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About the Journal

The journal is published by Great Lakes Institute of Management, Gurgaon, India. The aim of the journal is to attract articles that address issues the industry is currently facing. A special focus is on articles that provide innovative solutions to these issues. The journal articles not only are of interest to academics, but also, with their focus on relevance, should be of interest to policy makers, think tanks, government, corporate and multilateral institutions, professionals, and industry leaders. Manuscripts undergo a double-blind peer review process, and the journal follows all international journal publication norms. The journal is published with an open-access format so that it reaches the maximum readers. Journal Publishing Services for publication are powered by Sage Spectrum.

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Aims and Scope

GLIMS Journal of Management Review and Transformation aims to publish scientific, empirical research on the theory, practice, and contemporary perspectives of management focusing on the problems, interest, and concerns of managers. It aims to explore interesting questions and phenomena in management, develop and/or test theory, replicate prior studies, and review and synthesize existing research.

Within its scope are all aspects of management related, but not limited, to strategy, entrepreneurship, innovation, information technology, digital business, analytics, artificial intelligence, machine learning, and policy and organizations, as well as all functional areas of business, such as organizational behavior, human resource management, accounting, finance, marketing, operations, data and analytics, and technology transformation.

This journal intends to publish a variety of articles including quantitative and qualitative empirical research articles and conceptual articles that provide novel perspectives on recent business phenomena. To achieve our aim of writing about business transformation, the journal will also include case studies and book review articles. It would also publish abstracts of PhDs that are relevant and in-line with the journal's objectives.

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Editorial

GLIMS Journal of Management
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Welcome to Volume 4, Issue 1 of *GLIMS Journal of Management Review and Transformation* (JMRT). Since our launch in 2022, the journal has grown steadily as a forum for management research. Our mission is to publish work that bridges theory and practice and addresses real challenges facing organisations. We now feature a range of articles that meet international standards and remain relevant to managers, policymakers and academics.

Today's business landscape is changing rapidly, driven by digital innovation, globalisation, evolving workforce trends and sustainability priorities, making scholarly research more important than ever. Each article we publish illuminates key issues in leadership, strategy, human resources and beyond, offering insights practitioners can apply and scholars can build upon. The papers in this issue cover a broad spectrum of topics. We are excited by the fresh perspectives each study brings to current management challenges. Together, these articles can inspire new research and influence real-world decision-making.

Our authors and reviewers have made this issue possible. I extend sincere thanks to the scholars who submitted their work to *JMRT* and to the reviewers who generously gave their time and expertise. Their dedication and rigorous feedback maintain the high standards our readers expect.

I invite all readers to engage with the journal and to submit manuscripts on emerging management issues.

Dr Akhter Mohiuddin Rather
Editor, *GLIMS Journal of Management Review and Transformation*

Fintech and Its Emerging Verticals: A Systematic Review of Literature Using Topic Modelling

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Abstract

Fintech is here to stay, like the tech revolution with far-reaching impact on different sectors. Fintech's potential to transform the Banking, Financial Services, and Insurance (BFSI) sector has been evident since its inception. As fintech grew, product offerings kept increasing. The ease of transaction and speed of transaction lured many to switch to fintech offerings. Thus, numerous studies were done to check if fintech had redefined the product range in the BFSI sector. There was a gap wherein not many studies identified the direction of fintech with regard to products. The existing study scans the extensive literature to unveil different clusters which have emerged out of fintech research. A literature review was done for 1,321 articles by applying topic modelling, a machine learning technique. The abstracts of these documents were analysed by applying the latent Dirichlet allocation statistical method. The resultant keywords that emerged were manually analysed to identify the categories/topics of study based on relevance. Seven key categories emerged based on the analysis of the results of topic modelling being fintech, blockchain, digital banking, crowdfunding, algo tech, regulatory technology and sustainable finance. The findings of this study would be beneficial to understand how fintech is shaping contemporary venues for future research. The article suggests a technical approach to provide valuable information to practitioners for fintech applications and to academicians for future research.

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Keywords

Corporate, government and governance, industry, policy, professionals, RegTech, fintech and emerging verticals, effects of fintech, growth of fintech, fintech

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Introduction

Ever since business and commerce started to grow, the mobilisation of funds has been the prime responsibility of the banking sector, but recently, the focus has shifted to fintech. The financial world post-pandemic emerged very different, and the biggest change which happened was that dependence on brick-and-mortar banking infrastructure was reduced. With cashless transactions, microfinance and online trading, the fintech sector mushroomed big time, as it offered convenience, low cost and accessibility of digital platforms to facilitate these transactions. As per the Financial Stability Board, fintech is 'technologically enabled financial innovation that could result in new business models, applications, processes, or products with an associated material effect on financial markets and institutions and the provision of financial services'.

The growth of fintech was welcomed as more and more start-ups signed up, transactions moved faster, physical wallets were replaced by digital wallets as cashless transactions became popular, financial inclusion was possible, companies looked at alternate ways of financing than the traditional instruments, and cryptocurrencies could be launched, which eliminated geographical barriers. Fintech supplemented and replaced core banking transactions like small payments, which are now being done through mobile wallets and payment gateways using digital applications on smartphones (Stulz, 2022). In the last decade, there has been a significant adaptation of digital payment platforms. For example, in India, the inclination towards a cashless economy and the push towards demonetisation and the Covid provided impetus to the growth of fintech.

