27.
- Sundin, E., & Tillmar, M. (2008). A Nurse and a Civil Servant changing institutions: Entrepreneurial processes in different public sector organizations. *Scandinavian Journal of Management*, 24(2), 113–124. <https://doi.org/10.1016/j.scaman.2008.03.006>
- Szerb, L., Acs, Z., Autio, E., Ortega-Argiles, R., & Komlosi, E. (2013). *REDI: the Regional Entrepreneurship and Development Index*. Brussels, Belgium: Directorate-General for Regional and Urban Policy, European Commission.
- Vliamos, S. J., & Tzeremes, N. G. (2012). Factors Influencing Entrepreneurial Process and Firm Start-Ups: Evidence from Central Greece. *Journal of the Knowledge Economy*, 3(3), 250–264. <https://doi.org/10.1007/s13132-011-0043-x>.
- Welsh, D. H. B., Tullar, W. L., & Nemati, H. (2016). Entrepreneurship education: Process, method, or both? *Journal of Innovation & Knowledge*, 1(3), 125–132. <https://doi.org/10.1016/j.jik.2016.01.005>.
- Zupic, I., & Čater, T. (2015). Bibliometric methods in management and organization. *Organizational Research Methods*, 18(3), 429–472. <https://doi.org/10.1177/1094428114562629>.

India's External Sector and Global Supply Chain Resilience amid Rising Protectionism and Geopolitical Uncertainty (2019–2025)

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Abstract

This study examines the evolution of India's external sector between 2019–20 and 2024–25 in the context of intensifying global uncertainties and protectionist trends. Drawing from official data sources such as India's Economic Surveys (2019–20 and 2024–25) and trade databases (exportimportdata.in), the research analyses India's merchandise and services trade, current account balance, and dependence within global supply chains. The study identifies the top export and imports commodities and major trading partners, comparing their changes over time. It highlights India's ability to maintain external stability despite disruptions caused by geopolitical conflicts, shipping crises in the Red Sea and Strait of Hormuz, climate-induced transport bottlenecks, and rising non-tariff measures (NTMs). While India's exports faced moderate growth due to weak global demand, robust services exports, capital inflows, and remittances helped sustain a stable Balance of Payments (BoP). The paper concludes that India's external sector remains resilient and adaptive, but greater policy emphasis is needed on logistics efficiency, trade diversification, and strengthening participation in global value chains to mitigate future shocks.

Keywords: External Sector of India, Balance of Payments (BoP), Global Supply Chains, Protectionism and Geopolitical Uncertainty, Trade Competitiveness and Resilience

Introduction

When a good is manufactured and delivered to consumer level it requires to source raw material then manufacturing then to supply it to the whole sellers, retailers, and consumers or may be directly to the consumers. It also may require to hold a part of manufactured goods as inventory and the remaining part for supply. This process of supply may be happen within a country if all the functions of each level are being done in the same country right from sourcing raw material to deliver to the consumer then this will be the intra country dependence for the whole supply chain and if the functions are carried out at various countries for example sourcing raw material from South Africa, manufacturing in China and supply the final goods in India this will be called inter country dependence of the whole supply chain for each function i.e. global supply chain. Suppose India source its 90% crude oil from only one country, the UAE. It means it heavily depends on sourcing crude oil in the

UAE. Any disruption from this sourcing can badly impact India's economy. If India imports its 40% electronics from China again any disruption in import can badly impact India's economy. Suppose India is the supplier of its 70% services for the USA then any disruption in this supply can badly impact India's economy. The global supply chain faces some disruptions either due to man-made reasons or due to natural disasters like pandemic. When natural disasters happen, it disrupts the global supply chain in a mass level as much as the disaster is bigger. Covid 19 came in 2020 was such a disaster that disrupted the global supply chain due to the over demand of covid 19 equipment and shutdowns in EU and USA.

As there came the improvements in production methods the production increased per unit of time a mass level of surplus began to produce then a need grew up to supply goods from local to distant places this led to generate a chain of source, production, delivery of goods and services which is called a supply chain. A supply chain is a get together of each step of connectivity right from source to deliver at consumer level. At present the chain of source to last supply is much more complex which includes a third-party logistics provider for supply, personal computing and web communication and coordination (Gomez, A., 2022). Since the 1980s as per the improvement in production methods, mass level of production began with production stages spread across multiple countries which fragmented the global supply chain. This fragmentation increased intercountry dependence as countries specialize in specific stages of production rather than entire industries (Baldwin, R., & Freeman, R., 2022). Since the 1990s, supply chains have globalized rapidly, with manufacturing shifting to Asia (China, Japan, Korea) and companies relying on extended international networks. Modern supply chains use AI, machine learning, and analytics for optimization and risk management. However, global events such as the COVID-19 pandemic, Brexit, natural disasters (e.g., Taiwanese drought), industrial accidents, and transport blockages (like the Ever-Given incident in the Suez Canal) have exposed the vulnerabilities and challenges of these global systems Saloodo! blog. (2023).

There is asymmetric interdependence in global supply chains among nations. Some countries and firms are much more dependent on others for critical inputs. This asymmetry gives dominant suppliers or regions (such as East Asia) significant leverage in global trade dynamics. Firms and nations are deploying selective diversification - restructuring supply chains to reduce vulnerability in strategically sensitive sectors (like semiconductors or medical supplies) while maintaining global efficiency in others (Nagy, S. R., & Nguyen, H., 2021).

The intricate web of global supply chains has been a cornerstone of economic growth and interconnectedness, yet recent disruptions have starkly illuminated their inherent fragility and the systemic risks they pose to the global economy (Braun et al., 2025) (Chakraborty et al., 2024). This heightened awareness has prompted a critical re-evaluation of established supply chain metrics, shifting focus from mere participation to a more nuanced understanding of exposure to foreign dependencies (Baldwin et al., 2022). Specifically, while conventional trade data might suggest modest macro-level exposure for economies like the US, the reality of reliance on foreign suppliers, particularly from China, is considerably more significant and often "hidden" within complex global value chains (Baldwin et al., 2023). This study aims to

analyse the performance and resilience of India's external sector in the face of growing global challenges between 2019–20 and 2024–25.

Review of Literature

Baldwin & Freeman (2022) concluded that global supply chains are efficient but fragile. The overdependence on specific countries, industries, or regions has created systemic risks, making it necessary to rethink the balance between global integration (intercountry dependence) and domestic or regional capacity (intracountry strength). According to Nagy, S. R., & Nguyen, H. (2021), the future of global supply chains lies in selective, risk-based diversification rather than wholesale decoupling. It underscores that asymmetric dependence—where some economies wield more power in supply networks—will continue to shape global trade and that resilience requires carefully balancing efficiency, security, and inclusiveness. Bednarski et.al. (2025) stated that the geopolitical disruptions—such as trade wars, Brexit, COVID-19, and the Russia–Ukraine conflict—have fundamentally reshaped global supply chains, creating a shift from efficiency to resilience-oriented systems. Firms are increasingly adopting regionalisation, diversification, and digital technologies like AI and blockchain to reduce dependency and improve transparency. However, the paper notes limited evidence on the long-term impacts of these strategies and identifies research gaps regarding economic costs, transport disruptions, and sustainability in supply chain redesign. Yu et.al. (2022) found that COVID-19 exposed the vulnerabilities of global interdependence, magnified social and gender inequalities, but also highlighted opportunities to build more sustainable, resilient, and environmentally conscious supply chain systems. The global supply chains must evolve from efficiency-driven systems to adaptive, technology-enabled, and sustainability-oriented networks. The future of supply chain management lies in digital transformation, collaborative governance, and long-term resilience-building against geopolitical, environmental, and economic disruptions (Safdar et al., 2024). The global supply chain disruptions are an independent and powerful source of macroeconomic instability, driving both inflation and production downturns across major economies. These findings underscore the importance of resilient, diversified, and regionally adaptive supply chain structures to mitigate future global economic shocks (Finck & Tillmann, 2022). According to Koyamparambath, A., et.al. (2022), battery raw materials such as lithium, cobalt, and rare earth elements pose a much higher and growing supply risk than fossil fuels for OECD countries due to heavy dependence on a few producers, especially China. While fossil fuel risks have declined through decades of diversification and policy measures, new vulnerabilities have emerged in the shift toward clean energy. The paper highlights the urgent need for strategic mineral policies, recycling, and international cooperation to secure sustainable access to critical resources in the energy transition. While the EU holds geological potential for limited self-sufficiency in some critical raw materials, import dependency will remain high unless integrated strategies involving domestic production, recycling, and international cooperation are implemented. This is vital to secure materials for Europe's transition to a climate-neutral and digitally advanced economy (Lewicka et al., 2021). Jagtap et al., (2022) concluded that the Russia–Ukraine conflict has exposed deep vulnerabilities in global food systems, resulting in reduced agricultural output, broken transport links, and escalating food prices. To mitigate these risks, nations must enhance

supply chain resilience, diversify sourcing, and strengthen collaborative global food security frameworks. The Russia–Ukraine war has exposed severe vulnerabilities in global food security, especially for low-income and politically unstable countries. The study urges a shift toward resilient, diversified, and cooperative global food systems, integrating energy and agricultural strategies to prevent future crises (Hellegers, 2022). Khan et.al., (2022) stated that while natural resources remain essential to economic growth, their impact is asymmetric across income groups. Technological innovation and renewable energy adoption transform resource wealth into a growth advantage in developed countries, while resource dependence without innovation sustains the growth curse in developing economies. Sustainable growth, therefore, depends on innovation-led, diversified, and environmentally responsible resource utilization. The global value chains stimulate economic growth, innovation, and productivity, but their benefits are unevenly distributed. Developing nations risk being trapped in low-value segments unless they pursue technological upgrading and diversification. Sustainable participation in GVCs requires balancing global integration with domestic capacity building and supply chain resilience (Goel et. al., 2021). Flores (2023) found that Mexico’s trade patterns were significantly affected by the 2018 political transition to the Morena government, leading to a decline in overall bilateral trade. However, the effects varied across sectors—while Machinery/Electrical and Mineral Products showed growth, others like Metals and Plastics/Rubbers faced reduced substitutability and trade deficits. The results also revealed diversification in import sources and changing market shares, with less dependence on traditional partners. Overall, the findings highlight that political shifts, alongside economic and regional factors, jointly shape Mexico’s complex trade dynamics. Natural resource dependence affects economic growth asymmetrically across countries, with positive impacts in developed economies and negative effects in developing ones. While developed countries benefit from efficient resource management, technological advancement, and strong institutions, developing nations often experience the “resource curse” due to weak governance and lack of diversification. The long-run effects of resource dependence were stronger than short-run ones, and factors like capital formation, trade openness, and human development supported growth more effectively in developed nations. Overall, the findings highlight the need for developing countries to strengthen institutions, diversify their economies, and invest in human capital to turn resource wealth into sustainable growth (Khan et al., 2022). Carnazza et al. (2024) revealed that the geopolitical and economic dependence of European Union (EU) countries varies significantly depending on whether their key trading partners are the United States or China. When trade is concentrated with the U.S., the impact of import concentration and political instability in exporting countries on domestic political instability within the EU is weaker, suggesting that U.S. trade relations have a stabilizing effect. In contrast, when China is among the top exporters, the effect becomes stronger, indicating that higher trade concentration with China amplifies domestic political instability in EU countries. This implies that China’s growing role in global trade networks increases geopolitical vulnerability, while trade ties with the U.S. tend to mitigate such instability. Overall, the findings highlight the asymmetric influence of global trade dependencies on domestic political stability in Europe. The supply chain resilience research has grown significantly but remains conceptually fragmented, with no universal definition. It identified key resilience dimensions—such as agility, flexibility, collaboration, redundancy,

and visibility—as essential for managing disruptions. The authors proposed a comprehensive framework linking vulnerabilities, resilience capabilities, and performance outcomes, emphasizing that resilient supply chains enhance long-term sustainability and competitiveness. However, they noted a lack of standardized quantitative measures and called for future research using data-driven and technology-enabled approaches to better model and evaluate supply chain resilience. The efficient and reliable supply chains are vital for sustaining economic growth, particularly during global crises like COVID-19. Timely and well-coordinated logistics enhance productivity and mitigate disruption impacts, while delays and inefficiencies can significantly slow growth. The results emphasize that improving logistics infrastructure and delivery performance yields high economic dividends, especially for developing and slow-growing economies, and that post-pandemic recovery policies should prioritize strengthening supply chain systems to support long-term resilience and growth (Shishodia et al.,2023). Welage et al. (2025) found that bilateral diplomatic relations and regional integration both significantly enhance agricultural trade, but their effects are not complementary—they can substitute for one another. The presence of high-level diplomatic missions (e.g., ambassadors) most effectively promotes trade, while RTAs provide broader but less targeted trade benefits. Overall, the findings highlight that economic diplomacy remains a vital instrument for agricultural trade expansion, especially in politically sensitive or highly protected sectors. The countries are most likely to file WTO disputes when important and interdependent trade sectors are harmed by foreign trade measures. Large, economically vital sectors with strong bilateral dependence drive governments to protect domestic industries through international legal action. The findings suggest that WTO litigation is primarily used as an enforcement tool to safeguard national economic interests, especially in sectors where trade ties are both substantial and strategically sensitive (Invernizzi, 2023). Both bilateral diplomacy and regional trade agreements boost agricultural trade, but diplomacy plays the stronger role. High-level diplomatic presence—such as ambassadors—significantly promotes trade, especially in key agricultural sectors. However, regional integration can partially offset the benefits of diplomacy, indicating a trade-off between collective and bilateral approaches. Overall, the findings emphasize that strategic diplomatic engagement remains vital for expanding agricultural trade and overcoming protectionist barriers (Osabohien et al.,2022).

Objectives

- o To analyse the performance and resilience of India's external sector during 2019–20 and 2024–25.
- o To identify India's top export and import commodities and their shifts over time.
- o To assess the impact of major global headwinds and protectionist trends—such as geopolitical conflicts, climate disruptions, and NTMs—on India's trade and BoP.
- o To suggest policy measures for strengthening India's competitiveness and integration into resilient, diversified global supply chains.

Methodology

This study uses a descriptive-analytical approach, combining numerical trade data with qualitative analysis of global and policy trends. It relies on secondary data sources, including the *Economic Surveys of India (2019–20 and 2024–25)*, *Union Budget 2024–25 (Chapter 3: External Sector)*, and trade data from *exportimportdata.in*. International sources such as the *World Bank*, *IMF*, *World Economic Forum (WEF)*, and *Economist Impact* are also used to understand broader global risks and trade policy developments.

The research process involves identifying the top ten export and import items for both 2019–20 and 2024–25, then comparing them to highlight major shifts or emerging trends in trade composition. It further examines India's key trading partners, Balance of Payments (BoP) movements, and the roles of capital inflows, FDI, and remittances. Alongside quantitative analysis, the study qualitatively explores the impact of global challenges—such as protectionism, friend-shoring, near-shoring, Non-Tariff Measures (NTMs), and climate-related trade rules—on India's external trade and supply chain dependencies. Data are presented in tables and comparative formats, supported by descriptive interpretation for analytical discussion.

External sector of India

India's external sector has shown remarkable resilience despite global uncertainties such as slowing world demand, geopolitical tensions, protectionism, and disruptions to supply chains. In 2019-20, India benefited from moderate crude prices, robust service exports, and strong remittances, which helped narrow the current account deficit to 1.5% of GDP. In 2024-25, although merchandise exports grew moderately due to weak global demand, India's services exports surged strongly and continued to be the backbone of the external sector, generating large net receipts and cushioning the merchandise trade deficit.

India's merchandise trade continues to show a mixed trend. Imports remain strong due to rising domestic demand (especially petroleum, electronics, machinery), while exports face global headwinds. However, sectors such as textiles, pharmaceuticals, engineering goods, and refined petroleum continue to form the core of India's export basket. The government has focused on logistics reforms, trade facilitation, digitisation of customs, and new FTAs to support export competitiveness. On the capital account, both surveys highlight stable and positive capital inflows. In 2019-20, net FDI and strong remittances supported BoP stability. In 2024-25, India experienced renewed foreign portfolio investment after mid-year volatility, and FDI inflows, though affected by high repatriation, remained healthy. Overall, both Surveys conclude that India's external sector is strong, flexible, and well-buffered. But to expand its role in global supply chains, India must continue reducing trade costs, improving logistics, deepening FTAs, encouraging quality manufacturing, and strengthening export-oriented industry capabilities. This is essential as the world moves away from globalisation toward protectionist and uncertainty-driven trade patterns.

According to economic survey 2019-20 Top export commodities of India were Petroleum products (13.7%), Pearl, Precious, Semiprecious Stones (7.0%), Drug Formulations

Biologicals (5%), Gold and Other Precious Metal Jewellery (4.5%), Iron and Steel (3.0%), Electric Machinery and equipment (2.8%), Organic Chemicals (2.8%), RMG Cotton including Accessories (2.6%) Motor Vehicles/ Cars (2.5%), Marine Products (2.3%). According to exportimportdata.in the top 10 exports of India include petroleum products > Gems and jewellery > textiles and garments > pharmaceuticals > organic and inorganic chemicals > machines and equipment > iron and steel > vehicles > dairy products > tea. Out of both common top exports are found as petroleum products, Gems and jewellery (including precious stones and metals), Textiles and garments (including RMG cotton), Pharmaceuticals (drug formulations and biologicals), Organic chemicals, Iron and steel, Vehicles (motor vehicles and cars)

According to the economic survey 2019-20 the top 10 imports of India were Petroleum: Crude (21%), Gold (6.4%), Petroleum Products (5.6%), Coal, Coke and Briquettes, etc. (4.8%), Pearl, Precious, Semiprecious Stones (4.6%), Electronics Components (3.6%), Telecom Instruments (3.2%), Organic Chemicals (2.7%), Industrial Machinery for Dairy etc. (2.6%), Iron and Steel (2.5%). According to exportimportdata.in top imports of India in year 2024 were Petroleum, Crude & Products > Coal, Coke & Briquettes > Electronic Goods > Transport Equipment > Organic & Inorganic Chemicals > Pearls, Precious & Semi-Precious Stones > Plastic and plastic articles > Vegetable Oil > Fertilizers, Crude & Manufactured > Iron and Steel. Out of both common top imports of India are petroleum: Crude & Products; Coal, Coke & Briquettes; Electronic Goods / Components; Organic & Inorganic Chemicals; Pearls; Precious & Semi-Precious Stones; Iron and Steel.

According to Indian trade Data from exportimportdata.in top 10 trading partners of India for its exports United States (16%), China (7%), UAE (7%), UK (3%), Bangladesh (3%), Germany (3%), Singapore (2%), Saudi Arabia (2%), Nepal (2%), Switzerland (2%) and top 10 trading partners for its imports are China (19%), USA (7%), UAE (6%), Saudi Arabia (5%), Iraq (4%), Indonesia (4%), Korea RP (4%), Japan (3%), Switzerland (3%), Germany (3%) as on July 2025. This implies that the top

India usually runs a CAD (Current Account Deficit). During 2014-19 crude oil prices fell sharply and FDI inflows were very strong which improved BoP position in a healthy way but due to weak domestic demand India imported less during 2019-20 which further improved BoP position. India's BoP in FY 2024-25 shows stability – due to low current account deficit, rising capital inflows however it faced global headwinds and protectionist trends. But these barriers directed India to take steps to strengthen the global supply chain by enhancing export competitiveness and reducing trade costs. These adverse international conditions are Geopolitical conflicts and fragmentation, disruptions in the Red Sea, instability in the Hormuz strait climate events, rising global political uncertainty.

Geopolitical conflicts and fragmentation: The year 2024, dubbed the "Great Election Year," saw an unusually high number of national elections in countries accounting for 60% of global GDP, amplifying political and economic uncertainty and accelerating trends of geopolitical fragmentation worldwide. This environment has pushed nations further toward inward-looking strategies, deepening divisions in international relations and eroding enthusiasm for multilateral cooperation (Global Risks Report, 2025). Global fragmentation

and uncertainty are being driven by ongoing geopolitical conflicts, protectionist policies, and weakening global cooperation. Wars and tensions, such as the Russia-Ukraine conflict, US-China rivalry, and regional disputes in Europe and the Middle East, are dividing countries into competing groups and encouraging economic separation (Top geopolitical risks of 2025). At the same time, many governments are responding to supply chain problems and technological competition by raising tariffs, creating trade barriers, and supporting local industries through subsidies—as seen in the US, China, and India. Additionally, countries are losing faith in global organizations like the WTO and are instead forming smaller regional or bilateral groups, such as BRICS and CPTPP, reflecting a shift away from global unity toward more fragmented alliances (MAX Security, 2025, January 17). The political uncertainty caused by the many elections held in 2024 has made investors more cautious, delayed important economic decisions, and added to global market instability. In India, for example, unexpected election results led to an 8.5% drop in the stock market, showing how political instability can quickly impact financial systems. Around the world, this uncertainty has reduced investment, production, and spending, while also making supply chains weaker and slowing overall global growth (Pandey, D. K., Rajesh, S. P., & Kumari, V., 2024).

Disruptions in the Red Sea (since November 2023): Since November 2023, problems in the Red Sea have caused one of the biggest shipping crises in many years. Houthi rebels have attacked commercial ships passing through important routes like the Bab al-Mandab Strait, which leads to the Suez Canal. These attacks are connected to the wider conflict in the Middle East, especially the war in Gaza. Because of this, thousands of container ships have changed their routes to avoid the Red Sea (Wikipedia contributors, 2025, October 28). By March 2024, over 2,000 ships had avoided the Red Sea, which made trips longer, fuel and insurance more expensive, and caused major delays and shortages in global supply chains (Sainz, V., 2025, March 27). Shipping costs for containers rose by up to 300%, and deliveries from Asia to Europe or the US East Coast took 10–15 extra days. Ports became crowded, and there were not enough shipping containers, especially in Southeast Asia and the Middle East. As a result, global trade fell by 1.3% at the end of 2023, and many exporters—like those in the UK—faced money problems and lacked parts because of these disruptions (Röhlig Logistics, 2025). According to JPMorgan and other reports, the Red Sea disruptions increased global goods inflation by about 0.7% in the first half of 2024 and added another 0.3% to overall inflation. The Russell Group estimated that up to \$1 trillion worth of goods were affected between October 2023 and May 2024. Ship traffic through the Suez Canal also dropped sharply—from 2,068 ships in November 2023 to only 877 by October 2024 (Real Logistics, 2025, June 13).

By July 2025, most shipping companies were still avoiding the Red Sea and using the longer route around the Cape of Good Hope, which has become the “new normal.” This is likely to continue because rebel attacks remain a threat, peace talks have made little progress, and naval forces have not been able to make the area safe again (Röhlig Logistics, 2025). Countries in Europe, Asia, and Africa that depend heavily on trade are suffering the most. Factories that rely on quick deliveries are facing delays, Egypt is losing money from lower Suez Canal fees, and prices are staying high as supply chains adjust. Overall, these problems

show how global trade is becoming more divided and unstable, with supply chains learning to manage greater risks and uncertainty in 2025 (Denamiel, T., 2024).

Instability in the Hormuz Strait: Since late 2024, tensions around the Strait of Hormuz—a key route for global oil and gas—have grown sharply because of rising conflict between Iran, the US, and Israel. By June 2025, Iran’s parliament had even approved a possible closure of the strait in response to recent US airstrikes on its nuclear sites, increasing worries about the region’s future and global trade (Butler, G., 2025). The Strait of Hormuz is a crucial route for global trade, carrying about 20% of the world’s crude oil and 30% of liquefied natural gas—around 20 million barrels each day—making its stability vital for the global economy. Any disruption or closure would quickly cut global energy supplies, drive up oil and gas prices, and affect many industries and consumer markets. Countries that rely heavily on energy from the Gulf, such as China, India, and Japan, would face major supply problems, while nearby nations would suffer from delays and higher costs for food, goods, and essential materials (ET EnergyWorld,2025).

By June 2025, oil prices rose above \$86 per barrel—up 12% in a month—and European gas prices jumped over 20% due to fears of disrupted LNG supplies. Shipping and insurance costs also increased, and rerouting ships around Africa added 10–14 extra days to deliveries. Experts warn that a full blockade of the Strait of Hormuz could push oil prices to \$100–150 per barrel, driving up electricity, transport, and product costs worldwide.

Although Iran has threatened to close the strait before, it has never done so, and its top security council would make the final decision. Gulf countries and Iraq have no major alternative export routes, making them highly vulnerable. Asian markets, already hit by Red Sea shipping problems, would face even worse supply and inflation issues. Overall, instability in the Strait of Hormuz poses a serious global threat that could quickly disrupt energy supplies and raise prices, adding to global economic and political uncertainty.

Climate events: During 2023 and 2024, one of the worst droughts in Panama’s history severely reduced the capacity of the Panama Canal, affecting about 5% of global maritime trade (Jovanovic, D., 2025; LaRocco, L. A., 2025). Water levels in Lake Gatún—the main reservoir supplying the canal’s locks—fell nearly two meters below the previous year’s level, the lowest since the canal opened in 1914 (Erten, E., 2025). By early 2024, daily ship transits dropped from about 36–38 to only 18–22 per day, a 30–40% decline (Project44, 2025). Canal authorities were forced to restrict both ship numbers and cargo weights, leading many vessels carrying bulk goods, LNG, and containers to reroute around South America (Kuehne+Nagel, 2025).

These restrictions sharply increased freight costs and caused delays in global supply chains, as rerouting added extra time and fuel expenses (LaRocco, L. A., 2025). Time-sensitive exports like liquefied natural gas (LNG) and U.S. grain shipments to Asia faced the steepest price hikes and delivery issues (Kuehne+Nagel, 2025; Jovanovic, D., 2025). These problems also led to container shortages and imbalances at key ports, compounding disruptions already caused by tensions in the Red Sea and Strait of Hormuz (Jovanovic, D. (2025).

Looking ahead, scientists warn that due to global warming, extreme droughts like these could become the “new normal” for Panama, putting long-term pressure on canal operations and world trade connectivity (Muñoz, S. E., Lawrence, L., & Wang, S., 2025). In response, the Panama Canal Authority is investing in new infrastructure projects, including additional reservoirs and a land bridge with road, rail, and natural gas pipelines, to reduce dependence on rainfall (LaRocco, L. A., 2025). By mid-2025, the canal had mostly recovered, though bulk and LNG traffic remained below normal levels. Overall, the Panama Canal drought highlights how climate change is reshaping key maritime chokepoints, deepening supply chain risks, and increasing inflationary pressures in an already unstable global economy.

Rising global policy uncertainty: In 2025, global policy uncertainty reached record-high levels, as shown by the Global Economic Policy Uncertainty (GEPU) and Trade Policy Uncertainty (TPU) indices (Soltani, E., 2025). These increases followed the 2024 “Great Election Year,” when many countries saw major political shifts that led to new trade tensions and unpredictable tariff changes. Much of the uncertainty came from the U.S., China, and the EU, whose changing trade and economic policies have unsettled global markets. The GEPU Index rose to levels higher than during the 2008 financial crisis and the 2020 pandemic, reflecting growing fears of new tariffs and unstable trade agreements (McKinsey, 2025). Similarly, the TPU Index climbed as governments introduced new trade barriers and adjusted customs and nationalist policies, creating confusion about future trade costs and supply chain reliability (World Bank, 2025).

This uncertainty has had clear economic consequences. The International Monetary Fund (IMF) and World Bank both project global growth to slow to around 2.3–2.4% in 2025, the weakest rate since the 2008 crisis, as investment, trade, and business confidence all decline (IMF, 2025; World Bank, 2025). Trade volumes have dropped as companies face uncertainty over tariffs and regulations, prompting many to delay investments and shift production to reduce risk (WEF, 2025). This has also led to more volatile financial markets, higher borrowing costs, and slower recovery in industries that depend on international trade and capital flows (McKinsey, 2025).

Overall, economists describe 2025 as an “era of heightened uncertainty,” with ongoing geopolitical tensions and fragmented trade relations worsening economic fragility (WEF, 2025). Unless major countries resolve their trade and policy differences, uncertainty will likely persist, keeping global growth weak and cooperation difficult (World Bank, 2025; IMF, 2025). As a result, businesses and governments are focusing more on resilience and diversification to handle these unpredictable conditions. In conclusion, 2025’s record-high policy uncertainty—driven by trade disputes and shifting regulations among major economies—is deepening global economic instability and threatening future growth and trade prospects.

Protectionist Trends

Friend-shoring and near-shoring: In 2025, friend-shoring and near-shoring have become major global trade strategies as countries and companies try to make their supply chains more secure amid rising geopolitical tensions and disruptions (Inbound Logistics, 2025; World

Economic Forum, 2023). *Friend-shoring* means shifting production or sourcing to politically and economically allied countries that share similar values and stable governance, helping reduce risks from unstable or adversarial regions (Align MFG, 2025). *Near-shoring*, on the other hand, involves moving operations closer to home markets—often to neighbouring countries—to cut transport times, reduce costs, and improve flexibility (Juneja, H., 2025). Both approaches have grown as businesses seek to avoid the kind of disruptions seen in the Red Sea and Panama Canal, while also improving responsiveness and building resilience into their operations (Align MFG, 2025).

However, these strategies also bring challenges. By focusing on trade within politically aligned or nearby regions, companies may reduce global diversification and become more vulnerable to local shocks or regional instability (Neyts, P., 2025). Production and labour costs in friendly or nearby countries are often higher, lowering cost-efficiency compared to traditional offshoring in low-cost regions (Inbound Logistics, 2025). Moreover, political alliances can shift over time, turning trusted partners into new risks, which means friend-shoring requires constant political awareness and flexibility (World Economic Forum, 2023). In conclusion, while friend-shoring and near-shoring strengthen supply chain security and stability in an uncertain world, they also create trade-offs by limiting diversification and increasing dependence on specific partners or regions. Countries and companies must therefore balance political alignment, proximity, and cost efficiency to build truly resilient global supply chains (Align MFG, 2025; Inbound Logistics, 2025).

Trade concentration: In 2025, global trade has become more concentrated among a few major partners, reflecting shifting geopolitical and economic priorities focused on stability, political alignment, and supply chain security. For the United States, most trade is now cantered around Mexico (16.1%), Canada (13.4%), and China (10.2%), with these three nations dominating key sectors like vehicles, electronics, agriculture, and machinery (U.S. Import Data, 2025). Meanwhile, China—the world’s largest trading nation—has deepened its trade ties with developing regions such as ASEAN, Latin America, and Russia, which together made up more than half of China’s total trade in 2024 (McKinsey, 2025). ASEAN has now become China’s biggest trading partner region, showing a major shift in trade flows across Asia and away from traditional partners like the U.S., Japan, and Europe. These changes are driven by growing geopolitical fragmentation and strategies like friend-shoring and near-shoring, which emphasize trade with trusted and nearby partners rather than distant or politically tense markets (World Bank, 2025; World Economic Forum, 2025).

This growing trade concentration offers both benefits and risks. On one hand, it strengthens supply chain security and efficiency within politically aligned blocs. On the other hand, it reduces global diversification, leaving countries more exposed to regional disruptions or political instability. For example, while the U.S. and China gain greater control over strategic sectors, they also face higher vulnerability if a key partner’s economy or politics shifts suddenly (U.S. Import Data, 2025; McKinsey, 2025). Emerging economies, particularly in ASEAN and Latin America, are benefiting from stronger trade ties but risk becoming too dependent on a few dominant countries. In conclusion, the global trading system in 2025 is becoming more regional and politically anchored—moving away from broad globalization toward a fragmented structure based on alliances and proximity. This shift improves

resilience within select blocs but increases global vulnerability and reshapes the balance of economic power worldwide.

Increase in Non-Tariff Measures (NTMs): Between 2020 and 2024, global trade saw a sharp rise in Non-Tariff Measures (NTMs), with more than 26,000 new trade and investment restrictions introduced worldwide (Economist Impact, 2024). These include rules like Technical Barriers to Trade (TBTs), which now affect 31.6% of product lines and cover over two-thirds of global trade. Governments have increasingly used NTMs to manage market access, protect domestic industries, and advance national goals. This surge is driven by rising geopolitical tensions, trade conflicts, and new environmental standards—for instance, the EU’s Carbon Border Adjustment Mechanism (CBAM) targets high-emission sectors like steel, automotive, and energy (Economist Impact, 2024). Similarly, export controls on sensitive technologies and raw materials, especially between the U.S. and China, have expanded as countries prioritize strategic and security interests over open trade.

However, these NTMs come at a cost. They increase compliance expenses, create uncertainty, and make it harder for exporters—especially from middle-income economies such as China, Brazil, India, and Turkey—to compete globally (Fernández-Amador, O., Francois, J., & Vogt, A., 2025,). Studies show that if high-income countries were to raise NTMs on middle-income nations by 50%, global GDP could shrink by 0.57%, with developing countries losing 1.42% of GDP due to reduced trade and competitiveness (Economist Impact, 2024). Retaliatory measures could worsen the damage, potentially cutting over 1% of global GDP. Looking ahead, NTMs are expected to remain a central feature of trade policy, as countries balance economic openness with security, environmental, and industrial goals. Policymakers may need to improve regulatory cooperation and mutual recognition agreements to reduce trade friction, though geopolitical rivalries will continue to make coordination difficult. In conclusion, the rapid rise of NTMs marks a major shift in global trade—toward more regulation-heavy, fragmented, and costly trade systems, particularly for emerging economies striving to stay competitive.

India is now reaching out to new and emerging markets to expand its trade beyond traditional partners. In recent years, Indian exporters have started selling more products to countries in Africa, Asia, and Eastern Europe, such as Vietnam, Tanzania, Romania, Ghana, and Kuwait. Products like optical items, medical instruments, cranes, and office equipment are finding new buyers in these regions. This shows that India is working to diversify its exports, reduce dependence on a few major markets, and build stronger trade links with developing and fast-growing economies around the world.

Table 1: New Emerging Markets for Indian Products

New Emerging Markets for Indian Products			
Product Category	Export Value (Apr–Nov 2024)	Number of New Markets	New Emerging Markets Identified

Optical Items	USD 16.6 M	14 new markets	Zimbabwe, Vietnam, Tanzania, Uganda, Tunisia, Romania, Qatar, Philippines, Mozambique, Kuwait, South Korea, Iraq, Ghana, Finland
Cranes, Lifts & Winches	USD 23.1 million	12 new markets	Taiwan, Somalia, Portugal, Myanmar, Morocco, Madagascar, Lithuania, Jordan, Honduras, Cameroon, Armenia (and one more market in text)
Office Equipment	USD 10.7 million	12 new markets	Multiple new markets (full list not included in extracted text but flagged as 12 markets)
Medical & Scientific Instruments	USD 62.7 million	12 new markets	
Other Principal Commodities (PCs)		Varies	20 PCs with export value > USD 100 million expanded into several new markets

Source: Indian Economic Survey 2024-25

Discussion

India's external sector demonstrates remarkable resilience despite the complex global environment of 2024–25. While merchandise exports grew only moderately amid weak global demand, services exports surged and continued to anchor the external account. Strong inflows of remittances and stable capital inflows maintained a healthy Balance of Payments, keeping the Current Account Deficit (CAD) near 1.2–1.3 % of GDP.

India's top exports—petroleum products, gems and jewellery, textiles and garments, pharmaceuticals, organic chemicals, iron and steel, and vehicles—indicate continuity in the country's manufacturing and resource-based strengths. On the import side, persistent dependence on petroleum, coal, electronics, chemicals, and precious stones highlights India's exposure to global price and supply fluctuations. The U.S., China, UAE, Saudi Arabia, and European partners remain India's principal trade counterparts, underlining both strong global linkages and the need for diversification.

However, the external sector faces several global challenges:

- Geopolitical conflicts and fragmentation—including the Russia–Ukraine war, U.S.–China rivalry, and the 2024 “Great Election Year” that heightened policy uncertainty.
- Trade route disruptions—particularly in the Red Sea and Strait of Hormuz, which inflated freight and insurance costs.
- Climate-related transport shocks—such as the Panama Canal drought, which affected global maritime flows.
- Rising protectionism—through friend-shoring, near-shoring, and the spread of Non-Tariff Measures (NTMs) like the EU’s CBAM and EUDR, impacting exporters in developing countries.

Despite these headwinds, India’s policy responses—including logistics reforms, trade facilitation, customs digitisation, and new free trade agreements (FTAs)—helped sustain competitiveness. The services sector, FDI inflows, and robust forex reserves provided additional buffers, reflecting a strong macroeconomic foundation.

Conclusion

The study concludes that India’s external sector between 2019–25 has been stable, adaptive, and resilient amid a turbulent global environment. Although protectionism and geopolitical risks have reshaped international trade dynamics, India managed to maintain BoP stability through diversified exports, strong services performance, and prudent external management.