Fintech could be understood to be an advanced version of internet banking, but the product offerings clearly indicate that it is a necessary technology for the banking sector in the developed ecosystem. Important verticals emerging in the fintech are RegTech, Proptech, Wealthtech, Insurtech and the most important blockchain technology. Mobile payments and digital wallets, an outcome of fintech, have impacted banks somewhat positively (Anshari et al., 2020). A more recent outcome is the achievement of economic growth through financial inclusion. Fintech innovations can prove to be a game changer in this direction.

Literature Review

Fintech-enabled solutions and innovative business models from the combination of finance and technology (Jagtiani & Lemieux, 2018). It streamlines financial services and offers efficiency and convenience. Fintech has gained popularity in both developed and developing nations as the integration between information

communication and technology and finance (Buckley et al., 2019). Fintech offers cost savings and maximises profits in operations. Fintech implies innovative business models that would transform the financial services industry (Mhlanga, 2020). Computational risk management, big data analytics and electronic stock trading have increased the efficiency and effectiveness of financial services (Holmes & King, 2019). Fintech innovations offer new value-added services and improve efficiency (Takeda & Ito, 2021). Various aspects of fintech include financial inclusion, bank marketing, P2P lending, crowdfunding and RegTech. Fintech lending includes peer-to-peer lending platforms that facilitate direct borrowing and lending between individuals, bypassing traditional financial intermediaries (Bollaert et al., 2021). Fintech technologies can improve access to finance by reducing information asymmetry, agency problems and difficulties in allocating residual control rights.

The global financial crisis triggered the growth of fintech (Anshari et al., 2020). It was predicted that technological power would prove to be a core competency for financial institutions in the future (Chen et al., 2017), which was proven by fintech. Fintech products challenge products of conventional banking (Butt & Khan, 2019) and cover a wide spectrum of products like peer-to-peer (P2P) lending (Hendrikse et al., 2020) and cryptocurrencies blockchain technology (Nakamoto, 2008). Fintech represents a disruption in the financial sector due to the intertwining of ICT and automatic processing (Sibanda et al., 2020). As per Thakor (2020), fintech bypasses traditional intermediaries in banking in its offering of financial services. As the internet environment gets mature, the lack of physical banking is not perceived as a problem (Tatuev et al., 2020). Also, with peer-to-peer lending, which directly matches lenders and borrowers, fintechs are putting more pressure on policymakers and supervisors (Vucinic, 2020).

Fintech is a disintermediation force with disruptive technologies as the drivers, which resulted in a technological change in raising, allocating and transferring capital (Das, 2019). Fintech disruptions are assertively cutting the bank's service delivery chain, resulting in clients getting a higher value proposition. The banking sector is undergoing transformation in its fundamental system due to digital transformation (Drasch et al., 2018). The financial industry, which was considered relatively conservative, changed rapidly due to the advent of innovative financial services such as internet-only banks (Lee & Kim, 2020; Vives, 2019). Internet-only banks are platforms of fintech services widely compatible with not only financial services but also diversification of services such as messenger, shopping and media (Rafay, 2019). Though fintech evolved in phases, this technology has enabled banking services to evolve from 'ATM' to 'Any time availability'. Fintech grew fast, and the pace was phenomenal, which resulted in challenges to practitioners on relevant insights for quite some time but a relief to customers on many fronts.

Advances in technology, such as Gen artificial intelligence (AI), machine learning (ML), ChatGPT and immersive technologies, are challenging traditional intelligence on ways to interact and offer products/services to customers (Coetzee, 2018). There is a positive as well as negative outlook on financial innovation (Athique, 2019). The positive one is that it improves efficiency or performance, and the new services would increase transaction speed for the customer and opportunities for growth for banks and fintech companies. The negative one is that

the regulatory ecosystem might get compromised as there are no stringent rules governing this growth; hence, it increases risk. Nevertheless, the popularity of fintech is evident by the fact that seed funding and VC investment in fintech have been rising steadily in the past decade. There are a few challenges too in the process. Cybersecurity and protection of private client information is a critical regulatory point, but this information about the clients is vital for fintech companies to study patterns and establish trends using big data thereafter to offer technology-based solutions to the general masses. When information is not protected by regulatory decrees, trust gets eroded and contributes to systemic risk (Coetzee, 2018). Regulations like the General Data Protection Regulation in the West and the Digital Personal Data Protection (DPDP) 2023 in some countries, like India, provide a framework to safeguard clients' private data against cybercrimes.

Fintech formation happens in economies where access to loans is more difficult. The country's gross domestic product and a less developed banking system provide impetus to the growth of fintech, more specifically in the field of credit (Hommel & Bican, 2020). Although fintech lending has started to transform the way businesses secure finance, with non-bank lenders growing rapidly, the volume of lending is not as high as traditional banks (Jagtiani & Lemieux, 2018).

While BIS and the Financial Stability Institute proposed a systematisation splitting the fintech environment into three parts—fintech activities, enabling technologies and enabling policies—but it was difficult to identify the direction in which fintech academic research was heading and the important verticals which needed to be studied. This study is an attempt to classify the research in clear verticals which have emerged in the past few years using topic modelling (TM).

Methodology

The use of TM technique for topic discovery has increased in order to manage the vast amount of data to be studied. Service industries such as banks need to record all data related to customer interaction, such as transactions, enquiries, feedback, reviews enquiries, feedback, reviews and interests, to help the organisations to target their resources and services effectively. TM is also an important technique for many applications such as sentiment analysis (Dandala et al.,2019). Recommendation include systems to extract user preference (Pennacchiotti & Gurumurthy, 2011), document summarisation to summarise a vast amount of text into concise format (Wang et al., 2009), topic discovery in a chat box system (Tepper et al., 2018) and fake news detection (Sabeeh et al., 2021). Therefore, TM is effectively utilised in several application domains like healthcare, online learning, spam detection and document analysis to discover the underlying topic.