Looking forward, India must:

- Deepen its integration into global value chains by reducing trade costs and improving logistics infrastructure.
- Strengthen domestic manufacturing quality to expand export competitiveness.
- Pursue strategic FTAs and regulatory cooperation to navigate non-tariff barriers.
- Promote resilient supply chains through innovation, sustainability, and regional partnerships.

By focusing on these areas, India can transform current challenges into opportunities, positioning itself as a key node in a more regional, yet resilient, global trading system.

References

- Baldwin, R., & Freeman, R. (2022). Risks and global supply chains: What we know and what we need to know. *Annual Review of Economics*, 14(1), 153-180.
- Baldwin, R., Freeman, R., & Theodorakopoulos, A. (2022). Horses for courses: Measuring foreign supply chain exposure (No. w30525). National Bureau of Economic Research.

Baldwin, R., Freeman, R., & Theodorakopoulos, A. (2023). Hidden exposure: Measuring US supply chain reliance. *Brookings Papers on Economic Activity*, 2023(2), 79-167.

Bednarski, L., Roscoe, S., Blome, C., & Schleper, M. C. (2025). Geopolitical disruptions in global supply chains: a state-of-the-art literature review. *Production planning & control*, 36(4), 536-562.

Braun, E., Longauer, D., Gyimesi, A., & Sebestyén, T. (2025). The role of overlapping input sourcing structures in shaping systemic risk in global supply chains. University of Pécs, Faculty of Business and Economics / EconNet Research Group / HUN-REN Institute for Computer Science and Control.

Butler, G. (2025, June 23). What is the Strait of Hormuz and why does it matter? <https://www.bbc.com/news/articles/c78n6p09pzno>

Chakraborty, A., Reisch, T., Diem, C., Astudillo-Estévez, P., & Thurner, S. (2024). Inequality in economic shock exposures across the global firm-level supply network. *Nature Communications*, 15(1), 3348.

Data, E. I. (2025, July 31). Find latest Indian Trade Data, Best Export import insight. Exportimportdata. <https://www.exportimportdata.in/indian-trade-data.aspx>

Denamiel, T., Schleich, M., Reinsch, W. A., & Todman, W. (2024, January 22). Critical questions. Center for Strategic and International Studies (CSIS). <https://www.csis.org/analysis/global-economic-consequences-attacks-red-sea-shipping-lanes>

Detail. (2025, July 1). Röhlrig Logistics. <https://www.rohlig.com/about-us/news-press/detail/red-sea-shipping-crisis-escalates-july-2025-update-for-global-logistics/>

Economic uncertainty hits a new high. (2025, May 8). McKinsey & Company. <https://www.mckinsey.com/featured-insights/week-in-charts/economic-uncertainty-hits-new-high>

Erten, E. (2025, August 1). The Panama Canal and the drought crisis: What to know - More than shipping. More Than Shipping. <https://www.morethanshipping.com/the-panama-canal-and-the-drought-crisis-what-to-know/>

ET EnergyWorld & www.ETEnergyworld.com. (2025, June 23). Closure of Strait of Hormuz could disrupt global oil supply, threaten India's energy security. *ETEnergyworld.com*. <https://energy.economictimes.indiatimes.com/news/oil-and-gas/potential-closure-of-strait-of-hormuz-poses-threat-to-global-oil-supply-and-indias-energy-security/122013829>

Fernández-Amador, O., Francois, J., & Vogt, A. (2025, January 23). General equilibrium effects of technical non-tariff measures: Evidence from bilateral trade cost estimates. *World Trade Institute*. https://www.wti.org/media/filer_public/55/f4/55f404fb-a882-4050-a744-e3cb7dc885a1/general_equilibrium_effects_of_technical_non-tariff_measures_1.pdf

Finck, D., & Tillmann, P. (2022). The macroeconomic effects of global supply chain disruptions.

Flores, E. C. (2023). Revitalizing Trade Dependencies: Analyzing the Influence of the 2018 Mexican Government Transition on Economic Patterns using a Gravity Model and Sector-Specific Indicators.

Global Risks Report 2025 (2025). World Economic Forum. <https://www.weforum.org/publications/global-risks-report-2025/digest/>

Goel, R. K., Saunoris, J. W., & Goel, S. S. (2021). Supply chain performance and economic growth: The impact of COVID-19 disruptions. *Journal of Policy Modeling*, 43(2), 298-316.

Gomez, A. (2022, September 17). History and Evolution of the Global Supply Chain — AJG Transport. <https://www.ajgtransport.com/ajg-blog/2022/8/25/history-and-evolution-of-the-global-supply-chain>

Inbound Logistics. (2024, May 24). Friendshoring: Definition, benefits, and Challenges - Inbound Logistics. <https://www.inboundlogistics.com/articles/friendshoring/>

Invernizzi, A. (2023, April). Interdependence that hurts: Sectoral trade as a driver of WTO litigation. In the PEIO conference paper. Available at: https://wp.peio.me/wp-content/uploads/PEIO15/PEIO15_paper_107.pdf (visited on 24/09/2024).

Jagtap, S., Trollman, H., Trollman, F., Garcia-Garcia, G., Parra-López, C., Duong, L., ... & Afy-Shararah, M. (2022). The Russia-Ukraine conflict: Its implications for the global food supply chains. *Foods*, 11(14), 2098.

Jovanovic, D. (2025, June 12). How Panama canal disruptions are shaping global supply chains. <https://log-hub.com/how-panama-canal-disruptions-are-shaping-global-supply-chains/>

Juneja, H. (2025, April 3). What are Near-Shoring and Friend-Shoring and why do they matter for Western multinationals? Management Study Guide. <https://www.managementstudyguide.com/near-shoring-and-friend-shoring.htm>

Kancs, D. A. (2024). Enhancing resilience: model-based simulations. *Journal of Defense Analytics and Logistics*, 8(1), 105-120.

Khan, S. A. R., Ponce, P., Yu, Z., & Ponce, K. (2022). Investigating economic growth and natural resource dependence: An asymmetric approach in developed and developing economies. *Resources Policy*, 77, 102672.

Koyamparambath, A., Santillán-Saldivar, J., McLellan, B., & Sonnemann, G. (2022). Supply risk evolution of raw materials for batteries and fossil fuels for selected OECD countries (2000–2018). *Resources Policy*, 75, 102465.

LaRocco, L. A. (2025, September 13). Inside the Panama Canal's mega-project plan to engineer its way through severe droughts of the future. CNBC. <https://www.cnbc.com/2025/09/13/panama-canal-drought-el-nino-climate-change-shipping-trade.html>

Lewicka, E., Guzik, K., & Galos, K. (2021). On the possibilities of critical raw materials production from the EU's primary sources. *Resources*, 10(5), 50.

MAX Security. (2025, January 17). Geoeconomic fragmentation and regional trade in 2025. <https://www.max-security.com/resources/global-forecast/geoeconomic-fragmentation-trade-2025/>

Muñoz, S. E., Lawrence, L., & Wang, S. (2025). Drying of the Panama Canal in a warming climate. *Geophysical Research Letters*, 52(18), e2025GL117038.

- Nagy, S. R., & Nguyen, H. (2021). Asymmetric Interdependence and the Selective Diversification of Supply Chains. *Journal of Contemporary Eastern Asia*, 20(2).
- Neufeld, D. (2025, March 17). Charted: Global Economic Policy Uncertainty (1997-2025). Visual Capitalist. <https://www.visualcapitalist.com/global-economic-policy-uncertainty-1997-2025/>
- Neyts, P. (2025, February 5). Are friendshoring, nearshoring, and reshoring enough to future-proof your supply chain? LinkedIn. <https://www.linkedin.com/pulse/friendshoring-nearshoring-reshoring-enough-your-supply-patrick-neyts-4dqje>
- Osabohien, R., Iqbal, B. A., Osabuohien, E. S., Khan, M. K., & Nguyen, D. P. (2022). Agricultural trade, foreign direct investment and inclusive growth in developing countries: evidence from West Africa. *Transnational Corporations Review*, 14(3), 244-255.
- Panama Canal has plenty of water but transits still below pre-drought levels. (2025, July 14). <https://mykn.kuehne-nagel.com/news/article/panama-canal-has-plenty-of-water-10-jul-2025>
- Pandey, D. K., Rajesh, S. P., & Kumari, V. (2024). Do election results resolve economic uncertainty? Evidence from Indian election 2024. *Finance Research Letters*, 69, 106251.
- project44. (2025, September 23). Recovery of the Panama Canal | project44. Project44. <https://www.project44.com/supply-chain-insights/recovery-of-the-panama-canal/>
- Real Logistics. (2025, June 13). Dual impact: red Sea tensions, surging demand drive ocean freight rates and capacity in 2025. Real Logistics. <https://reallogistics.vn/insights/market-updates/dual-impact-red-sea-tensions-surging-demand-drive-ocean-freight-rates-and-capacity-in-2025>
- SA, H. (2025, September 23). Strait of Hormuz: Why does its stability impact global logistics costs? Cargo Insurance | Hanseatica. <https://hanseatica.com/en/2025/06/23/estrecho-de-ormuz-por-que-su-estabilidad-impacta-en-los-costos-logisticos-globales/>
- Safdar, M., Zhong, M., Ren, Z., & Hunt, J. D. (2024). An integrated framework for estimating origins and destinations of multimodal multi-commodity import and export flows using multisource data. *Systems*, 12(10), 406.
- Sainz, V. (2025, March 27). The Red Sea Shipping Crisis (2024–2025): Houthi attacks and global trade disruption. Atlas Institute for International Affairs. <https://atlasinstitute.org/the-red-sea-shipping-crisis-2024-2025-houthi-attacks-and-global-trade-disruption/>
- Saray, M. O. (2024). Geographical Intensity and Diversification of Exports in Malatya Province: An Evaluation For The Years 2004-2019. *Akademik Yaklaşımlar Dergisi*, 15(3), 1276-1296.
- Schwellnus, C., Haramboure, A., Samek, L., Pechansky, R. C., & Cadestin, C. (2023). Global value chain dependencies under the magnifying glass. *OECD Science, Technology and Industry Policy Papers*.
- Seong, J., White, O., Birshan, M., Smit, S., Lamanna, C., & Devesa, T. (2025, January 27). Geopolitics and the geometry of global trade: 2025 update. McKinsey & Company. <https://www.mckinsey.com/mgi/our-research/geopolitics-and-the-geometry-of-global-trade-2025-update>

Shishodia, A., Sharma, R., Rajesh, R., & Munim, Z. H. (2023). Supply chain resilience: A review, conceptual framework and future research. *The International Journal of Logistics Management*, 34(4), 879-908.

Soltani, E. (2025, March 5). Global Economic policy uncertainty Index Hits All-Time High in 2025. Voronoi. <https://www.voronoiiapp.com/economy/-Global-Economic-Policy-Uncertainty-Index-Hits-All-Time-High-in-2025-683>

The history of global supply chains | Saloodo! blog. (2023, October 24). Saloodo! <https://www.saloodo.com/blog/the-history-of-global-supply-chains/>

The impacts of non-tariff measures on the global economy. (n.d.). Economist Impact. https://impact.economist.com/projects/trade-in-transition/non-tariff_measures/

The Strait of Hormuz: how would a closure impact trade? (2025, June 23). <https://www.controlrisks.com/our-thinking/insights/the-strait-of-hormuz-how-would-a-closure-impact-trade>

Top geopolitical risks of 2025. (2025). S&P Global. <https://www.spglobal.com/en/research-insights/market-insights/geopolitical-risk>

Tradeimex. (2025, May 1). Top US Trade Partners in 2025: Largest Trading Partners & Key Import-Export Trends. Tradeimex. <https://www.usimportdata.com/blogs/top-us-trade-partners-2025-trade-statistics>

Welage, N. U., Afesorgbor, S. K., Lim, S., & Kennedy, L. (2025). Economic Diplomacy and Agricultural Trade.

Wikipedia contributors. (2025, October 28). Red Sea crisis. Wikipedia. https://en.wikipedia.org/wiki/Red_Sea_crisis

World Economic Outlook, April 2025: A Critical Juncture amid Policy Shifts. (2025, April 22). IMF. <https://www.imf.org/en/Publications/WEO/Issues/2025/04/22/world-economic-outlook-april-2025>

Yu, Z., Razzaq, A., Rehman, A., Shah, A., Jameel, K., & Mor, R. S. (2022). Disruption in global supply chain and socio-economic shocks: a lesson from COVID-19 for sustainable production and consumption. *Operations Management Research*, 15(1), 233-248.

Development and Validation of Student-Teachers' Attitude Towards Teaching Profession Scale in Manipuri Context

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Abstract

The purpose of this study is to develop and validate the "Attitude towards Teaching Profession Scale (ATPS)" among student-teachers in Manipur is the primary goal of this study. The study found that three factors (cognitive judgments, affective engagement, and behavioral commitment) accounted for 51.9% of the variance in the Exploratory Factor Analysis of 351 student-teachers. This structure was further supported by the Confirmatory Factor Analysis results on 958 student-teachers, which showed an excellent model fit (CFI =.938, RMSEA =.058). Additionally, the scale showed great concurrent validity with an existing measure ($r = .79$) and excellent reliability ($\alpha = .86$ to $.91$; test-retest $r = .86$). When evaluating student-teachers' attitudes toward their teaching profession, the 20-item Attitude towards Teaching Profession Scale is a viable and dependable tool.

Keywords: Attitude, teaching profession, student-teachers, scale development, Manipur

Introduction

Teachers' professional proficiency, personal attributes and attitude regarding their profession plays a vital impact in their success (Win & New, 2020). The study of attitudes is fundamental for the professional growth of teachers. A good and positive attitude towards their profession not only helps people do their jobs more effectively but also makes their lives more fulfilling and enjoyable.

On the other hand, people with unfavorable attitudes are worn out, dull, and unacceptable. The type of attitude one has towards an object, an idea or a person, needed exploration. Its objective consideration needs a type of measurement that can help people to determine to some extent in a reliable and valid way the nature of one's attitude towards a given object, idea or person.

The teachers' attitude is one of the most influential factors in the teaching profession from a psychological point of view. Regarding this Evans (1965) expressed that "*Attitudes are playing a major role in human life as a motive for conduct in the various aspects of this life*".

This put forth the significance of attitude in connection with individuals in a society where attitudes help the individual in social adjustment. Attitudes are considered as the most significant indicator of success in the profession. If someone doesn't have a positive attitude toward their work, they might not be able to do their tasks effectively (Terzi & Tezci, 2010).

The most crucial element in improving a country's quality is its human resources. The majority of human resources are developed and raised in schools, colleges, and universities. The resources in his possession are shaped and moulded by the teacher. It implies that talented and capable educators hold the key to the country's prosperity (Win & New, 2020).

The Kothari Commission (1964-66) stated that *"education is a powerful tool for social, economic, and cultural transformation, aiming to increase productivity, achieve national integration, accelerate modernization, and cultivate moral values"*. Since teachers are the primary educators, their job is crucial (Htang, 2017).

Kennedy (1998) has pointed out that *"The calibre of the teaching staff has an impact on educational outcomes. For many pupils, having dedicated and qualified professors will mean the difference between success and failure."* Pre-service and in-service teachers are the most crucial components of any successful teaching-learning process. Pre-service teachers must be well-prepared with a good attitude toward their career in addition to continuously updating and improving the knowledge and abilities of in-service teachers.

A teacher's professional attitude is how they express their likes and dislikes about teaching and learning methods in the field of education. Positive attitudes among teachers have been shown to improve both teaching and learning outcomes. In carrying out their responsibilities as educators, they are more cooperative and committed. Teachers' professional attitudes have a significant influence on how they behave (Carr, 1990, cited in Ahmad et al., 2013).

According to Baxter (1989, cited in Ahmad et al., 2013) "teachers with a positive attitude have stable emotions and feelings. They demonstrate affection, patience, sincerity and care while interacting with teachers, parents or school staff. They do not work in isolation. Such teachers work in collaboration and they have high self-esteem. Students do not hesitate to meet them as they are accessible to everyone openly." Teachers who have a positive professional attitude are better equipped to create a shared environment where everyone can participate. It could be a parent, teacher, or student. They efficiently monitor the teaching and learning environment and have a fair amount of control over it (Bean, 1996, cited in Ahmad et al., 2013).

Teachers' personal traits and dispositions play a major role. Both appear to be closely related because the teaching profession demands specific dominant behaviors that demonstrate a person's intelligence, drive to succeed, extended professionalism and continuum, in service growth for a competent teacher, and teachings as a life concern (Baver et al., 1995, cited in Thilakan, 2012). This is a profession, which exalts service above the personal gains.

Due to lack of a contextually and culturally valid and reliable scale for measuring student-teachers' attitudes toward the teaching profession in Manipur the present study was carried out with the objectives given below:

- To develop and validate the Attitude towards Teaching Profession Scale (ATPS).
- To explore and confirm its factor structure.
- To establish its reliability and validity.
- To provide a psychometrically sound tool for future research.

Accordingly, it was hypothesized that:

- The scale would have a three-factor structure (affective, cognitive, and behavioral) with acceptable fit indices.
- The scale would express strong internal consistency ($\alpha \geq .70$).
- The scale would have satisfactory test-retest reliability ($r \geq .70$).
- The scale would have a significant concurrent validity ($r \geq .70$) with an established measure.

Literature Review

Some of the prior literature relating to student-teachers' attitude towards teaching profession have been reviewed. Manju (2016) evaluated student teachers' attitudes toward the teaching profession using the Teacher Attitude Inventory (TAI), which was created by S. P. Ahluwalia (2006). The results showed that 62.66% had a highly favorable attitude and 37.34% had a less favorable attitude (Manju, 2016).

The "Attitude Scale Towards the Teaching Profession," which was used by Muhammet and Sarigöz (2018), showed excellent reliability with a Cronbach Alpha coefficient of 0.919. It evaluated the views of teacher candidates and found that there were notable gender disparities, with female candidates exhibiting more positive attitudes (Muhammet & Sarigöz, 2018).

Hussain (2020) evaluated secondary school teachers' attitudes toward the teaching profession in Sahiwal, Pakistan, using the Attitude Scale towards Teaching Profession (ASTTP), which was created by Dr. Malswami consists of 36 closed-ended statements (Hussain, 2020). A Likert-type scale with 48 statements was used in a study by Jeevanantham and Muthuchamy (2022) to create an attitude scale for student teachers in the teaching profession. According to the study, the reliability coefficient shows good internal consistency among the items, with a Cronbach's alpha value of .829 (Jeevanantham & Muthuchamy, 2022).

Fteiha and Al Bustami (2023) evaluated the attitudes of 300 second-semester students in the postgraduate diploma program using the Students Attitudes Scale toward the teaching profession. They found significant differences based on specialization and cumulative average, but not on school grade (Fteiha & Al Bustami, 2023).

Deupa and Deupa (2023) created an attitude measure for school instructors on the teaching profession in a pilot research. The scale included 32 statements divided into eight categories. In order to ensure reliable coefficients between .80 and .87 for efficient measurement, it was piloted in the Indo-Nepalese setting (Deupa & Deupa, 2023). Singh et al. (2024) evaluated student-teachers' attitudes toward the teaching profession using the Teacher Attitude Inventory (TAI-AS), focusing on a variety of factors influencing these attitudes, such as

personal experiences, societal perceptions, and career aspirations. The results showed that participants' attitudes were generally positive (Singh et al., 2024).

A 15-item self-constructed Attitude toward Teaching Profession (ATTP) scale was used in a study by Mustapha et al. (2025) to gauge the positive and negative attitudes of student instructors. This scale was used to gauge opinions from six institutions in Funtua, Katsina State, Nigeria, using a structured questionnaire (Mustapha et al., 2025).

Materials And Methods

Research Design

This study adopted a cross-sectional survey design, which is beneficial for assessing student-teachers' attitudes towards the teaching profession while they were undergoing pre-service teacher education at various institutes affiliated with Manipur University.

Participants

- **Preliminary tryout sample:** Fifty individuals with demographic characteristics similar to the main sample participated in the preliminary tryout.
- **Scale development sample:** A randomly selected sample of 351 student-teachers (Mean age 31.8 ± 8.7 years) undergoing B.Ed. courses at various institutes in Manipur consented to participate in a survey conducted during October–November 2025. The sample has a predominant female (66.10%), rural (67.52%), and highly educated, with 68.3% holding post-graduate degrees. Subject backgrounds included Social Science (42.7%), Physical Science (34.8%), Mathematics (12.5%), Biological Science (6.8%), and Languages (3.1%).
- **Test-retest reliability sample:** Two weeks later, a subset of the scale development sample ($N = 148$) participated in a third survey with the same questionnaires. Data analysis was completed for 135 respondents (91.2% retention).
- **CFA sample:** A total of 1,000 student-teachers from 1st and 3rd semester B.Ed. programs were invited to participate in a fourth survey during March–April 2026. Complete data were obtained from 958 respondents (95.8%). Among these, females (55.6%) slightly outnumbered males (44.4%), and the majority were from rural localities (57.0%). Post-graduates (54.8%) exceeded graduates (45.2%). The mean age was approximately 32.0 years ($SD = 8.9$ years).

Table 1: Demographic Characteristics of CFA Participants (N = 958)

Characteristic	Variable	Frequency	Percent
Gender	Male	425	44.4
	Female	533	55.6
Locality	Rural	546	57.0
	Urban	412	43.0
Qualification	Graduate	433	45.2

	Post-graduate	525	54.8
Subject	Maths	78	8.1
	Social Science	398	41.5
	Physical Science	311	32.5
	Biological Science	115	12.0
	Languages	56	5.8

Instrumentation

An initial item pool consisting of 60 items was adapted from three existing attitudes toward teaching profession scales (Win & New, 2020; Deupa & Deupa, 2023; Alemu, 2024). The initial item pool covered the affective, cognitive, and behavioral components of attitude (20 items per component). All items were translated into Manipuri and back-translated into English by bilingual experts to ensure linguistic equivalence.

A five-point Likert scale was used ranging from 1 (strongly disagree) to 5 (strongly agree), with reverse scoring for negatively worded items. Expert review was conducted by five experts in Educational Psychology to assess face and content validity. Based on expert feedback, irrelevant and overlapping items were removed or revised, resulting in a 20-item preliminary scale named the Attitude towards Teaching Profession Scale (ATPS).

Data Collection Procedure

Data were collected in four phases:

Phase 1 (Preliminary Tryout): The initial 20-item ATPS was administered to 50 student-teachers to assess item clarity and readability.

Phase 2 (Scale Development Sample): The refined 20-item ATPS, along with the established Win and New (2020) scale (27 items), was administered to 351 student-teachers (October–November 2025).

Phase 3 (Test-Retest Sample): Two weeks after the initial administration, the same 20-item ATPS was re-administered to a subset of 148 student-teachers from Phase 2. Complete paired data were obtained from 135 respondents (91.2% retention).

Phase 4 (CFA Sample): The final 20-item ATPS was administered to 1,000 student-teachers from 1st and 3rd semester B.Ed. programs (March–April 2026). Complete data were obtained from 958 respondents (95.8% response rate).

Data Analysis

Data were analysed using IBM SPSS Statistics Version 22 and AMOS Version 7.0. Descriptive statistics such as frequency and percentage were used to compute demographic characteristics of the participants. Split-half reliability was assessed using the Spearman-Brown coefficient. Principal component analysis with Varimax rotation was used to perform exploratory factor analysis (EFA). The Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were used to assess factorability. To test the factor structure found in EFA, an independent sample was subjected to confirmatory factor analysis (CFA). Model

fit was evaluated using χ^2/df , CFI, TLI, RMSEA, and SRMR. Reliability was assessed using Cronbach's α and composite reliability (CR). Average variance extracted (AVE) was used to evaluate convergent validity, while the Fornell-Larcker criterion was used to evaluate discriminant validity. Using the Win and New (2020) scale and Pearson correlation, concurrent validity was investigated. Test-retest reliability was assessed using Pearson correlation and intra class correlation coefficient (ICC).

Results

Pilot testing of Attitude Scale towards Teaching Profession (ATPS)

The split-half reliability of the 20-item student-teachers' attitude scale was examined following preliminary testing on 50 individuals. The scale was divided into two equal halves of 10 items each. Cronbach's alpha for Part 1 (items 1–10) was .758, and for Part 2 (items 11–20) was .861, indicating acceptable to good internal consistency for each half. The correlation between the two halves was .797, demonstrating that both halves measure a similar underlying construct. The Spearman-Brown coefficient for equal and unequal lengths was .887, and the Guttman split-half coefficient was .870. When taken as a whole, these values show that the split-half dependability of the 20-item scale is good to exceptional. Therefore, the scale demonstrates adequate internal consistency and can be considered a reliable instrument for measuring student-teachers' attitudes toward the teaching profession in further research.

Psychometric property of Attitude towards Teaching Profession Scale (ATPS)

A respectable level of sample adequacy was indicated by the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy, which was 0.861, above the suggested minimum value of 0.60 (Kaiser, 1974). Additionally, the null hypothesis that the correlation matrix is an identity matrix was rejected by Bartlett's test of sphericity, which was significant (χ^2 (190) = 3074.203, $p < .001$). Together, these findings demonstrate that the variables have enough shared variance and are strongly linked, making the data excellent for factor analysis.

Table 2

EFA Factor Loadings, Communalities, and CFA Loadings

Item	Factor	EFA Loading	h^2	CFA Loading
Item 14 (Anxiety about discipline, R)	C-1	.837	.71	.82
Item 18 (Innovative methods)	C-1	.770	.62	.78
Item 19 (Burnout reconsideration, R)	C-1	.759	.58	.76
Item 7 (Excited to shape young minds)	C-1	.506	.37	.71
Item 3 (Proud to tell others)	C-1	.493	.42	.68
Item 11 (Sense of purpose)	C-1	.446	.33	.65

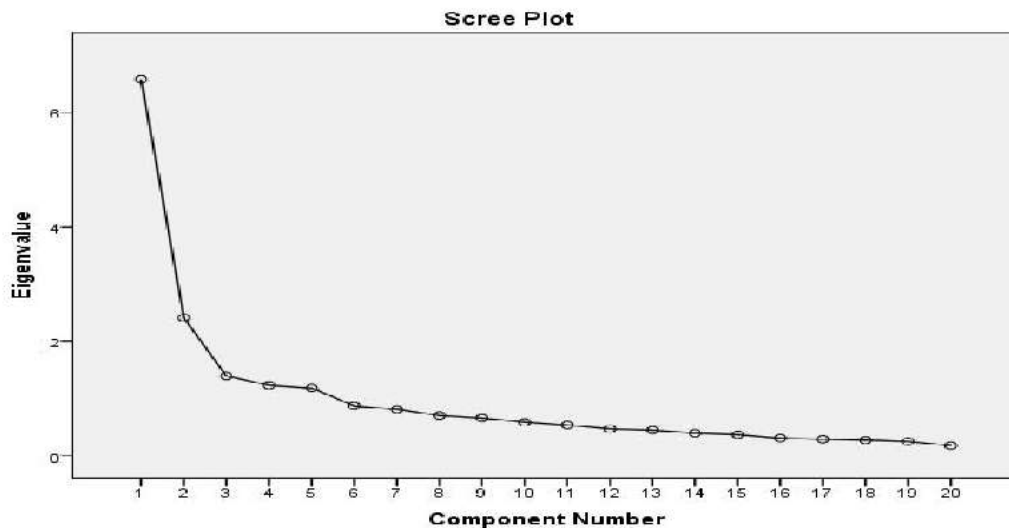
Item 5 (No other option, R)	C-2	.850	.75	.87
Item 4 (Limited career growth, R)	C-2	.839	.72	.85
Item 8 (Community contribution)	C-2	.737	.60	.74
Item 17 (Fair financial rewards)	C-2	.706	.58	.73
Item 6 (Workload discouraging, R)	C-2	.676	.54	.72
Item 16 (Training preparedness)	C-2	.649	.51	.70
Item 15 (Work-life balance)	C-2	.613	.49	.69
Item 12 (Undervalued by policymakers, R)	C-2	.551	.37	.62
Item 9 (Teachers receive respect)	C-2	.506	.38	.60
Item 2 (Financial security)	C-2	.444	.38	.58
Item 1 (Respectable profession)	C-2	.410	.36	.54
Item 13 (Remain 5+ years)	C-3	.781	.66	.79
Item 10 (Encourage others)	C-3	.728	.57	.75
Item 20 (Lifelong career)	C-3	.634	.50	.71

Only primary loadings shown (cross-loadings < .40 omitted for clarity)

Note: R = Reverse-scored; C-1 = Affective Engagement, C-2 = Cognitive Judgments, C-3 = Behavioral Commitment

A principal component analysis with Varimax rotation was conducted on the 20-item student-teachers' attitude scale. The analysis yielded three distinct components with eigenvalues exceeding 1, collectively explaining 51.90% of the total variance. Component 1 (eigenvalue = 6.575) accounted for 32.88% of the variance and comprised six items reflecting student-teachers' emotional reactions toward teaching, including pride (Item 3), excitement (Item 7), sense of purpose (Item 11), anxiety about classroom discipline (Item 14, reverse-scored), enthusiasm for innovative methods (Item 18), and reconsideration due to stress or burnout (Item 19, reverse-scored). This component was labelled Affective Engagement and Emotional Responses to Teaching. Component 2 (eigenvalue = 2.413) explained 12.06% of the variance and contained eleven items representing cognitive judgments about the teaching profession, such as perceived respect (Items 1 and 9), financial security (Items 2 and 17), career growth limitations (Item 4, reverse-scored), reasons for choosing teaching (Item 5, reverse-scored), workload discouragement (Item 6, reverse-scored), community contribution (Item 8), policy undervaluation (Item 12, reverse-scored), work-life balance (Item 15), and preparedness from teacher training (Item 16). This component was labelled Cognitive Judgments and Professional Realities. Component 3 (eigenvalue = 1.393) explained 6.96% of the variance and included three items measuring behavioral intentions: encouraging others to join teaching (Item 10), intending to remain in the profession for at least five years (Item 13), and having a positive attitude toward lifelong teaching (Item 20). This component was labelled Behavioral Commitment and Advocacy. The factor loadings for all items exceeded the recommended threshold of 0.40 on their respective components, with minimal cross-loadings observed; only Item 3 showed

modest cross-loading on Component 2 (0.408) but was conceptually retained within Component 1 due to its affective nature. In summary, the rotated component matrix provides strong empirical support for the three-component theoretical framework of attitudes (affective, cognitive, and behavioral) in the context of student-teachers' attitudes toward the teaching profession.



Confirmatory Factor Analysis of Attitude Scale towards Teaching Profession (ATPS)

Table 3: Model Fit Indices (CFA, N = 958)

Fit Index	Value	Interpretation
χ^2/df	2.84	Acceptable
CFI	.938	Good
TLI	.926	Good
RMSEA	.058	Good
SRMR	.049	Excellent

Table 4: Reliability, Convergent & Discriminant Validity

Factor	α	CR	AVE	$\sqrt{AVE}$	Factor Correlations	
					C-1	C-2
C-1	.86	.87	.53	.73	1.00	
C-2	.91	.92	.55	.74	.48	1.00
C-3	.82	.83	.62	.79	.56	.44

Note: Diagonal (bold) = $\sqrt{AVE}$; off-diagonal = factor correlations. Discriminant validity established as $\sqrt{AVE} > \text{all correlations}$.

Using Amos 7.0 (SPSS, Chicago, IL), a CFA was conducted to assess the fit of the exploratory model to the data from the third sample ($N = 958$).

The three-factor CFA model demonstrated good fit to the data ($N = 958$): $\chi^2/df = 2.84$, CFI = .938, TLI = .926, RMSEA = .058, SRMR = .049. All factor loadings were significant ($p < .001$) and ranged from .54 to .87. Reliability was satisfactory for all factors, with Cronbach's α values of .86 (Factor 1: Affective Engagement and Emotional Responses to Teaching), .91 (Factor 2: Cognitive Judgments and Professional Realities), and .82 (Factor 3: Behavioral Commitment and Advocacy). Convergent validity was supported by composite reliability and average variance retrieved, both of which met suggested thresholds. Since each factor's square root of AVE was greater than its correlations with other components, discriminant validity was proven.

The final 20-item *Attitude towards Teaching Profession Scale (ATPS)* demonstrated strong psychometric properties. EFA ($N=351$) revealed a three-factor structure (affective, cognitive, behavioral) explaining 51.9% of variance. CFA ($N=958$) confirmed this structure with good model fit (CFI = .938, RMSEA = .058). Reliability was excellent ($\alpha = .86-.91$; CR = .83-.92). Convergent validity was supported by AVE values $\geq .53$, and discriminant validity was established as $\sqrt{\text{AVE}}$ exceeded all factor correlations ($r = .44-.56$). Concurrent validity with an established scale was strong ($r = .79$, $p < .001$).

Concurrent Validity of Attitude Scale towards Teaching Profession (ATPS)

Scores of 351 student-teachers on the newly developed 20-item attitude scale were correlated with their scores on an established measure of attitude toward the teaching profession to establish concurrent validity (Win & New, 2020). The mean score on the new scale and established scale were 77.88 ($SD = 13.13$) and 80.01 ($SD = 7.95$) respectively, indicating similar central tendency but greater variability in the new scale. The Pearson correlation coefficient between the two measures was $r = 0.79$ ($p < .001$), which is statistically significant and represents a strong positive relationship. This correlation exceeds the commonly accepted threshold of 0.70 for concurrent validity, demonstrating that the new scale measures a construct highly similar to the established instrument. The coefficient of determination ($r^2 = 0.624$) indicates that approximately 62.4% of the variance in the new scale scores is shared with the established scale. Collectively, these findings provide strong evidence of concurrent validity for the newly developed student-teachers' attitude toward teaching profession scale.

Test Retest reliability of Attitude Scale towards Teaching Profession (ATPS)

Test-retest reliability was assessed by administering the same 20-item ATPS to a subset of 135 student-teachers two weeks after the initial survey. The Pearson correlation coefficient between the two administrations was $r = .86$ ($p < .001$), indicating a strong positive relationship. This value exceeds the commonly accepted threshold of .70 for test-retest reliability, demonstrating that the scale produces consistent scores over time. The intra class correlation coefficient (ICC = .85, 95% CI [.79, .89]) further supported temporal stability. Subscale correlations were also acceptable: Factor 1 (Affective Engagement) $r = .84$, Factor 2

(Cognitive Judgments) $r = .87$, and Factor 3 (Behavioral Commitment) $r = .79$. These findings indicate that the ATPS yields stable and reproducible measurements, making it suitable for longitudinal research on student-teachers' attitudes toward the teaching profession.

Discussion

This study developed and validated the Attitude towards Teaching Profession Scale (ATPS) for student-teachers in Manipur. The EFA ($N=351$) revealed a three-factor structure such as Affective Engagement, Cognitive Judgments, and Behavioral Commitment explaining 51.9% of the variance, which aligns with the tripartite model of attitudes (Al-Mahdy & Elwakil, 2025). The CFA ($N=958$) confirmed this structure with good model fit ($CFI = .938$, $RMSEA = .058$, $SRMR = .049$), consistent with previous scale development studies (Pamukkale University, 2022; Win & New, 2020). The ATPS demonstrated excellent reliability ($\alpha = .86-.91$; test-retest $r = .86$), exceeding conventional thresholds and showing temporal stability similar to validated instruments (Nadhirah & Orakci, 2018). Concurrent validity was strong ($r = .79$, $p < .001$) with an established measure (Win & New, 2020), while convergent ($AVE \geq .53$) and discriminant validity ($\sqrt{AVE} > \text{inter-factor correlations}$) met recommended standards (Fornell & Larcker, 1981; Wüthrich & Sahli Lozano, 2025).

The findings have several implications. The strong cognitive factor ($\alpha = .91$) suggests that student-teachers' attitudes are heavily shaped by rational appraisals of professional conditions i.e., financial security, career growth, and work-life balance etc. supporting Moses (2017), who emphasized the role of environmental factors in fostering commitment. The high loadings of stress- and burnout-related items on the affective factor underscore the emotional challenges of teacher preparation, as noted by Al-Mahdy and Elwakil (2025), who found that positive affective attitudes help pre-service teachers thrive. Practically, the ATPS offers a reliable tool for teacher education programs to assess attitudes at program entry and exit, and for policymakers to design interventions targeting professional conditions. Limitations include the Manipur-specific sample and cross-sectional design; future research should examine factorial invariance across regions and employ longitudinal designs to track attitude changes over time.