TM technique uses statistical algorithms to discover the semantic structures that define a topic, in the text content under study. It works on the principle that normally a cluster of words that are similar or related and a set of expressions often occur together to describe the focus or topic of interest of the text. The words that contribute to identifying the topic are called 'keywords'. TM technique searches and identifies these 'keywords' and their relative strength of presence to discover the hidden 'topic' or 'topics' (Cogitotech, 2021).

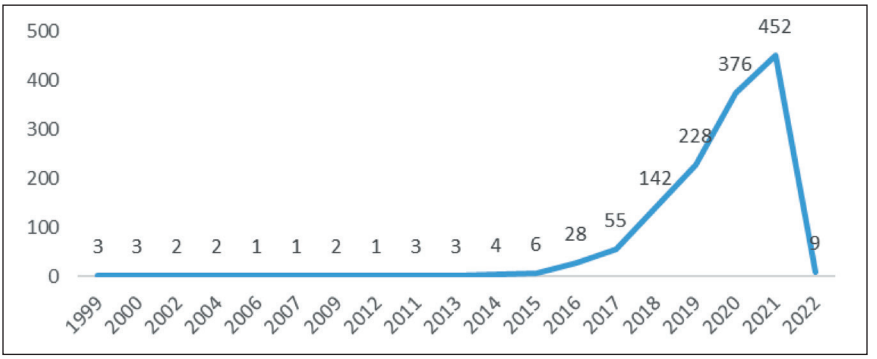

Figure 1. Chart Showing the Number of Studies Done Over the Years.

A trend analysis of literature related to fintech in the past two decades shows a steady increase in research, awareness and interest in this domain (Figure 1).

This article uses TM to analyse the applicability of fintech in various domains by evaluating the extant literature and discovering the most common areas/domains/segments which emerge out of the study. The research articles for the study were sourced from various acclaimed databases that publish original and new works, academic research papers and review articles, such as Web of Science, ProQuest, Science Direct, Academic Search Complete, IEEE Explore and Association for Computing Machinery. These publications are some of the most popular, well-known and trusted original research paper publishers in the fields of technology, banking and finance. The research articles were searched with the keyword 'fintech' and were shortlisted from the databases from 1998 to 2022. A total of 5,880 articles were identified. Thereafter through a manual review process, irrelevant articles were excluded, such as duplicates, editorials, non-English, review papers and not related to journals. The manual view process is important to clean the data and filter unwanted articles before TM can be run. This resulted in 1,372 articles matching the given keyword criteria. From this pool, only journal and conference articles were retained. After filtering, 1,321 articles were found suitable for the next step.

Topic model is a statistical method used in ML techniques to find or discover set of hidden or latent 'topics' in a collection of documents. TM works on the principle that a document under study focuses on a single or related topic based on a set of related keywords/semantics. TM is an unsupervised technique and an exploratory work, since it works on an input that is completely new to it (as opposed to a supervised technique that works on data that are already provided to it), identifies an optimal number of topics and optimal number of words that contribute to each topic. It finds a number of 'clusters' or 'groups' of topics in the literature that are more similar to each other. Several input parameters, such as corpus of words, sample number of topics, number of iterations and number of words, are provided to the TM technique, using which it iterates over the given corpus of text to identify the hidden latent topics.

There are several techniques of TM, such as latent semantic analysis (LSA), latent Dirichlet allocation (LDA) and non-negative matrix factorisation (NMF) (Appendix A). While LSA captures hidden concepts or topics in a document corpus by leveraging context around words, the algorithm uses a term frequency–inverse document frequency (TF-IDF) matrix for analysing documents. Hence, rare words contribute more weight to the model. Therefore, the model helps to identify 'incoherent' topics in a corpus. The LDA technique assumes each document as a mix of many topics and each topic as a mix of many words. LDA starts work from documents to identify topics that would have generated those documents and the set of words that would have generated those topics, in a reverse iterative way. In addition, the NMF technique also uses term–document matrix to generate a set of topics. The NMF technique reduces the dimension of the input corpus and gives relative weightage to words that have less coherence. The NMF method is also good in extracting sparse and incoherent topics from the documents.

Each of these techniques was applied to the article repository under study, and the output generated was assessed to identify the technique that is more suitable for the study. After studying the outputs generated by each TM technique, the LDA technique was chosen as it was more consistent in the topics generated.

Detailed Steps

For applying the TM technique, the 'abstract' section of articles was used since the abstract provides a summary of the article, whereas using the complete article would have provided a lot of detailed text as an input corpus, resulting in repetitive content for processing. The additional step of reviewing abstracts adds significant value to bibliometric analysis by enhancing the precision, reliability and interpretability of the findings. While keyword search provides an initial filter, abstract reviews ensure that the final dataset is robust and accurately represents the research landscape.

Data cleaning was done using pre-processing techniques to remove noisy data, that is, which is unnecessary and does not provide useful inputs to the TM programme. To remove noisy data, first, the entire input corpus or text was converted into lower case to standardise them. Thereafter, special characters, digits and stop words (such as prepositions and articles) were removed. The next step was 'lemmatization', where each word was reduced to its root word. This step is useful as it helps to remove the plural word forms and inflectional endings of words and retains only the root or base form of the words.

Prior to pre-processing, the entire text was broken down into individual words, called 'tokens' by a method called 'count vectorization', used by the TM technique. Vector representation of tokens helps in identifying the most repeated words, relationship between the words, as well as uncovering the most similar group of words and topics.