Conclusion

The Attitude towards Teaching Profession Scale (ATPS), a 20-item, three-factor tool for gauging the attitudes of student-teachers in Manipur, was created and validated in this study. The scale demonstrated strong psychometric properties, including excellent internal consistency ($\alpha = .86-.91$), good test-retest reliability ($r = .86$), good model fit ($CFI = .938$, $RMSEA = .058$), and strong concurrent validity ($r = .79$). The three-factor structure - Affective Engagement, Cognitive Judgments, and Behavioral Commitment - provides a theoretically grounded framework for understanding and assessing student-teachers' attitudes. In comparable cultural contexts, the ATPS is advised for use in teacher education research, program assessment, and intervention studies meant to promote favorable attitudes toward the teaching profession.

Conflict of interest

There is no conflict of interest in the publication of this article with any individual or group of individuals or any organisation.

References

- Ahmad, I., Said, H., Zeb, A., Sihatula., & Rehman, K. (2013). Effects of Professional Attitude of Teachers on their Teaching Performance: Case of Government Secondary School Teachers in Malakand Region, Khyber Pakhtunkhwa, Pakistan. *Journal of Educational and social research*, 3(1), 25-31.
- Alemu, A. (2024). Challenges and Prospects: Understanding Teachers' Attitudes towards the Teaching Profession in Ethiopia. *Social Sciences & Humanities Open*, 10, <https://doi.org/10.1016/j.ssaho.2024.100933>.
- Al-Mahdy, Y. F. H., & Elwakil, F. R. (2025). Unpacking the dynamics of pre-service teachers' attitudes toward the teaching profession, belonging, and knowledge sharing in an underexplored context. *Education Sciences*, 15(5), 636. <https://doi.org/10.3390/educsci15050636>
- Deupa, M.S. & Deupa, J. (2023). Construction of Attitude Scale: Attitude of Schoolteachers Towards Teaching Profession. *Sudurpaschim Spectrum*, 1(1), 1-21. <https://doi.org/10.3126/sudurpaschim.v1i1.63384>
- Elstad, E., Christophersen, K. A., & Turmo, A. (2014). Antecedents of student teachers' affective commitment to the teaching profession. *European Conference on Educational Research (ECER) 2014*. University of Oslo.
- Evans, K.M. (1965). Attitudes and tendencies in education. Arabic Edition. Translation of Al-Maroofof, S.A, Ridha, AR. and Al-Suliaman, M. (1999) Cairo Mukhtar Publishing Est.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39–50.
- Fteiha, M. A., & Al Bustami, G. (2023). Students' attitudes of the Postgraduate Diploma in teaching program towards teaching profession. *Cogent Education*, 10. <https://doi.org/10.1080/2331186X.2023.2204608>
- Htang, L.K. (2017). Pre-service Teachers' Attitudes Towards Teaching Profession in Myanmar. *Journal of Education and Practice*, 8(20), 107-114.
- Hussain, T. (2020). *Attitude towards Teaching Profession in Pakistan: A Case of Public Sector Secondary School Teachers*. 4. [https://doi.org/10.35484/PSSR.2020\(4-II\)39](https://doi.org/10.35484/PSSR.2020(4-II)39)
- Jeevanantham, V. M., & Muthuchamy, I. (2022). Construction and validation of attitude towards teaching scale (ATTS). *International Journal of Health Sciences (IJHS)*, 2309–2315. <https://doi.org/10.53730/ijhs.v6ns5.9144>
- Kennedy, K. (1998). Enhancing the status of teachers in the Asia-Pacific region: An Exploration of the Issues. *Asia-Pacific journal of teacher education and development*, 1(1).

- Manju, N. D. (2016). Attitude of student teachers towards teaching profession. *Asian Journal of Development Matters*, 10(1), 10–19. <https://www.indianjournals.com/ijor.aspx?target=ijor:ajdm&volume=10&issue=1&article=002>
- Moses, I. (2017). *Student-teachers' commitment to teaching* [Doctoral dissertation, Leiden University]. Scholarly Publications Leiden University. <https://scholarlypublications.universiteitleiden.nl/handle/1887/54952>
- Muhammet, B. & Sarigöz, O. (2018). An examination of teacher candidates' attitudes towards the teaching profession. *International Journal of Educational Administration and Policy Studies*, 10(4), 25–32. <https://doi.org/10.5897/IJEAPS2018.0553>
- Mustapha, A., Lawal, A., Mustapha, A., & Lawal, A. (2025). *Assessment of Prospective Teachers' Attitude Toward Teaching Profession in Funtua, Katsina State, Nigeria*. 6(2), 14–23. <https://doi.org/10.14419/enbtj41>
- Nadhirah, F., & Orakci, Ş. (2018). The validity and reliability studies of the scale attitude toward pedagogical teacher training programme. *Malaysian Online Journal of Educational Sciences*, 6(3), 1–15.
- Pamukkale University. (2022). Development of attitude towards teaching profession scale for teacher candidates. *Pamukkale University Journal of Education*. <http://yerbilimleri.cumhuriyet.edu.tr/en/pub/pauefd/issue/77152/1121949>
- Singh, Y., Singh, K., & Singh, C. K. (2024). Understanding The Attitudes Of Student-Teachers In Colleges Of Teacher Education Towards The Teaching Profession: A Mixed-Methods Approach. *Educational Administration: Theory and Practice*. <https://doi.org/10.53555/kuey.v30i5.4134>
- Tezci, E., & Terzi, A. R. (2010). An examination on the attitudes towards teaching profession of the students of secondary school branch teacher training programs. *Journal of New World Science Academic*, 5(2), 367-388.
- Thilakan, S. (2012) *A study of attitude and work commitment of teachers towards teaching profession*. Unpublished Ph.D. Thesis, Shri Jagdish Prasad Jhabarmal Tibrewala University. Retrieved April 28, 2027, from <http://hdl.handle.net/10603/10584>
- Win, O. & New, K.H. (2020). Attitude Scale For Student Teachers Towards Teaching Profession. *J. Myanmar Acad. Arts Sci.* 18(9B), 501-512
- Wüthrich, S., & Sahli Lozano, C. (2025). The attitudes to inclusion and teacher efficacy for inclusive practices scales: Psychometric properties across Swiss in-service, pre-service, and special education teachers. *Frontiers in Psychology*, 16, 1531782. <https://doi.org/10.3389/fpsyg.2025.1531782>

Navigating Research on Service Quality of Airlines: A Bibliometric Analysis

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Abstract

Service quality plays a pivotal role in ensuring customer satisfaction in the airline industry. To maintain long-term competitiveness, delivering exceptional service quality is essential. This study examines trends in research on the service quality of airlines from 2001 to 2023. A total of 509 research papers have been selected through scanning of the Scopus database using titles, abstracts, and keywords. The data have been analysed and presented using tables and figures. Software such as Biblioshiny (an extension of R Studio) and VOSviewer utilized for tabular and visual representation. The study reveals that the research conducted by Tsaor S-H in 2002 is the most cited paper in this field. "The Journal of Air Transport Management" emerged as the most prolific source of research on the topic. Additionally, the USA was identified as the leading country in terms of research output. Regarding keyword co-occurrence, "Service Quality" appeared most frequently with 193 occurrences. The study contributes by analysing the key research themes and their evolution in airline service quality research, offering insights for future studies and practical implications for improving customer experience in the airline industry.

Keywords: Service quality, Bibliometric analysis, Keyword co-occurrence, Thematic analysis, VOSviewer.

Introduction

The business landscape has undergone a significant change due to globalization and intense competition. The decline in customer satisfaction and increase in customer expectations pose challenges for businesses, compelling them to devise unique approaches to improve the quality of their services (Abdel, 2018). It is crucial to provide service to the passengers that meets or exceeds their expectations. Service quality means the capability of a business firm to cater to the ever-increasing demand of the passengers (Parasuraman et al., 1988; Gronroos, 1984; Ladhari, 2008). Service quality contributes to the formation and evolution of an organization's reputation in the eyes of customers (Fahim, 2019). Service quality is considered as a strategy to manage business operations to elevate customer satisfaction. This not only fosters competitiveness but also facilitates airlines in enhancing its financial performances (Adhikari and Paul, 2016; Clemes et al., 2014). In today's highly competitive and frequently changing business environment, providing quality services has become crucial for businesses (Ong and Tan, 2010; Farooq et al., 2018; Namukasa, 2013). It is no longer just

about retaining the existing market share but also about attracting new customers. Companies that offer high-quality services will have a better chance of survival in the competitive marketplace (Adhikari and Paul, 2015). The Indian aviation industry is amongst the world's fastest growing aviation industries, which is linked with the liberalization of the aviation industry in India (Subha and Archana 2013).

Since service quality is pivotal for sustaining in a competitive market, researchers have consistently focused on studying service quality. The airline industry is no exception, as different studies have been conducted on service quality of airlines. The present study aims to analyze the trends in research on service quality in airlines. The timespan selected for this analysis is from 2001 to 2023. After applying all necessary refinements (as displayed in Table 1), a total of 509 documents have been identified. Tools such as Biblioshiny, an extension of R Studio, and VOSviewer were employed to present the data.

Theoretical Background

The concept of service quality has been extensively examined within the domain of services marketing and is primarily grounded in the expectation–perception paradigm. One of the most widely accepted frameworks for measuring service quality is the SERVQUAL model, developed by Parasuraman et al (1988). This model conceptualises service quality as the gap between customer expectations and their perceptions of actual service performance across five dimensions: tangibles, reliability, responsiveness, assurance and empathy. While SERVQUAL has been widely applied across various service sectors, its direct application in the airline industry has been subject to criticism due to the unique characteristics of airline services. In response, sector-specific models such as AIRQUAL have been developed to better capture airline service attributes, including in-flight comfort, safety, and airline image (Ekiz et al., 2006). These models emphasise that service quality in airlines is multidimensional and context-dependent. Another important theoretical perspective is the Gronroos Service Quality Model (Gronroos, 1984), which distinguishes between technical quality (what is delivered) and functional quality (how it is delivered). In the airline context, technical quality includes aspects such as flight safety and punctuality, whereas functional quality relates to staff behaviour and service delivery processes. This distinction is particularly useful in understanding how passengers form overall service evaluations.

Furthermore, the relationship between service quality and customer satisfaction is often explained through the Expectation-Confirmation Theory (ECT) (Oliver, 1980). According to this theory, customer satisfaction is determined by the comparison between prior expectations and actual service performance. When perceived performance exceeds expectations, positive disconfirmation occurs, leading to higher satisfaction and loyalty. In recent years, researchers have also incorporated behavioural frameworks linking service quality with outcomes such as customer loyalty, repurchase intention and word-of-mouth communication (Cronin & Taylor, 1992; Zeithaml et al., 1996). Within the airline industry, these relationships have been validated through empirical studies using structural equation modelling techniques (Chen, 2008; Park et al., 2004). Overall, these theoretical foundations provide a comprehensive basis for understanding the multidimensional nature of service quality and its implications in the

airline industry. The integration of these models highlights the need for continuous evaluation of service delivery processes, especially in a highly competitive and customer-driven market.

Objectives of the Study

- To analyse the trend of research publications on service quality of airlines over the period 2001 to 2023.
- To identify the influential studies in the field based on citation analysis.
- To examine the geographical distribution of research contributions across countries.
- To demonstrate the co-occurrence of keywords and the thematic evolution of research on service quality of airlines.

Research Methodology

This study adopts a bibliometric approach to analyse the research trends in airline service quality. Bibliometric analysis is widely used to evaluate the intellectual structure, publication patterns, and emerging themes within a specific research domain. The data for the study were extracted from the Scopus database, which is considered one of the most comprehensive and reliable sources of peer-reviewed academic literature. The search was conducted using the query: TITLE-ABS-KEY (“service quality” AND airline), ensuring the inclusion of relevant studies focusing on airline service quality.

Table 1: Criteria Wise Refinement of Documents

Refining Criteria	Refinement	No. of documents after refinement
Article, abstract, keywords	“Service quality” AND “Airlines”	852
Year	2001 to 2023	796
Subject Area	Business Management and Accounting, Social Science, Economics, Econometrics and Finance	615
Document Type	Article	513
Source type	Journal	512
Language	English	509

Source: Compiled by Researchers

The initial search yielded 852 documents. To ensure consistency and relevance, a series of inclusion criteria has been applied. First, the time span was limited to the period between 2001 and 2023 to capture contemporary research trends in the 21st century, resulting in 796 documents. Further refinement based on subject areas, namely Business, Management and Accounting, Social Sciences, Economics, Econometrics and Finance, reduced the dataset to 615 documents. Subsequently, only peer-reviewed journal articles were considered to maintain the academic quality of the analysis. This resulted in 513 documents after applying the document type filter and 512 after restricting the source type to journals. Finally, limiting

the language to English yielded a final dataset of 509 articles, which were included for analysis.

For data analysis and visualisation, Biblioshiny (a web interface of the Bibliometrix R package) and VOSviewer have been employed. Biblioshiny has been used for descriptive and thematic analysis, while VOSviewer has been utilised to construct co-authorship networks, keyword co-occurrence networks and collaboration maps. These tools are widely used in bibliometric studies for mapping and visualising scientific knowledge structures (Aria & Cuccurullo, 2017; Van Eck & Waltman, 2010).

Table 2: Main Information

Description	Results
Main Information About Data	
“Timespan”	2001:2023
“Documents”	509
“Annual Growth Rate %”	8.49
“Document Average Age”	8.48
“Average citations per doc”	40.83
“References”	23956
Document Contents	
“Keywords Plus (ID)”	932
“Author's Keywords (DE)”	1261
Authors	
“Authors”	1084
“Authors of single-authored docs”	77
Authors Collaboration	
“Single-authored docs”	83
“Co-Authors per Doc”	2.56
“International co-authorships %”	26.92
Document Types	
“Article”	509

Note: Compiled by Researchers from Scopus Database using Bibliometrix

Table 2 provides an overview of the dataset used for analysis. The dataset comprises 509 documents published between 2001 and 2023, with an annual growth rate of 8.49%, indicating a steady increase in research activity. The presence of 1,084 authors and an average of 2.56 co-authors per document reflects a collaborative research environment. Additionally, the high number of keywords suggests thematic diversity within the field.

Data Analysis

Year wise Number of Publications

Figure 1 illustrates the annual growth in publications on airline service quality from 2001 to 2023. The trend reflects a steady increase in scholarly output, with an average annual growth rate of 8.49%. Notably, research activity remained relatively moderate during the early 2000s but gained significant momentum after 2015. The peak in publications was observed in 2020 with 51 articles, followed closely by 2019. This upward trajectory indicates a growing academic interest in service quality within the airline industry, likely influenced by increased competition, the expansion of low-cost carriers and the rising importance of customer experience. The surge in recent years may also be linked to digital transformation and evolving passenger expectations, which have intensified the focus on service quality research.

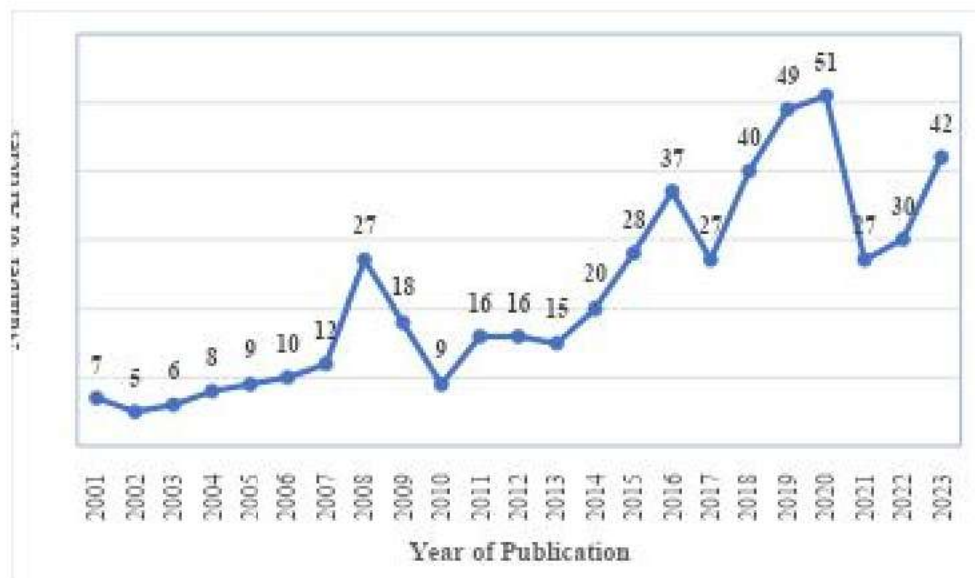


Figure 1: Annual Scientific Production

Note: Compiled by Researchers from Scopus Database

Influential Studies Based on Citation Analysis

More number of citations in research generally means that the study is more successful and influential. Table 3 highlights the top 10 most cited papers on service quality in airlines, showcasing the most influential research conducted between 2001 and 2023. According to Scopus data, the most cited article is “The Evaluation of Airline Service Quality by Fuzzy MCDM” by Tsaur S.-H. (2002) with 725 citations. This research work applied fuzzy set theory and found that the most critical aspect of service quality is tangibles while empathy is the least. Key attributes identified include courtesy, safety and comfort. The second most cited article, “Investigating Structural Relationships Between Service Quality, Perceived Value, Satisfaction, and Behavioral Intentions for Air Passengers: Evidence from Taiwan” by Chen C.-F. (2008) received 402 citations. The study concluded that perceived value and satisfaction have significant and positive effects on behavioural intentions with perceived value exerting a larger impact than overall satisfaction. The third most cited article is

“Service Quality, Customer Satisfaction, and Behavioral Intentions in the Service Factory” by Olorunniwo F. (2006) with 363 citations. Tangibles, recovery, responsiveness and knowledge were found as the dominant service quality dimensions. Further, service quality had a significant direct effect on behavioural intentions. These findings underscore the importance of understanding key dimensions of service quality and their influence on customer satisfaction and behavioural outcomes in the airline industry.