To identify the optimal number of topics, along with the number of words, the number of topics and other parameters, the data were analysed by applying bigrams and trigrams. Based on the output of the model, it was observed that

bigrams provided the best results with an optimal number of topics and keywords. Accordingly, bigram was applied to the abstracts under analysis, along with the number of topics, keywords and other parameters to the topic analysis.

After pre-processing the text, a TM programme was created using the LDA technique using the Gensim library. This library provides prebuilt functions with algorithms to process the given text data, which generates a set of 'topics', keywords contributing to the topics and the percentage of how each keyword contributes to the given topic. Measures such as perplexity, coherence scores and topic visualisation were used to evaluate the generated topic models. Coherence score is a measure of the relative distance between words in a topic. The average distance between words is calculated as the overall coherence score of a topic. This score is calculated by building many models with different numbers of topics. The model with the highest coherence score has the optimal number of topics.

To find the optimal number of topics, the topic model algorithm was executed with different numbers of topics, such as 5, 7, 10, 15, 20 and 35, by varying the number of target models (num_topics) and the number of words per topic (num_words) parameters of the model. Coherence scores were computed each time. Coherence scores for each run were assessed. It was found that the coherence score was consistently high when the number of topics was seven with different parameter values.

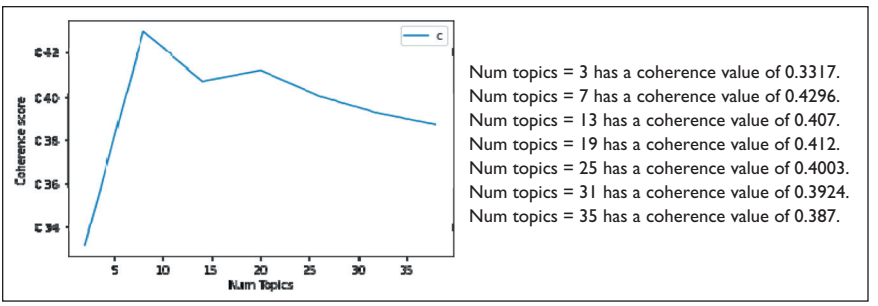

Figure 2. Coherence Value for Topics Generated with Number of Topics = 35 and Number of Words = 15 per Topic.

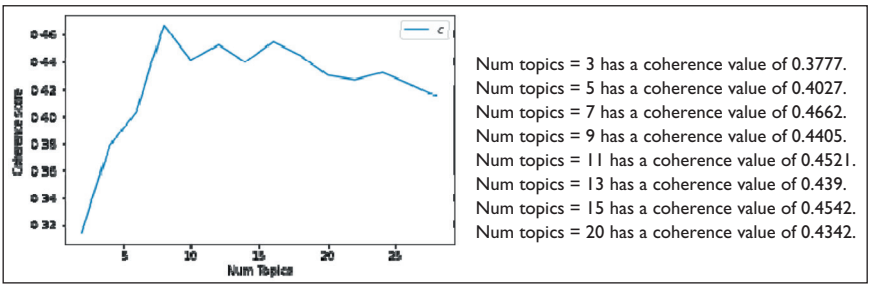

Figure 3. Coherence Value for Topics Generated with Number of Topics = 25 and Number of Words = 15 per Topic.

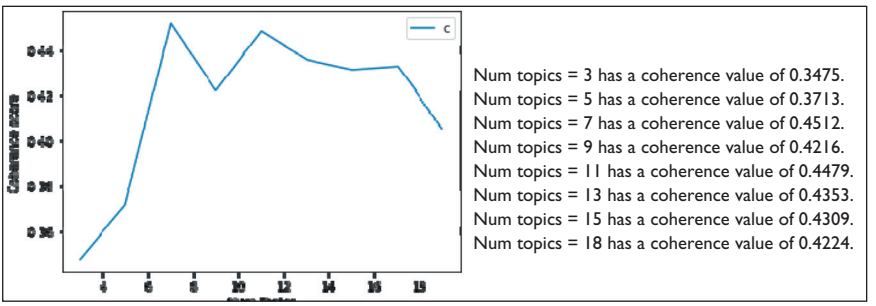

Figure 4. Coherence Value for Topics Generated with Number of Topics = 20 and Number of Words =15 per Topic.

Figures 2–4 present outputs from the LDA model for various hyperparameters.

The final output of topics and keywords that emerged from the tuned model was reviewed. The keywords and their contribution to each topic were analysed. The articles that correspond to these topics were reviewed, and each topic was labelled with an appropriate topic title.

Table 1 presents the list of topics and corresponding keywords that emerged as output from the final LDA model.

Results

The study identified seven dominant clusters out of the 1,321 documents identified through topic modelling. These clusters highlight topics such as algorithmic trading, blockchain, crowdfunding, sustainable finance and regulatory technologies. The findings suggest that these clusters are not isolated and unique but are overlapping indicating few studies fall at the intersection of these clusters. Figure 5 shows the distribution of articles in each cluster. In such cases, a combination of the top 10 keywords, the weightage of the keywords along with manual review of the corresponding articles was used to find and assign suitable

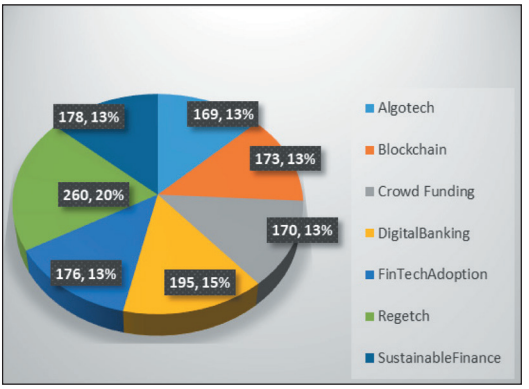

Figure 5. Emerging Distribution of the Articles by Key Topics.