Table 3: Influential Studies Based on Citation Analysis

Author	Year	Title of the Paper	Journal	Total Citations
Tsaur S-H,	2002	“The evaluation of airline service quality by fuzzy MCDM”	Tourism Management	725
Chen C-F	2008	“Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan”	Transportation Research Part A: Policy and Practice	402
Olorunniwo F	2006	“Service quality, customer satisfaction, and behavioral intentions in the service factory”	Journal of Services Marketing	363
Liljander V	2006	“Technology readiness and the evaluation and adoption of self-service technologies”	Journal of Retailing and Consumer Services	332
Brodie RJ	2009	“Investigating the service brand: A customer value perspective”	Journal of Business Research	307
Gilbert D	2003	“Passenger expectations and airline services: a Hong Kong based study”	Tourism Management	295
Zins AH	2001	“Relative attitudes and commitment in customer loyalty models”	International Journal of Service Industry Management	294
Park J-W	2004	“The effect of airline service quality on passengers’ behavioural intentions: a Korean case study”	Journal of Air Transport Management	288
Hussain R	2015	“Service quality and customer satisfaction of a UAE-based airline: An empirical investigation”	Journal of Air Transport Management	242
Gupta H	2018	“Evaluating service quality of airline industry using hybrid best worst method and VIKOR”	Journal of Air Transport Management	241

Note: Compiled by Researchers from Scopus Database

Publication by Journals

Figure 4 illustrates the most prolific journals that published the maximum number of articles between 2001 and 2023. The top 10 journals are presented in Figure 2. It can be observed that the “*Journal of Air Transport Management*” published the largest number of articles, with 102 publications far exceeding the other journals. Followed by “*Sustainability (Switzerland)*” with 22 articles, “*Transportation Research Part E: Logistics and Transportation Review*”

with 13 articles, and “*Research in Transportation Business and Management*” with 12 articles. Furthermore, “*Tourism Management*”, “*Transport Policy*”, and “*Transportation Research Part A: Policy and Practice*” each published 12 articles. While, the “*Journal of Transport Economics*” and “*Policy and Managing Service Quality*” published eight articles each, and the “*International Journal of Quality*” and “*Reliability Management*” published seven articles.

Table 4: Most Relevant Source

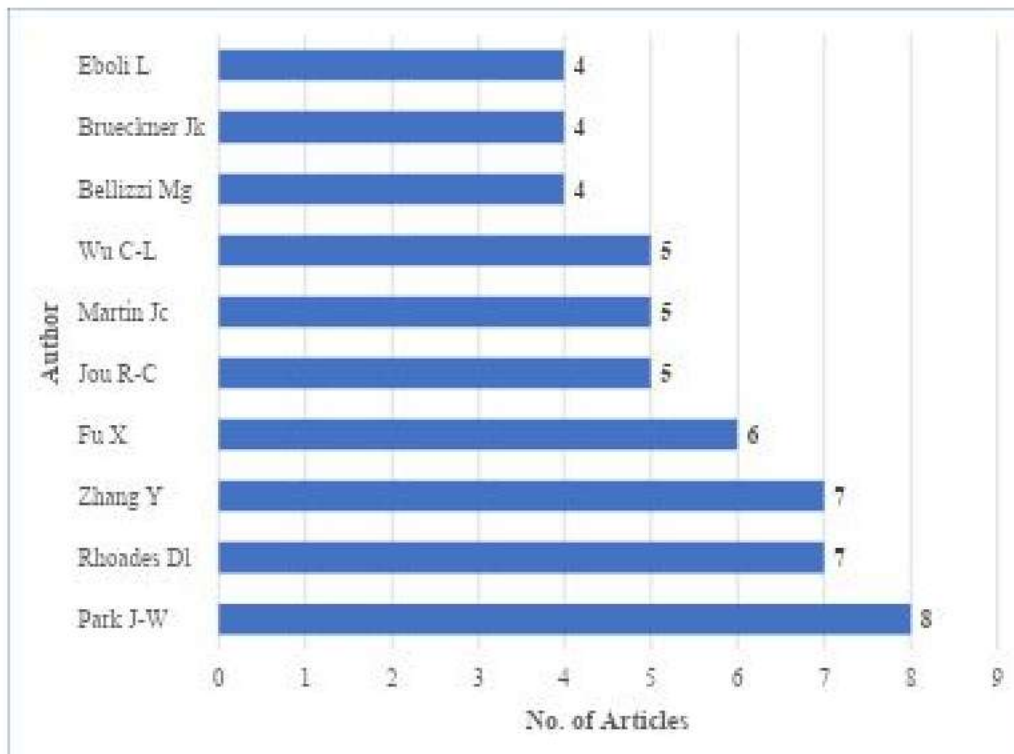
Sources	Articles
“Journal of Air Transport Management”	102
“Sustainability (Switzerland)”	22
“Transportation Research Part E: Logistics and Transportation Review”	13
“Research In Transportation Business and Management”	12
“Tourism Management”	12
“Transport Policy”	12
“Transportation Research Part A: Policy and Practice”	12
“Journal of Transport Economics and Policy”	8
“Managing Service Quality”	8
“International Journal of Quality and Reliability Management”	7

Note: Compiled by Researchers from Scopus Database

Most Relevant Authors

Figure 2 depicts the top 10 most prolific authors who have contributed papers on the service quality of airlines. Park J-W has made the highest contribution to the topic with eight articles over the period selected for the study. Closely followed by Rhoades D.L. and Zhang Y., who have published seven articles each during the selected timespan of the study. Fu X has contributed six articles, followed by Jou R-C, Martín J.C., and Wu C-L with five articles each. Lastly, Bellizzi M.G., Brueckner J.K., and Eboli L. have contributed four articles each. This highlights the significant interest of these authors in working on the topic of airline service quality. The distribution indicates that research in this domain is not dominated by a single author but rather characterised by moderate contributions from multiple scholars. This suggests a decentralised research structure, where knowledge development is driven by a diverse group of researchers rather than a few highly dominant figures.

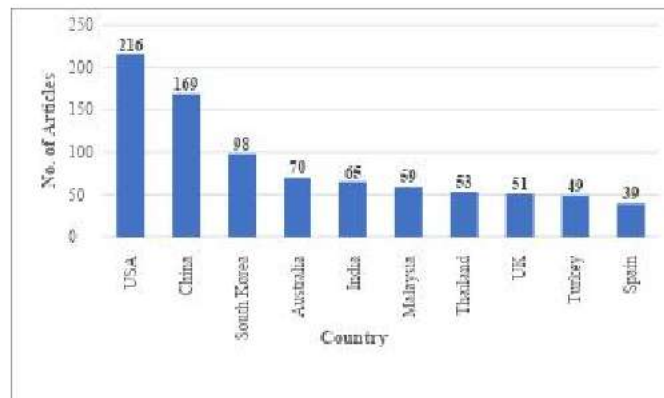
Figure 2: Articles by Authors



Note: Compiled by Researchers from Scopus Database

Publication by Nation

Figure 3 highlights the geographical distribution of research output, with the United States leading in terms of publication volume, followed by China and South Korea. This dominance reflects the presence of well-established research infrastructure, greater funding opportunities, and mature aviation markets in these countries. In terms of citation impact, China and the United States also emerge as the most influential contributors, indicating not only higher research productivity but also greater academic impact. The growing contribution from countries such as India, Malaysia and Thailand suggests an increasing research focus in emerging economies, possibly driven by the rapid expansion of the aviation sector in these regions. This shift points towards a gradual diversification of research contributions beyond traditionally dominant countries.



Note: Compiled by Researchers from Scopus Database

Figure 4 displays a three-field plot consisting of countries, keywords and journal names. The diagram presents a tripartite graph illustrating the distribution of scholarly articles related to the service quality of airlines across these three categories. The first column represents the countries with maximum author affiliations, the second column shows keywords associated with these countries and the third column displays the most important journals in this field. The height of the boxes and the width of the connecting lines indicate the volume of work being conducted. The findings show that the USA has devoted the greatest attention to the subject of airline service quality, followed closely by China, South Korea, Malaysia, Australia and India. An analysis of the connecting lines between countries, keywords, and journals reveals that the keyword service quality has the highest number of connections, indicating that it is the primary focus of researchers across countries and journals followed by keywords such as customer satisfaction and airlines. In the third column, it is evident that the Journal of Air Transport Management is the most important journal in this field, followed by Sustainability (Switzerland).

Figure 4: Three Field Plot

Note: Compiled by Researchers from Scopus Database using Bibliometrix

Most Frequent Words

Most frequent words are the words that appear most often in a specific field or dataset. This is used to identify the most commonly used words across the dataset which provides insights about the dominant theme. Here, ‘service quality’ has been repeated 169 times followed by ‘customer satisfaction’ (68 times). Further, it is followed by words like ‘airlines’ (66 times) and ‘airline industry’ (42 times). ‘Airline’ and ‘customer loyalty’ appeared 29 times, closely followed by ‘airline service quality’ and ‘satisfaction.’ The term ‘SERVQUAL’ was repeated 27 times.



Figure 5: Most Frequent Words

Note: Compiled by Researchers from Scopus Database using Bibliometrix

Co-occurrence Network

An analysis of keyword co-occurrence was conducted to determine how frequently keywords appeared in published papers on the service quality of airlines. This evaluation enables researchers to identify commonly researched themes and topics. A minimum threshold of 5 co-occurrences was set, and out of 1,261 keywords, 49 met this criterion. These keywords were further grouped into nine clusters according to their occurrence. Different colours in the diagram represent distinct clusters of keywords.

Cluster 1 (9 items) airline industry, airline service quality, airport, customer satisfaction, kano model, low-cost carriers, on-time performance, quality of service, structural equation modeling

Cluster 2 (8 items) aviation, behavioral intention, customer loyalty, low-cost airlines, loyalty, perceived value, satisfaction, self-service technology

Cluster 3 (7 items) airline image, airline service, behavioural intentions, customer service, low cost airlines, price, service quality

Cluster 4 (7 items) airlines, consumer behaviour, customer services quality, image, quality, trust, United States of America

Cluster 5 (6 items) airline services, airport service quality, importance-performance analysis, passenger satisfaction, sentiment analysis, text mining

Cluster 6 (4 items) airline, covid-19, mcdm, servqual

bottom-left quadrant represents emerging or declining themes. Keywords such as Turkey, quantitative investment and multi-criteria decision making are categorized under this group. Overall, the thematic map reveals a balanced distribution between established and evolving research themes, reflecting the dynamic and continuously developing nature of airline service quality research.

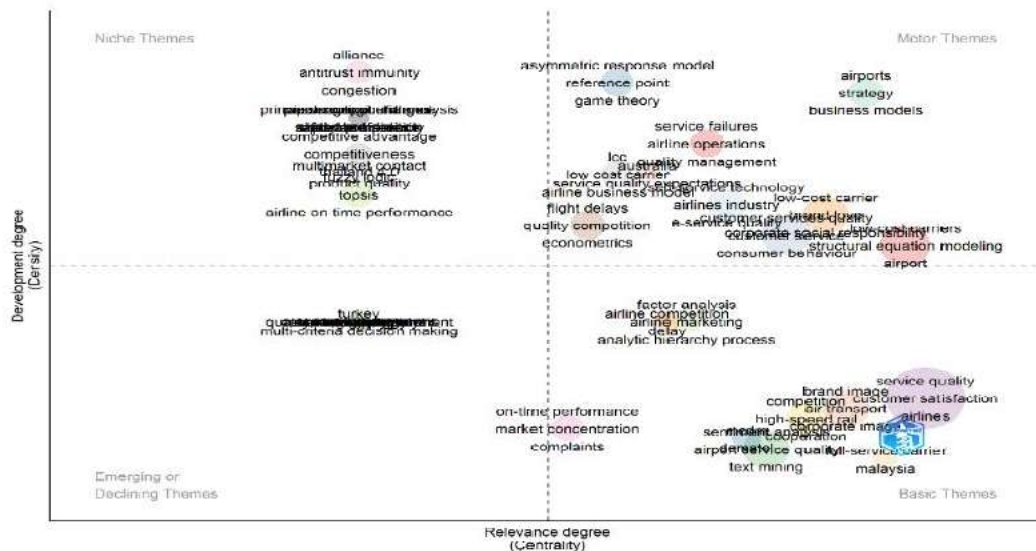


Figure 7: Thematic Map

Note: Compiled by Researchers from Scopus Database using Bibliometrix

Thematic Evolution

From 2001 to 2012, research in the airline industry focused on foundational themes such as service quality, competition, satisfaction, and airline image, emphasizing customer perceptions and operational efficiency. Between 2013 and 2017, the focus shifted towards customer behaviour with themes like e-loyalty and behavioural intention, while low-cost carriers and airport service quality gained prominence. During 2018 to 2020, topics such as sentiment analysis and brand image emerged, reflecting the integration of data analytics and an enhanced focus on customer experience. From 2021 to 2023, service quality remained central alongside the rise of recommendation systems, highlighting advancements in technology and balancing the roles of low-cost and full-service carriers.

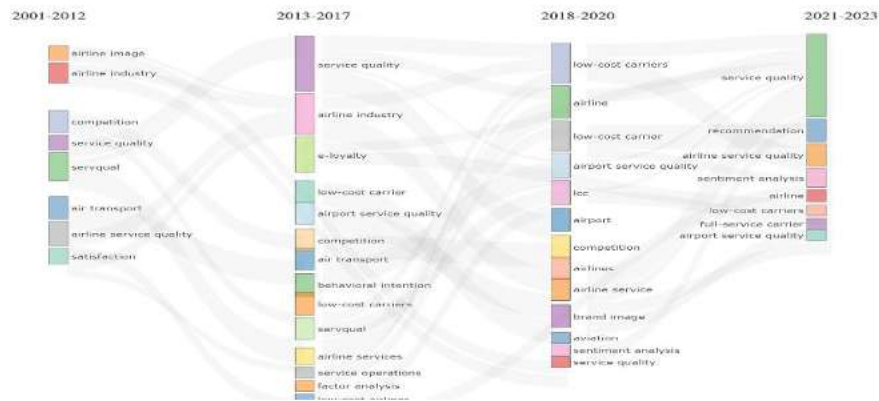


Figure 10: Thematic Evolution

Note: Compiled by Researchers from Scopus Database using Bibliometrix

Conclusion

The present study provides a comprehensive bibliometric overview of research on airline service quality over the period 2001 to 2023, based on 509 articles indexed in the Scopus database. The findings reveal a steady growth in scholarly output, particularly after 2015, reflecting the increasing importance of service quality in a highly competitive and evolving aviation industry. The analysis identifies a strong concentration of research around core themes such as service quality, customer satisfaction and behavioural intentions, indicating that the field remains largely anchored in customer-centric perspectives. At the same time, the emergence of themes such as sentiment analysis, text mining and technology-driven service delivery highlights a gradual shift towards data-oriented and digital approaches. Geographically, the dominance of developed countries such as the United States and China suggests that research output is closely linked to the maturity of aviation markets and the availability of research infrastructure. However, the growing contributions from emerging economies indicate a widening global participation in this field.

The study contributes to the existing literature by systematically mapping the intellectual structure, thematic evolution, and research trends in airline service quality. It provides a clear understanding of how the field has developed over time and identifies key areas for future exploration. In terms of practical implications, the findings suggest that airline service providers should focus not only on improving traditional service dimensions but also on incorporating digital tools, data analytics, and personalized service strategies to enhance customer experience and satisfaction. Despite its contributions, the study is limited by its reliance on a single database (Scopus) and its focus on quantitative bibliometric indicators. Future research may expand the scope by incorporating multiple databases, conducting systematic literature reviews, or applying meta-analytical techniques to gain deeper insights into the relationships between service quality dimensions and customer outcomes. Overall, the study highlights that airline service quality research is evolving from a traditional service evaluation perspective towards a more integrated, technology-driven, and customer-centric approach, offering significant opportunities for further academic and practical advancement.

References

- Abdel Rady, H. (2018). Measuring airline service quality using AIRQUAL model: A study applied to Egyptair. *International Journal of Heritage, Tourism and Hospitality*, 12(1), 271-290. <https://doi.org/10.21608/IJHTH.2018.31517>.
- Adhikari, K., & Paul, B. (2015). Perceived service quality and customer satisfaction in public sector banks: An empirical study. *Vidyasagar University Journal of Commerce*, 20, 151-159.
- Adhikari, K., & Paul, B. (2016). Impact of Perceived Service Quality on Customer Satisfaction in United Bank of India: A Perceptual Study. *International Journal of Innovative Research in Management Studies (IJIRMS)*, 1(2), 13-22.
- Aria, M., & Cuccurullo, C. (2017). Bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.00>
- Brodie, R. J., Whittome, J. R. M., & Brush, G. J. (2009). Investigating the service brand: A customer value perspective. *Journal of Business Research*, 62(3), 345–355. <https://doi.org/10.1016/j.jbusres.2008.06.008>
- Chen, C.-F. (2008). Investigating structural relationships between service quality, perceived value, satisfaction, and behavioral intentions for air passengers: Evidence from Taiwan. *Transportation Research Part A: Policy and Practice*, 42(4), 709–717. <https://doi.org/10.1016/j.tra.2008.01.007>
- Clemes, M.D, Shu, X. and Gan, C. (2014). Mobile communications: A comprehensive hierarchical modeling approach. *Asia Pacific Journal of Marketing and Logistics*, 26 (1), 114-146.
- Cobo, M. J., López-Herrera, A. G., Herrera-Viedma, E., & Herrera, F. (2011). Science mapping software tools: Review, analysis, and cooperative study among tools. *Journal of the American Society for Information Science and Technology*, 62(7), 1382–1402. <https://doi.org/10.1002/asi.21525>
- Cronin, J. J., & Taylor, S. A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing*, 56(3), 55–68. <https://doi.org/10.1177/002224299205600304>
- Dolhey, S. (2019). A bibliometric analysis of research on entrepreneurial intentions from 2000 to 2018. *Journal of Research in Marketing and Entrepreneurship*. <https://doi.org/10.1108/JRME-02-2019-0015>
- Ekiz, E. H., Hussain, K., & Bavik, A. (2006). Perceptions of service quality in North Cyprus national airline. *New Trends in Tourism and Hospitality Management*, 778–790.
- Fahim, M. G. A. (2019). The relationship between service quality dimensions and customer satisfaction in public service organizations with application to EgyptAir. *Arab Journal of Administration*, 39(1), 229-259. <https://doi.org/10.21608/aja.2019.27918>.