Table 1. Output of the LDA Model with Topics and Word Scores.

Regetch	Blockchain	Crowd Funding	Algotech	FinTechAdoption	Digital Banking	SustainableFinance
'0.064*"bank" + 0.024*"regulatory" + 0.021*"lending" + 0.019*"regulation" + '	'0.056*"technology" + 0.037*"user" + 0.029*"blockchain" + 0.019*"give" + '	'0.013*"application" + 0.013*"base" + 0.012*"provide" + 0.012*"system" + '	'0.045*"risk" + 0.032*"datum" + 0.024*"investment" + 0.020*"investor" + '	'0.027*"service" + 0.022*"payment" + 0.021*"finding" + 0.020*"customer" + '	'0.151*"financial" + 0.041*"technology" + 0.040*"digital" + '	'0.031*"market" + 0.028*"finance" + 0.026*"platform" + 0.023*"firm" + '
'0.016*"credit" + 0.013*"loan" + 0.012*"peer" + 0.011*"legal" + '	'0.017*"industry" + 0.015*"property" + 0.015*"post" + 0.013*"full" + '	'0.011*"approach" + 0.011*"identify" + 0.011*"network" + 0.011*"propose" + '	'0.019*"base" + 0.018*"result" + 0.013*"information" + 0.009*"trading" + '	'0.015*"social" + 0.014*"adoption" + 0.014*"result" + 0.014*"factor" + '	'0.031*"innovation" + 0.022*"service" + 0.022*"sector" + 0.020*"banking" + '	'0.020*"economic" + 0.018*"effect" + 0.017*"level" + 0.016*"impact" + '
'0.010*"market" + 0.009*"regulator" + 0.009*"consumer" + 0.008*"law" + '	'0.013*"financial" + 0.013*"business" + 0.012*"abstract" + 0.012*"copy" + '	'0.010*"transaction" + 0.010*"future" + 0.010*"challenge" + 0.009*"method" + '	'0.009*"high" + 0.009*"method" + 0.009*"model" + 0.008*"performance" + '	'0.013*"mobile" + 0.013*"banking" + 0.012*"approach" + 0.012*"datum" + '	'0.017*"business" + 0.016*"change" + 0.014*"institution" + 0.014*"inclusion" '	'0.012*"large" + 0.012*"increase" + 0.012*"role" + 0.011*"examine" + '
'0.008*"argue" + 0.007*"borrower" + 0.007*"lender" + 0.007*"crisis" + '	'0.012*"copyright_applie" + 0.012*"copyright_holder" + 0.012*"email_article" '	'0.009*"framework" + 0.008*"design" + 0.008*"work" + 0.007*"address" + '	'0.008*"asset" + 0.008*"algorithm" + 0.008*"decision" + 0.008*"stock" + '	'0.011*"islamic" + 0.011*"trust" + 0.010*"adopt" + 0.010*"knowledge" + '	'+ 0.013*"market" + 0.012*"global" + 0.011*"product" + 0.010*"company" + '	'0.011*"policy" + 0.011*"efficiency" + 0.009*"reduce" + 0.008*"sustainable" '
'0.007*"commercial" + 0.007*"increase" + 0.007*"online" + 0.006*"challenge" '	'+ 0.012*"abridge" + 0.012*"may_print" + 0.012*"multiple_site" + '	'0.007*"problem" + 0.007*"relate" + 0.006*"present" + 0.006*"enable" + '	'0.007*"control" + 0.007*"alternative" + 0.007*"technique" + 0.007*"return" '	'0.010*"relationship" + 0.009*"consumer" + 0.009*"aim" + 0.009*"investigate" '	'0.009*"economy" + 0.009*"industry" + 0.009*"create" + 0.008*"country" + '	'+ 0.008*"financing" + 0.008*"emerge" + 0.008*"capital" + 0.008*"cost" + '
'+ 0.006*"concern" + 0.005*"offer" + 0.005*"ai" + 0.005*"competition" + '	'0.012*"original_publishe" + 0.012*"express_written" + 0.011*"practice" + '	'0.006*"project" + 0.006*"solution" + 0.006*"number" + 0.006*"success" + '	'+ 0.007*"management" + 0.007*"company" + 0.006*"propose" + 0.006*"data" + '	'+ 0.008*"design_methodology" + 0.008*"significant" + 0.008*"behavior" + '	'0.008*"ecosystem" + 0.007*"technological" + 0.007*"traditional" + '	'0.008*"dynamic" + 0.007*"economy" + 0.007*"play" + 0.007*"year" + '
'0.005*"big"'),	'0.010*"author_copyright" + 0.009*"review" + 0.009*"content_may" + '0.009*"area"'),	'0.006*"crowdfunde"'),	'0.006*"evidence"'),	'0.008*"perceive" + 0.007*"intention"'),	'0.007*"include" + 0.007*"environment" + 0.006*"model"'),	'0.006*"industry"')]

topics. The output of the topic model provides the keywords and a pointer to the corresponding article from which the topic was extracted.

Topic Cluster 1. Algotech

Articles in the first cluster pertain to the field of algorithmic trading. Algorithmic trading is a new concept which uses ML to make predictions based on historical data using advanced technologies such as deep learning models (long short-term memory networks). The Design Science Research model is used to create a high-frequency trading strategy minute by minute for a stock, proving the existence of economic benefit using the strategy against out-of-sample trading (Vo & Yost-Bremm, 2020). Algorithmic trading offers sophisticated decision-making tools, maximising profits by taking advantage of optimal position, price, trading time and volume (Fahlenbrach & Frattaroli, 2021). It offers the adoption and diffusion of technology in financial services at an accelerating pace (Tao et al., 2021).

Deep learning models capture nonlinear patterns of stock data which statistical or traditional models are unable to capture (Horobet et al., 2024). This means deep learning models are able to capture the complexity of the data. This trade can generate profits at a frequency that is impossible for a human trader to do manually. The platform runs on sophisticated mathematical models which negate the effect of human emotions on trading.

Topic Cluster 2. Blockchain

Blockchain can be visualised as a shared ledger of records which is digitally maintained, but to ensure its security timestamps/hashtags are used (Chen & Chen, 2020), any change in the records needs a proof of work, which means it can only be done with substantial effort (Agarwal & Chua, 2020). Cryptographic proof is the substitute for trust, and blockchain can be copied/duplicated and shared with relevant recipients (Choi & Lee, 2020). The transactions are irreversible, and the biggest advantage of blockchain is that it cannot be tampered with or altered (Park & Park, 2020). Blockchain is gaining popularity and is being used in areas like the maintenance of P2P transactions, trading, capital markets SCM, international payments, bank ledgers and most importantly the cryptocurrency such as Bitcoin.

Topic Cluster 3. Crowd Funding

The benefits of technology can be leveraged to create funding opportunities for small businesses/retailers wherein borrowers and lenders come together on a digital platform and mobilisation of funds can happen (Athique, 2019). Hence the

symbolic name 'crowdfunding'. Crowdfunding uses small amounts of funds from a large number of individuals to cater to the financial needs of a new business venture to meet medical and natural emergencies. Enormous opportunities have been created through the crowdsourcing platform (Lin & Pursiainen, 2021) for entrepreneurs due to the speed and ease of collecting money, but since the regulatory norms vary from country to country (Cheng & Qu, 2020, Lin & Pursiainen, 2021), not all nations permit using this platform for 'profit-making' businesses (Luo, 2016). For example, in India, crowdfunding is permitted for donations, for example, Ketto, but not for funding commercial businesses. Other platforms for business ventures in other parts of the world include KickStarter and Indiegogo (Lin & Pursiainen, 2021).

Topic Cluster 4. Digital Banking

E-commerce exclusively relies on financial institutions as trusted third parties to process electronic payments (Nakamoto, 2008). This has resulted in the increasing popularity of digital banking, which includes all banking activities done using a technology platform (Nuyens, 2019). Digital banking also encompasses the use of a mobile phone for receiving money or making payments through a mobile wallet (Mhlanga, 2020). So great is the ease of use and the speed of transactions 24 × 7 that digital banking is fast replacing traditional banking and has already replaced most consumer and capital banking processes (Ang & Kumar, 2014; Polasik & Piotrowski, 2016).

Topic Cluster 5. Fintech Adoption

Fintech adoption is the backbone of launching products in the fintech domain (Brener, 2019; Karjaluoto, 2017). It refers to the adoption of digital technology platforms for directing financial transactions such as money transfers, insurance, trading in shares or cryptocurrency and borrowing and lending money (Hoang et al., 2021). Fintech adoption has been rising progressively over the years, with 75% of consumers globally adopting some form of money transfer in 2019 itself (Shao, 2021, statista.com). Between 2021 and 2022, the US consumers fintech adoption rose from 58% to 88%, a gigantic 52% growth. As nations, China and India have reported gigantic growth in fintech adoption over the years.

Topic Cluster 6. RegTech

RegTech refers to regulatory technologies which are prevalent in the fintech ecosystem. These are important as they are needed to control, enhance and track regulatory compliances. As fintech adoption increases across the globe and more

and more consumers start transacting on these platforms, there is a need to have robust controls to prevent customer- and business-related frauds (Yuan & Xu, 2020), instil trust in the processes and have defined legal protocols for the aggrieved and punishing the guilty (Chen et al., 2017). RegTech is more in controlled organisations such as the financial sector, healthcare and gaming, which impact people directly (Schulte, 2015). Along with streamlining compliances, RegTech also saves time and helps in managing repetitive work (Brown & Piroska, 2021). Unfortunately, the fast-paced fintech adoption has given little time to the regulatory bodies to set up a well-defined regulatory framework; thus, more research is being done in this area to identify the gaps (Omarova, 2021).

Topic Cluster 7. Sustainable Finance

As sustainability got attention in the SDGs of the United Nations in the form of clean energy and sustainable cities, the corporate focus has also shifted to the triple bottom line and sustainable finance (SF). SF takes into consideration environmental, social and governance requirements to make investment decisions in the financial sector, which leads to an increase in long-term investments into areas such as projects and sustainable economic activities (Knight & Wojcik, 2020; www.wordlbank.com). The activities covered include investing in green technologies, in organisations that demonstrate social inclusion, good governance across areas such as manufacturing, healthcare, energy, technology, capital goods and transportation (De la Poza, 2022; Ding et al., 2018). SF would include all those practices, standards, regulations and norms which generate returns for the business taking care of the environment along with economic and social objectives (Harris, 2021). SF aims to create an inclusive society and emphasises the long-term impact of economic investments (Khan et al., 2021).