- Farooq, M. S., Salam, M., Fayolle, A., Jaafar, N., & Ayupp, K. (2018). Impact of service quality on customer satisfaction in Malaysia airlines: A PLS-SEM approach. *Journal of Air Transport Management*, 67, 169–180. <https://doi.org/10.1016/j.jairtraman.2017.12.008>
- Gilbert, D., & Wong, R. K. (2003). Passenger expectations and airline services: a Hong Kong based study. *Tourism Management*, 24(5), 519–532. [https://doi.org/10.1016/s0261-5177\(03\)00002-5](https://doi.org/10.1016/s0261-5177(03)00002-5)
- Gronroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing*, 18(4), 36–44. <https://doi.org/10.1108/eum00000000004784>
- Gupta, H. (2018). Evaluating service quality of airline industry using hybrid best worst method and VIKOR. *Journal of Air Transport Management*, 68, 35–47. <https://doi.org/10.1016/j.jairtraman.2017.06.001>
- Hussain, R., Al Nasser, A., & Hussain, Y. K. (2015). Service quality and customer satisfaction of a UAE-based airline: An empirical investigation. *Journal of Air Transport Management*, 42, 167–175. <https://doi.org/10.1016/j.jairtraman.2014.10.001>
- Ladhari, R. (2008). Alternative measures of service quality: A review. *Managing Service Quality*, 18(1), 65–86.
- Liljander, V., Gillberg, F., Gummerus, J., & van Riel, A. (2006). Technology readiness and the evaluation and adoption of self-service technologies. *Journal of Retailing and Consumer Services*, 13(3), 177–191. <https://doi.org/10.1016/j.jretconser.2005.08.004>
- Murugeswari, R. & Kanagaraj, B., (2017). Service quality dimensions influencing the overall opinion about airline customer satisfaction –Multiple regression analysis. *Asia Pacific Journal of Research*, 1(48), 130–133.
- Namukasa, J., 2013. The influence of airline service quality on passenger satisfaction and loyalty: the case of Uganda airline industry. *The TQM Journal*, 25, 520–532. <https://doi.org/10.1108/TQM-11-2012-0092>
- Oliver, R. L. (1980). A cognitive model of the antecedents and consequences of satisfaction decisions. *Journal of Marketing Research*, 17(4), 460–469. <https://doi.org/10.1177/002224378001700405>
- Olorunniwo, F., Hsu, M. K., & Udo, G. J. (2006). Service quality, customer satisfaction, and behavioral intentions in the service factory. *Journal of Services Marketing*, 20(1), 59–72. <https://doi.org/10.1108/0887604061064658>
- Ong, W.L., Tan, A.K.G., 2010. A note on the determinants of airline choice: the case of air Asia and Malaysia airlines. *Journal of Air Transport Management*, 16, 209–212. <https://doi.org/10.1016/j.jairtraman.2009.06.001>
- Parasuraman, A., Zeithaml, V. A., & Berry, L. L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64(1), 12–40.

- Park, J.-W., Robertson, R., & Wu, C.-L. (2004). The effect of airline service quality on passengers' behavioural intentions: a Korean case study. *Journal of Air Transport Management*, 10(6), 435–439. <https://doi.org/10.1016/j.jairtraman.2004.06.001>
- Subha, M. V., & Archana, R. (2013). Identifying the dimensions of service quality as antecedents to passenger satisfaction of Rajiv Gandhi International Airport. *Journal of Contemporary Research in Management*, 8(2), 25-33.
- Tsaur, S.-H., Chang, T.-Y., & Yen, C.-H. (2002). The evaluation of airline service quality by fuzzy MCDM. *Tourism Management*, 23(2), 107–115. [https://doi.org/10.1016/s0261-5177\(01\)00050-4](https://doi.org/10.1016/s0261-5177(01)00050-4)
- Van Eck, N., & Waltman, L. (2010). Software survey: VOSviewer, a computer program for bibliometric mapping. *Scientometrics*, 84(2), 523-538. <https://doi.org/10.1007/s11192-009-0146-3>
- Zeithaml, V. A., Berry, L. L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing*, 60(2), 31–46. <https://doi.org/10.1177/002224299606000203>
- Zins, A. H. (2001). Relative attitudes and commitment in customer loyalty models. *International Journal of Service Industry Management*, 12(3), 269–294. <https://doi.org/10.1108/eum0000000005521>

Reimagining Global Health: Perceptions of Sustainability and Transformative Change

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Abstract

Global health systems currently deal with a number of challenges including pandemics, limited resources, and the need for sustainable practices. In order to bring about sustainable change, there is a need to know how individuals employed in the health sector perceive sustainability and their readiness to adapt to change. This study aims to investigate the impact of perceptions of sustainability and resilience on health care systems in the world and the influence of those perceptions on individuals' readiness for transformation. The method used in the study was a descriptive cross-sectional design, whereby the data were collected from 400 respondents utilizing a structured 15-item questionnaire developed from WHO Health System Resilience Toolkit and theories of organizational change. The sampling approach was non-probability as participants were purposely chosen to study or work in health-related fields. Reliability and factor analyses proved the validity of the constructs used, and regression analysis results showed that perceptions of sustainability had a significant positive relationship with individuals' readiness for transformation ($\beta = .48, p \leq .001$), explaining 22.7% of the variance. It can be noted that when an individual believes in the sustainability and resilience of the system, he or she becomes motivated and ready for transformation. Sustainability and system resilience become important factors that promote readiness for reform.

Keywords: Global health, sustainability, transformative change

Introduction

In the past few years, global health has drawn more interest as an idea and field of study. The COVID-19 pandemic has highlighted the fact that our world is increasingly interconnected, and therefore, threats to public health can no longer be addressed by an individual nation-state, region or sector (Malqvist & Powell, 2022). Koplan et al. (2009) define global health as an area of study, research, and practice that prioritizes improving health for all populations globally and achieving health equity across all peoples globally, focusing on addressing health issues, determinants of health, and solutions for health, regardless of

national boundaries. There are some issues that characterize the global health systems such as pandemics, resource scarcity, among others. The continuous disruptions have prompted health care scholars and practitioners to consider the ideas of sustainability and resilience within the health care system (Nuzzo et al., 2019). Within global health, it is common to see sustainability discussed alongside the concept of resilience, which defines how resilient a system can be towards disturbance and still function effectively. Together, sustainability and resilience are what define people's perceptions about the sustainability and resilience of health care systems (Barasa et al., 2018; Gilson et al., 2017; Thomas et al., 2020). Recent literature argues that resilience is not just the set of capabilities to "bounce back" from crises, but also about the ability to adapt, learn and transform in a context of persistent stressors (Barasa et al., 2017). How people see sustainability and resilience in the system is vital for thinking about how willing (or not) they are to engage with reforms or embrace new practices / innovation. While general concepts have been outlined, an increasing number of researchers are considering the nature of global health systems as being complex and adaptable, involving different types of interactions among many players which can be quite unpredictable. When viewed in this way, sustainability and resilience cannot be viewed as inherent given social and political relationships between governments, service delivery and communities and other larger, socio-economic factors (de Savigny & Adam, 2009; Hill, 2011). The emergence of resilience as a central theme of international health research, following major disasters such as Ebola and COVID-19, is demonstrated in many assessments. However, most of these studies focus on design aspects, performance measures, and emergency response actions, with limited consideration of how employees working in such systems perceive changes (Biddle et al., 2020; Saulnier et al., 2021).

However, at the same time, a growing number of researchers believe that in order to develop a full understanding of the notion of sustainability and resilience, one should pay much attention to how these two factors are perceived and interpreted by the scientists and professionals working in the field of healthcare. Recent scholarly works stress the need to understand how local opinions, legitimacy, and daily assessments influence one's perception of a system's strength and weaknesses (Saulnier et al., 2021; Ismail et al., 2022). In other words, the approach proposed by the authors rejects the concept of resilience viewed as merely a technical and managerial issue. Nowadays, resilience is considered to be affected by how people perceive things around them, what their expectations are, and what values they cherish.

Studies indicate that people's perceptions and attitudes influence how successful health systems are at overcoming and being able to manage change. Numerous studies using data from various health systems demonstrate this clearly when assessing perceptions of strength of the system, fairness of the system, and readiness of the system to change; the more positively people perceive these, the more motivated/ open stakeholders are to transforming a health system (Weiner, 2009; Shea et al. 2014). If people believe their health system is capable of responding to reform needs, then they will likely want to support and participate in long-term improvements; but if people perceive the system negatively, momentum around reform will be lessened or stopped from getting any further, even if there are structures in place to support the reform efforts.

Although there is an increase in focus on sustainability and resilience, relatively few studies have examined the issue regarding how perceptions can affect readiness for transformative change, particularly among students or those working within the health sector. Such an issue is highly significant since it would be students, professionals, and emerging leaders within the health sector that would determine the way health systems evolve within the next couple of decades. The perceptions of these people may be responsible for determining the readiness, as well as willingness of these systems, to undergo transformative change. Therefore, this proposed research project, “Reimagining Global Health: Perceptions of Sustainability and Transformative Change,” would help understand how these perceptions relate to transformative change. Specifically, the objectives of the study are: (1) to assess perceptions of sustainability and resilience in global health systems, and (2) to examine whether these perceptions significantly predict readiness and motivation for transformative change. By measuring these dimensions in participants and identifying underlying structures, the study generates further insight into human factors driving global health transformation.

Review of Literature

Two major ideas that have been identified in the global health literature as the primary drivers of health systems in response to the increasing instabilities and resource limitations in the modern world are sustainability and resilience. According to Kruk et al. (2015), sustainability involves the ability of health care system to perform crucial functions over an extended period of time without the necessity to reduce their capabilities in the future, while resilience is defined as the ability of the system to undergo disruption and change and provide services in times of crisis (Kruk et al., 2015). The significance of the mentioned concepts has become more obvious in recent years due to the number of epidemics and natural disasters that undermined health care systems and highlighted the necessity to ensure the existence of resilient and sustainable organizations in the future (Blanchet et al., 2017). According to recent studies, resilience of an organization depends not only on its economic and material capacities but also on various aspects such as the quality of communication, motivation, and other sociological factors (Barasa et al., 2018).

Numerous studies have noted that the role of human perception is critical to the functioning and evolution of health systems. System strength and effectiveness of addressing uncertainty, the perception of preparedness for emergencies, and fairness of a system all affect an individual's level of confidence that they will be able to succeed in using institutional processes. This ultimately influences their willingness to support the implementation of new health initiatives (Weiner, 2009). When individuals perceive that a system is able to survive and manage uncertainty well, they are also more likely to demonstrate readiness for change. This can be defined as both their psychological and their behavioural readiness to make changes or to enact reforms (Shea et al., 2014). According to the literature on organisational change, individuals' readiness for change is further enhanced when they have an understanding of the need for proposed changes, their advantages and applicability to the system's goals (Holt et al., 2007). Consequently, the literature reinforces the fact that

perceptions are not simply superficial attitudes, but also act as influential mediators that shape how reforms will be experienced in practice.

Not only does organizational readiness play a significant role in transforming health care systems, but other researchers also highlight the extent to which changes are influenced by the social and institutional environment. As per research into the performance of health care systems, it was found that policy reforms would be more successful when there is inclusive governance and professional autonomy (Saltman et al., 2011). Sustainability also focuses on the fact that while technical efficiency plays an important role in sustaining systems, other factors like institutional continuity, commitment of staff, and organizational learning are crucial in order for the system to sustain itself in the long run (Scheirer & Dearing, 2011).

The research that is conducted on global health settings as being sustainable and resilient has shown that there are still considerable gaps. Assessing structural resilience like financing, supply chains, and governance has taken place in numerous studies, but fewer studies actually look at how the people working or studying in health-related areas of study comprehend these concepts, and how these perceptions are related to their motivation for a transformational change. According to Sacks et al. (2020), community and stakeholder views are not considered in the frameworks that mainly solely focus on the system's components, even though there is proof that social engagement and trust in the system capacity highly influence the success of the reform. This gap is even more critical, as the new health professionals are the ones who will be determining the future systems and their preparedness for change will be the factor that will decide how successfully the sustainability-oriented strategies would be implemented.

The literature existing so far points out three major themes: (1) the health systems that are strong and adaptive must have sustainability and resilience as their core characteristics, (2) people's views about these qualities have a major influence on their willingness to participate in changes, and (3) global health and health education have not been examined very much in terms of the relationship between these constructs. The current research adds to the literature by investigating through empirical means the extent to which the views of sustainability and resilience can predict one's readiness for a transformational change.

Methodology

Research Design

The present study employed a descriptive cross-sectional design with the purpose of assessing participants' perceptions of sustainability and resilience in global health systems and also to examine how these perceptions influence readiness for transformative change.

Participants and Sampling Technique

The population for the present study consisted of individuals who were either studying or working in health-related fields. A **sample size** of **400** participants was used for this study.

A purposive sampling technique was adopted to recruit respondents who were directly exposed to health-related environments, thus capable of providing informed views on sustainability, resilience, and readiness for change. Participation was voluntary, with all respondents providing informed consent.

Research Instrument

Data for the current study were gathered through a structured 15-item questionnaire that was designed to assess two key areas:

- (1) perceptions of sustainability and resilience in global health systems, and
- (2) readiness and motivation for transformative change.

Because the WHO Health System Resilience Toolkit does not provide a ready-to-use questionnaire, the items were developed by adapting its core concepts, such as system preparedness, adaptability, and sustainable practices. To further strengthen the measure, ideas from well-established organizational change and readiness frameworks were also incorporated, such as Weiner (2009) and Rafferty et al. (2013). In this way, the instrument was able to capture not only how people view the challenges of sustainability but also the extent to which individuals are willing to participate in change. The final survey had fifteen statements rated on a five-point Likert scale from “1” for “Strongly Disagree” to “5” for “Strongly Agree”.

The 15 items were broken down into two components (i.e., “**Perceptions of Sustainability and Resilience**” (7 items, P1-P7): assessed stability, preparedness, longer term thinking, and flexibility of global healthcare systems and “**Readiness for Transformational Change**” (8 items, R1-R8): assessed motivation, openness, psychological preparedness, and use of best practices.

The reliability and validity of the questionnaire were evaluated before conducting analyses. Both the sustainability and resilience scales demonstrated high levels of reliability based on Cronbach’s alpha. Additionally, the results of a factor analysis indicated that the items had been correctly categorized into each of the expected components, thus supporting the proper representation of the construct.

Reliability and Validity

Cronbach’s alpha was used to evaluate the internal consistency reliability of the perception scale ($\alpha=0.854$) and the readiness scale ($\alpha=0.876$). Both coefficients are above the minimum acceptable standard value of .70, showing that both measures have good internal consistency. Construct validity was established through **Exploratory Factor Analysis** (EFA), where sampling adequacy was supported by **KMO (0.931)** and by **Bartlett’s Test of Sphericity** ($\chi^2=2323.15$, $p\leq0.001$). The EFA, using Principal Component Analysis with Varimax rotation, produced two factors consistent with the theoretical constructs of perception and readiness that accounted for **53.67%** of the variance. All items loaded on their respective

constructs appropriately. Confirmatory factor analysis was not applied in this study due to the exploratory nature of the investigation.

Data Collection

The data gathering process was conducted through an online survey questionnaire which was sent to different educational institutions, hospitals, and other health-related establishments. The respondents were told about the objective of the research, promised confidentiality, and were given the freedom to leave the study whenever they wanted.

Data Analyses

Data were analysed using SPSS. The following steps were conducted:

- Descriptive statistics (mean, standard deviation)
- Reliability Test (Cronbach's alpha)
- Exploratory Factor Analysis
- Correlation test to determine any possible association among the important variables
- Simple Linear Regression to establish if there is any relationship between perceptions and transformative change readiness

Results

This section highlights the findings of the study obtained through descriptive analysis, reliability test, exploratory factor analysis, and regression analysis.

Demographic Characteristics of Respondents

Four hundred people took part in this research. Participants were sampled from multiple ages/genders, educational levels and with various levels of health experience, both personal and others. The average score across all age categories from the sample was 2.21 (SD = 0.89). No differences in scoring between male and female were indicated. The average score by age group for this study was 2.21 (SD = 0.89) with no significant differences between scores of males and females. The average score for education was 2.12 (SD = 0.97) and the average score for experience was 2.14 (SD = 0.82).

Table 1: Demographic Characteristics of Respondents

	N	Mean	Std. Deviation
Age	400	2.21	.891
Gender	400	1.54	.499

Field of study Profession	400	2.34	1.076
Educational Qualification	400	2.12	.973
Years of experience in Health-related Field	400	2.14	.823
Valid N (listwise)	400		

Source: *Computed from Primary Data*

Descriptive Statistic

To address the first objective, “*to assess perceptions of sustainability and resilience in global health systems and readiness for transformative change*”, we summed Descriptive Statistics for every question used to collect this information (P1-P7) and Every Question related to Readiness for Transformative Change (R1-R8). The overall mean for the perceived sustainability and resilience questions was 2.96-3.02, or moderate agreement across all types of respondents. The overall mean of perceived readiness and motivation factors ranged from an average of 2.96 - 3.02 also indicating a moderate willingness/ability to make these changes.

The standard deviation scores fell between 1.18 - 1.26 for the perceived sustainability/resilience scores and 1.20 - 1.24 for the perceived readiness/motivation scores which demonstrates reasonable variability in all respondent populations and supports the requirement to conduct additional statistical analyses.

Table 2: Descriptive Statistics for Perception and Readiness Items

	N	Mean	S.D.
The global health system is prepared to respond effectively to future pandemics or health emergencies. (P1)	400	2.96	1.256
Current health policies promote environmental sustainability and responsible resource management. (P2)	400	3.01	1.232
Health education and training emphasize sustainability, equity, and system resilience. (P3)	400	2.97	1.183
Collaboration between international and local organizations strengthens the ability of health systems to face challenges. (P4)	400	3.00	1.239

Research, innovation, and technology are helping build sustainable health systems. (P5)	400	2.98	1.219
Lessons learned from past health crises (e.g., COVID-19) have improved system preparedness. (P6)	400	2.99	1.196
Health strategies and programs adequately consider the needs of vulnerable populations. (P7)	400	3.02	1.203
Transformative changes are necessary to ensure a sustainable global health system. (R1)	400	3.02	1.207
I am open to adopting innovative approaches in healthcare delivery and management. (R2)	400	2.97	1.197
Leadership in health systems encourages experimentation and adoption of new ideas. (R3)	400	2.99	1.239
Collaboration across sectors (health, education, environment, policy) is essential for sustainability. (R4)	400	3.00	1.238
I feel confident in my ability to contribute to sustainable health initiatives in my work or studies. (R5)	400	2.96	1.210
New and emerging professionals can play a vital role in shaping sustainable global health. (R6)	400	2.98	1.222
I am optimistic that sustainable global health goals can be achieved in the near future. (R7)	400	3.01	1.233
I see myself as an active participant in bringing transformative change to global health. (R8)	400	3.00	1.214

Source: *Computed from Primary Data*

Reliability Analysis

Reliability analysis using Cronbach's alpha was conducted to examine the internal consistency of both the total scale and the individual sub-dimensions. The complete scale of 15 items proved highly reliable with a Cronbach's alpha value of 0.891. The subscale related to perceptions was highly reliable ($\alpha = 0.854$), whereas the subscale related to readiness was also highly reliable ($\alpha = 0.876$).