Conclusion

Fintechs' technological advantage over traditional financial institutions is their key driver of success and competitive advantage. Undoubtedly, fintech has had a value add for the customer as it connects people or services through platforms and has enhanced efficiency for the business.

Fintech activities as per BIS 2020 include equity crowdfunding (capital raising), digital banking, fintech balance sheet lending, loan crowdfunding (deposit and lending), robo-advice (asset management), e-money, digital payment services, insurtech business models and financial activities related to crypto-assets. Enabling technologies include application programming interface (API) cloud, biometric, distributed ledger technology (DLT), AI and ML. Policy enablers include digital ID, open banking, data protection, innovation facilitators and cyber security. Based on the literature review, the

verticals of fintech are (a) digital lending and capital raising, (b) payments excluding digital currencies (c) Wealthtech (including trading), (d) Insurtech, (e) blockchain technology and cryptocurrency, (f) Proptech and (g) RegTech and Suptech.

The fintech sector evolved after the sub-prime lending crisis emanating from the growing insecurity in the minds of people, as there was a dire necessity to have financial services which provided quick and reliable accessibility 24 × 7. For any technology to be usable, it should be easy, fast, scalable and understandable, which is applicable to fintech.

The findings of this study have significant implications for various stakeholders mentioned as follows.

For policymakers, the insights can guide the development of regulations that foster innovation while ensuring consumer protection and financial stability. Traditional banks and financial entities can leverage fintech advancements to enhance their service offerings and operational efficiency. Understanding the evolving landscape of fintech can help regulators create frameworks that balance innovation with risk management. The study provides valuable information on emerging trends and technologies that start-ups can capitalise on to gain a competitive edge over fintech start-ups.

Based on the findings, a conceptual framework can also be developed to illustrate the interplay between fintech activities, enabling technologies and policy enablers. The framework can serve as a foundation for future research and practical applications, highlighting the various ways through which fintech innovations impact various sectors and stakeholders. The framework can also identify and suggest standard regulatory requirements for fintechs to follow, thereby ensuring adherence to regulatory requirements and compliance.

The first limitation of the study is that the corpus used for text analysis consists of only academic papers. This gives a clear understanding of the research being pursued by the scholars in the field but gives less understanding of how the industry is changing with respect to contemporary practices in the area of fintech. Second, only key themes have been focussed upon in the study. A detailed analysis of the text could disclose peripheral topics which have not been analysed. Despite these limitations, this study is an important step towards understanding the research in the area of fintech and emerging trends.

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Appendix A

Sample Outputs of Topics and Keywords from the LDA Technique.

	LDA_topic_0	LDA_topic_1	LDA_topic_2	LDA_topic_3	LDA_topic_4	LDA_topic_5	LDA_topic_6	LDA_topic_7	LDA_topic_8	LDA_topic_9
0	lending	mobile	bank	financial	financial	trading	ai	datum	copyright	regulatory
1	platform	payment	banking	digital	Technology	network	intelligence	investment	user	risk
2	peer	service	customer	finance	Blockchain	ecosystem	financial	Base	email	regulation
3	loan	perceive	financial	inclusion	Innovation	rate	artificial	market	technology	legal
4	investor	user	technology	technology	industry	exchange	transformation	bitcoin	property	market
5	risk	security	finding	economy	business	trade	goal	investor	content	law
6	borrower	credit	approach	economic	service	actor	shadow	Information	article	financial
7	robo	intention	service	market	change	indicator	application	Stock	publish	regulator
8	lender	technology	value	money	market	cyber	challenge	algorithm	apply	sandbox
9	advisor	risk	result	policy	digital	attack	framework	propose	post	consumer
10	investment	adoption	islamic	impact	sector	strategy	architecture	machine	site	approach
11	online	acceptance	datum	effect	challenge	threat	decision	method	express	innovation
12	market	datum	implication	country	institution	detection	consumer	result	write	framework
13	rate	money	performance	level	finance	cross	design	financial	multiple	protection
14	high	consumer	social	service	practice	level	provide	Asset	original	firm
15	datum	base	company	credit	provide	low	reform	contract	abstract	European
16	increase	application	methodology	covid	technological	deposit	support	smart	print	regulate
17	negative	card	base	develop	application	technical	taxonomy	Cryptocurrencies	copy	argue
18	affect	financial	factor	global	traditional	trader	capability	return	permission	regime
19	low	internet	design	sector	insurance	output	professional	Price	author	state

Sample Outputs of Topics and Keywords from the NMF Technique.

	NMF_topic_0	NMF_topic_1	NMF_topic_2	NMF_topic_3	NMF_topic_4	NMF_topic_5	NMF_topic_6	NMF_topic_7	NMF_topic_8	NMF_topic_9
0	financial	bank	copyright	mobile	lending	technology	digital	regulatory	risk	blockchain
1	inclusion	banking	user	service	market	banking	finance	regulation	iot	technology
2	market	customer	email	money	platform	service	economy	sandbox	approach	finance
3	finance	credit	apply	payment	datum	innovation	economic	Innovation	assessment	application
4	institution	performance	multiple	adoption	investor	industry	business	market	framework	contract
5	sector	commercial	article	perceive	investment	financial	impact	regulator	management	base
6	country	efficiency	publish	inclusion	base	firm	transformation	approach	datum	smart
7	service	result	content	customer	peer	customer	level	Legal	perceive	transaction
8	non	impact	property	user	loan	business	effect	Law	sme	trust
9	global	market	post	consumer	result	sector	banking	industry	technology	islamic
10	level	sector	express	intention	credit	result	policy	Eu	base	approach
11	policy	service	site	usage	information	provide	government	Framework	spillover	network
12	information	innovation	write	trust	business	company	country	consumer	asset	bitcoin
13	goal	islamic	original	implication	value	market	company	State	cyber	chain
14	change	relationship	holder	datum	social	change	legal	challenge	portfolio	security
15	increase	payment	print	effect	borrower	base	monetary	adopt	systemic	challenge
16	economy	increase	copy	develop	approach	security	inclusion	service	standard	supply
17	innovation	finding	abstract	finding	online	information	space	united	platform	business
18	literacy	deposit	permission	value	company	datum	capital	policy	internet	cryptocurrencies
19	consumer	change	listserv	transaction	stock	value	develop	protection	type	provide