Table 3: Reliability Statistics

Cronbach's	
Alpha	No. of Items
.891	15
.854	7
.876	8

Source: *Computed from Primary Data*

Exploratory Factor Analysis

To dig deeper into the structure of the questionnaire, Exploratory Factor Analysis (EFA) was conducted. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was excellent given that 0.931. Bartlett's Test of Sphericity was statistically significant ($\chi^2 = 2323.15$, $p < 0.001$), confirming that the matrix correlation was suitable for extraction factors to extract factors.

A two-factor solution was suggested by the exploration of eigenvalues greater than 1 in a Varimax rotated (Principal Component Analysis) factorability. The first factor explained 39.68% of the variance and the second factor 13.99%, for a total explained a variance of 53.67%. They matched these two factors with the theoretical constructs of readiness for transformative change and positive perceptions of sustainability and resilience.

Table 4: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.931
Bartlett's Test of Sphericity	Approx. Chi-Square	2323.148
	df	105
	Sig.	.000

Source: *Computed from Primary Data*

Table 5: Total Variance Explained

Initial Eigenvalues				Rotation Sums of Squared Loadings		
Component	Total	% of	Cumulative	Total	% of	Cumulative %
		Variance	%		Variance	

1	5.952	39.681	39.681	4.282	28.544	28.544
2	2.098	13.986	53.667	3.768	25.122	53.667
3	.725	4.833	58.500			
4	.696	4.637	63.137			
5	.661	4.409	67.546			
6	.603	4.019	71.565			
7	.567	3.778	75.344			
8	.562	3.748	79.092			
9	.533	3.551	82.643			
10	.498	3.323	85.965			
11	.477	3.183	89.148			
12	.447	2.983	92.131			
13	.428	2.854	94.985			
14	.417	2.779	97.764			
15	.335	2.236	100.000			

Extraction Method: Principal Component Analysis.

The rotated component matrix indicated that the items of the R1 to R8 have very high saturation on the first factor, while the items P1 to P7 had a very high saturation on the second factor, with all factor saturations exceeding the acceptable level of 0.60 and no significant cross-saturations being present suggesting evidence of good construct validity.

Table 6: Rotated Component Matrix

	Component	
	1	2
R2	.749	
R5	.735	
R1	.729	
R7	.721	
R4	.710	
R6	.705	
R8	.689	
R3	.636	
P3		.783
P7		.729
P2		.723
P5		.706
P1		.678
P6		.673
P4		.659

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

The scree plot (**Figure 1**) demonstrated that the two-factor model structure was valid, displaying a distinct ‘jump’ after component two affirmed the retention of the two-factor solution

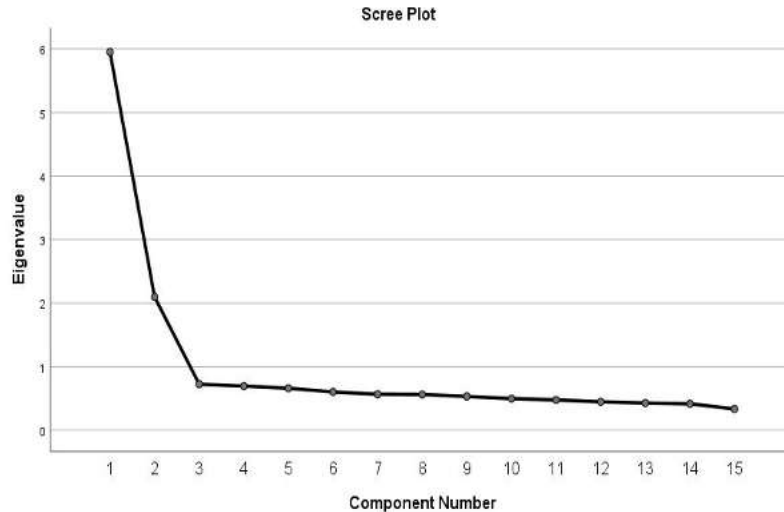


Figure 1: Scree Plot

Correlation Analysis

Correlation analysis using Pearson's r test revealed that there exists a significant positive correlation between perception of sustainability and resilience and readiness for transformative change ($r = .477$, $p < .001$). This means that there is a strong connection between perception and readiness for change.

Table 7: Correlations

		Perceptions	Readiness
Perceptions	Pearson Correlation	1	.477**
	Sig. (2-tailed)		.000
	N	400	400
Readiness	Pearson Correlation	.477**	1
	Sig. (2-tailed)	.000	
	N	400	400

**Correlation is significant at the 0.01 level (2-tailed).

The correlation between sustainability and resilience and transformative readiness, which is statistically significant, shows that there is some relationship between the two variables. Nevertheless, correlation alone does not mean prediction or causation. Hence, a regression analysis was done to determine if perceptions are significant predictors of transformative readiness and the extent of variance accounted for by perception in readiness.

Regression Analysis

For the second objective, “to examine whether perceptions of sustainability and resilience predict readiness for transformative change”, simple linear regression was employed to investigate if each perception of sustainability and resilience can predict readiness for transformative change. Based on the results of this analysis, there was a statistically

Table 8: Model Summary

Model	R	R Square	Adjusted R		Std. Error of the Estimate
			Square		
1	.477	.227	.225		6.28182

a. Predictors: (Constant), Perceptions

b. Dependent Variable: Readiness

significant difference between the two groups ($F(1,398) = 117.10, p < .001$). The model accounted for 22.7% of the variance in readiness score ($R^2 = .227$).

Table 9: ANOVA

Model		Sum of		Mean Square	F	Sig.
		Squares	df			
1	Regression	4620.704	1	4620.704	117.095	.000 ^b
	Residual	15705.606	398	39.461		
	Total	20326.310	399			

a. Dependent Variable: Readiness

b. Predictors: (Constant), Perceptions

From Figure 2, it can be seen that there is a direct positive pathway from perceptions of sustainability and resilience to readiness for transformative change. Without controlling for

the standardized regression coefficient, ($\beta = .477$) showed that perceived sustainability and resilience positively related to readiness as well. These results indicate that perception is an important psychological contributor to readiness for change, supporting the second objective of this study.

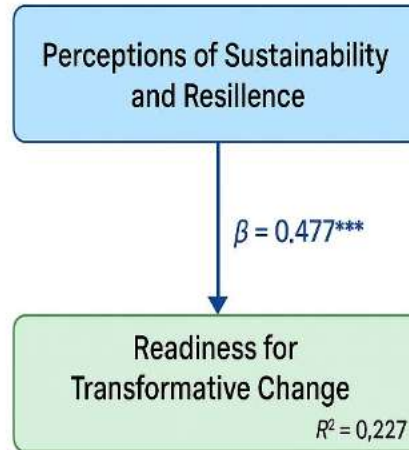


Figure 2: Regression Model showing the effect of Perceptions of Sustainability and Resilience on Readiness for Transformative Change

In this case, the standardized coefficient showed that there was a positive relationship between perceptions and readiness ($\beta = 0.477$, $p < .001$). The value of the unstandardized coefficient ($B = 0.546$) shows that for each unit of perceived score of sustainability and resiliency of health systems, the score for readiness increases by 0.55 units. In other words, it shows that such people are expecting a transformation.

Table 10: Coefficients

		Unstandardized		Standardized		
		Coefficients		Coefficients		
Model		B	Std. Error	Beta	t	Sig.
1	(Constant)	12.511	1.101		11.359	.000
	Perceptions	.546	.050	.477	10.821	.000

Assumption Testing

Before conducting any interpretation, the assumptions of regression were first checked. The normality assumption was tested through the use of a histogram and a Normal P-P plot of standardized residuals. From the visual test, it is clear that the residuals are normally distributed as evidenced by the close relationship of the data points with the diagonal in the P-P plot.

Discussion

The purpose of this research study is to evaluate how perceptions of sustainability and resilience impact readiness to transform within global health organizations. The research results provide strong evidence that perceptions significantly predict transformation readiness, with 22.7% of the variance in transformation readiness explained by perceived sustainability. This indicates that there is a greater likelihood for those who perceive the organization as sustainable, resilient, and focused on future success to be willing to participate in efforts to transform the organization. Furthermore, the research results provide support for the theoretical work done by Weiner (2009), which identifies the perception of organizational effectiveness as an important predictor of transformation readiness.

The correlation analysis adds weight to this conclusion by revealing a significant positive correlation between perceived sustainability and commitment to change. Those with stronger preferences on stability and adaptability were more likely to be ready for reform. While correlation does not imply cause-and-effect, this finding reinforces the perception as a critical psychological building block of readiness to action in change initiatives.

Exploratory factor analysis indicated that perception and readiness are two related but separated factors. This is important as it shows that a belief in sustainability does not guarantee readiness to act. Positive attitudes may increase willingness; however, positive attitudes do not transfer into behavioural readiness. This observation resonates with emerging organizational change literature emphasising that readiness is rooted in psychological and contextual determinants and not behaviour alone (Rafferty et al., 2013; Shea et al., 2014).

While this study did not specifically measure leadership quality, communication and fairness of change process, previous research indicates that these organizational characteristics often moderate the perception-action relationship (Oreg et al., 2011). Thus, the moderate proportion of variance accounted for by perception in this study shows that wider determinants of change may also come into play. These findings suggest a greater need for reform that combines system-level and individual readiness-building approaches.

In light of these results, it appears that increased awareness about sustainability in training settings might help foster change readiness through enhanced assurance about the capacity of the system itself. Training programs based on resilience ideas can potentially assist individuals in appreciating the worth and possibility of reforms, thus facilitating their participation in transformations. However, there are certain limitations to this study. The first limitation is that the research is cross-sectional in nature, and thus it cannot make any causal inference. The second one is that purposive sampling can affect the external validity of

results. Also, because the data was based on self-reporting, social desirability bias could have affected respondents' answers. Finally, even though we had a diverse set of participants in terms of health systems knowledge, there might have been people working on health systems globally that we did not contact. Additional longitudinal studies on perceptions would be warranted, or qualitative analysis of health systems professionals' experiences.

This study shows perception as a principal psychological factor in making transition preparedness. Individuals are less likely to advocate for sustainable reform if they do not only believe there is a need for change but also that the systems in which they work have the potential to adapt successfully.

Conclusion

The findings from this research show that individual perceptions of sustainability and resilience contribute significantly to their readiness to adapt within the global health care systems. The ability of the health care systems to adapt, learn, and respond to various challenges contributes to individuals' willingness to implement reforms and changes. The results obtained from this research confirm that the change process within health care systems does not depend only on policies and structures but also on individual perceptions.

As these findings are consistent with academic evidence of resilience being based not only on governance structures and resources, but also the beliefs and behaviours of individuals within systems (Hanefeld et al., 2018), Evidence also exists that sustainable reform does not rely solely on technical interventions but rather, social processes fostering stakeholder engagement and buy-in (Tediosi et al., 2020). In this sense, readiness is better understood as a psychological construct arising not only out of perception and self-efficacy but also from enabling organizational characteristics.

This research emphasizes how important it is for individuals to perceive their environment as a catalyst for change; this will lead to a human-centric perspective on healthcare reform and increase the likelihood that individuals will make sustainable modifications to their practices if they believe and have a sense of agency in the system(s) in which they operate. Building trust in the system's capacity for recovery and prompting individuals to assess their behaviours may be equally as significant for sustainable change as amending the system itself.

Implications

Results indicate that global health system improvement requires more than just new policies or infrastructure improvements. An individual's perspective of sustainability and resilience is a critical component influencing their inclination to accept and support change. Including sustainability as part of education and training can enhance understanding of long-term challenges of systems. Policy measures that ensure openness, fairness and trust can facilitate higher levels of involvement in the products of reform efforts as well. Future research could build on the present findings to explore how leadership, work culture and communication styles influence readiness for change in varying healthcare settings which may ultimately ensure that reform is meaningful and sustainable.

References

- Barasa, E., Cloete, K., & Gilson, L. (2017). From bouncing back to nurturing emergence: Reframing the concept of resilience in health systems strengthening. *Health Policy and Planning*, 32(Suppl 3), iii91–iii94. <https://doi.org/10.1093/heapol/czx118>
- Barasa, E., Mbau, R., & Gilson, L. (2018). What is resilience and how can it be nurtured? A systematic review of empirical literature on organizational resilience. *International Journal of Health Policy and Management*, 7(6), 491–503. <https://doi.org/10.15171/ijhpm.2018.06>
- Biddle, L., Wahedi, K., & Bozorgmehr, K. (2020). Health system resilience: A literature review of empirical research. *Health Policy and Planning*, 35(8), 1084–1109. <https://doi.org/10.1093/heapol/czaa032>
- Blanchet, K., Nam, S. L., Ramalingam, B., & Pozo-Martin, F. (2017). Governance and capacity to manage resilience of health systems: Towards a new conceptual framework. *International Journal of Health Policy and Management*, 6(8), 431–435. <https://doi.org/10.15171/ijhpm.2017.36>
- de Savigny, D., & Adam, T. (Eds.). (2009). *Systems thinking for health systems strengthening*. Alliance for Health Policy and Systems Research. <https://apps.who.int/iris/handle/10665/44204>
- Gilson, L., Barasa, E., Nxumalo, N., Cleary, S., Goudge, J., Molyneux, S., Tsofa, B., & Lehmann, U. (2017). Everyday resilience in district health systems: Emerging insights from Kenya and South Africa. *BMJ Global Health*, 2(2), e000224. <https://doi.org/10.1136/bmjgh-2016-000224>
- Hanefeld, J., Blanchet, K., Nam, S. L., Pienaar, D., & Bell, S. (2018). What factors affect the capacity of health systems to respond to shocks? Insights from the literature. *Globalization and Health*, 14(1), Article 1. <https://doi.org/10.1186/s12992-018-0375-4>
- Hill, P. S. (2011). Understanding global health governance as a complex adaptive system. *Global Public Health*, 6(6), 593–605. <https://doi.org/10.1080/17441691003762108>
- Holt, D. T., Helfrich, C. D., Hall, C. G., & Weiner, B. J. (2010). Are you ready? How health professionals can comprehensively conceptualize readiness for change. *Journal of General Internal Medicine*, 25(Suppl 1), 50–55. <https://doi.org/10.1007/s11606-009-1112-8>
- Ismail, S. A., Abimbola, S., Gonzalez, T., et al. (2022). Conceptualising and assessing health system resilience: A multidimensional framework. *Wellcome Open Research*, 7, 151. <https://doi.org/10.12688/wellcomeopenres.17852.2>
- Koplan, J. P., Bond, T. C., Merson, M. H., Reddy, K. H., Rodríguez, M. H., Sewankambo, N. K., & Wasserheit, J. N. (2009). Towards a common definition of global health. *The Lancet*, 373(9679), 1993–1995. [https://doi.org/10.1016/S0140-6736\(09\)60332-9](https://doi.org/10.1016/S0140-6736(09)60332-9)

- Kruk, M. E., Myers, M., Varpilah, S. T., & Dahn, B. T. (2015). What is a resilient health system? Lessons from Ebola. *The Lancet*, 385(9980), 1910–1912. [https://doi.org/10.1016/S0140-6736\(15\)60755-3](https://doi.org/10.1016/S0140-6736(15)60755-3)
- Malqvist, M., & Powell, N. (2022). Health, sustainability and transformation: A new narrative for good health. *BMJ Global Health*, 7, e010969. <https://doi.org/10.1136/bmjgh-2022-010969>
- Nuzzo, J. B., Meyer, D., Snyder, M., Ravi, S. J., Lapascu, A., Souleles, J., & Bishai, D. (2019). What makes health systems resilient against infectious disease outbreaks and natural hazards? Results from a scoping review. *BMC Public Health*, 19(1), Article 1. <https://doi.org/10.1186/s12889-019-7707-z>
- Oreg, S., Vakola, M., & Armenakis, A. A. (2011). Change recipients' reactions to organizational change: A review of quantitative studies. *The Journal of Applied Behavioral Science*, 47(4), 461–524. <https://doi.org/10.1177/0021886310396550>
- Rafferty, A. E., Jimmieson, N. L., & Armenakis, A. A. (2013). Change readiness: A multilevel review. *Journal of Management*, 39(1), 110–135. <https://doi.org/10.1177/0149206312457417>
- Sacks, E., Morrow, M., Story, W. T., Shelley, K. D., Shanklin, D., Rahman, Z., & Sarriot, E. (2019). Beyond the building blocks: Integrating community roles into health systems frameworks to achieve health for all. *BMJ Global Health*, 3(Suppl 3), e001384. <https://doi.org/10.1136/bmjgh-2018-001384>
- Saltman, R. B., Durán, A., & Dubois, H. F. W. (2011). *Governing public hospitals: Reform strategies and institutional autonomy*. European Observatory on Health Systems and Policies. <https://apps.who.int/iris/handle/10665/330203>
- Saulnier, D. D., Blanchet, K., Canila, C., Cobos Muñoz, D., Dal Zennaro, L., de Savigny, D., & Tediosi, F. (2021). A health system resilience research agenda: Moving from concept to practice. *BMJ Global Health*, 6(8), e006779. <https://doi.org/10.1136/bmjgh-2021-006779>
- Scheirer, M. A., & Dearing, J. W. (2011). An agenda for research on the sustainability of public health programs. *American Journal of Public Health*, 101(11), 2059–2067. <https://doi.org/10.2105/AJPH.2011.300193>
- Shea, C. M., Jacobs, S. R., Esserman, D. A., Bruce, K., & Weiner, B. J. (2014). Organizational readiness for implementing change: A psychometric assessment of a new measure. *Implementation Science*, 9, Article 7. <https://doi.org/10.1186/1748-5908-9-7>
- Tediosi, F., Lönnroth, K., Pablos-Méndez, A., Ravigliione, M., & Cassels, A. (2020). Build back better: A sustainable response to epidemics. *BMJ Global Health*, 5, e002874. <https://doi.org/10.1136/bmjgh-2020-002874>
- Thomas, S., Sagan, A., Larkin, J., Cylus, J., Figueras, J., & Karanikolos, M. (2020). *Strengthening health systems resilience: Key concepts and strategies*. European

Observatory on Health Systems and Policies.

<https://eurohealthobservatory.who.int/publications/i/strengthening-health-systems-resilience-key-concepts-and-strategies>

World Health Organization. (2021). *Health system resilience toolkit: A guide for national health system resilience assessment*.

<https://www.who.int/publications/i/item/9789240036367>

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