Sample Outputs of Topics and Keywords from the LSA Technique.

	LSA_topic_0	LSA_topic_1	LSA_topic_2	LSA_topic_3	LSA_topic_4	LSA_topic_5	LSA_topic_6	LSA_topic_7	LSA_topic_8	LSA_topic_9
0	financial	bank	bank	mobile	risk	digital	digital	Regulatory	risk	banking
1	technology	banking	financial	service	platform	technology	market	Innovation	regulatory	customer
2	bank	customer	banking	money	lending	blockchain	lending	Service	digital	service
3	service	risk	inclusion	payment	market	banking	platform	regulation	regulation	investment
4	digital	copyright	credit	adoption	investor	finance	finance	Market	iot	risk
5	market	user	efficiency	perceive	datum	economy	regulatory	sandbox	sandbox	robo
6	banking	lending	customer	customer	investment	business	economy	banking	banking	investor
7	risk	datum	stability	digital	base	industry	regulation	industry	payment	ai
8	innovation	payment	country	inclusion	approach	economic	copyright	regulator	mobile	advisor
9	datum	base	commercial	intention	peer	customer	inclusion	approach	framework	result
10	finance	result	market	usage	regulatory	government	economic	Legal	perceive	future
11	base	business	digital	trust	loan	transformation	effect	Change	legal	management
12	user	technology	central	implication	information	challenge	policy	Eu	regulator	industry
13	mobile	author	competition	datum	stock	application	business	Law	assessment	stock
14	copyright	platform	performance	consumer	propose	method	loan	consumer	adoption	intention
15	approach	industry	sector	social	credit	sector	peer	customer	approach	decision
16	business	email	crisis	effect	algorithm	security	consumer	payment	adopt	method
17	industry	approach	level	value	value	transaction	level	future	ai	copyright
18	result	loan	account	finding	method	change	legal	challenge	systemic	perceive
19	regulatory	performance	shadow	develop	borrower	process	email	investor	innovation	algorithm

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References

Agarwal, S., & Chua, Y. H. (2020). Fintech and household finance: A review of the empirical literature. *China Finance Review International*, *10*(4), 361–376.

Ang, J. B., & Kumar, S. (2014). Financial development and barriers to the cross-border diffusion of financial innovation. *Journal of Banking & Finance*, *39*, 43–56.

Anshari, M., Almunawar, M. N., & Masri, M. (2020). Financial technology and disruptive innovation in business: Concept and application. *International Journal of Asian Business and Information Management (IJABIM)*, *11*(4), 29–43.

Athique, A. (2019). A great leap of faith: The cashless agenda in digital India. *New Media & Society*, *21*(8), 1697–1713.

Bollaert, H., Lopez-de-Silanes, F., & Schwienbacher, A. (2021). Fintech and access to finance. *Journal of Corporate Finance*, *68*, 101941.

Brener, A. (2019). Payment service directive II and its implications. In T. Lynn, J. G. Mooney, P. Rosati, & M. Cummins (Eds.), *Disrupting finance* (pp. 103–119). Palgrave.

Brown, E., & Piroska, D. (2021). Governing fintech and fintech as governance: The regulatory sandbox, riskwashing, and disruptive social classification. *New Political Economy*, *27*(1), 1–14.

Buckley, R. P., Arner, D. W., Zetzsche, D. A., & Selga, E. (2019). The dark side of digital financial transformation: The new risks of fintech and the rise of techrisk. *UNSW Law Research Paper No.* 19–89.

Butt, S., & Khan, Z. A. (2019). Fintech in Pakistan: A qualitative study of bank's strategic planning for an investment in fintech company and its challenges. *Independent Journal of Management & Production*, *10*(6), 2092–2101.

Chen, R. R., & Chen, K. (2020). A 2020 perspective on 'Information asymmetry in initial coin offerings (ICOs): Investigating the effects of multiple channel signals'. *Electronic Commerce Research and Applications*, *40*(4), 100936.

Chen, Z., Li, Y., Wu, Y., & Luo, J. (2017). The transition from traditional banking to mobile internet finance: An organizational innovation perspective: A comparative study of Citibank and ICBC. *Financial Innovation*, *3*(1), 1–16.

Cheng, M., & Qu, Y. (2020). Does bank fintech reduce credit risk? Evidence from China. *Pacific-Basin Finance Journal*, *63,* 101398.

Choi, H., & Lee, K. (2020). Micro-operating mechanism approach for regulatory sandbox policy focused on fintech. *Sustainability*, *12*(19), 1–11.

Coetzee, J. (2018). Strategic implications of fintech on South African retail banks. *South African Journal of Economic and Management Sciences*, *21*(1), 1–11.

Cogitotech. (2021, September 27). *Topic modeling: Algorithms, techniques, and application*. https://www.datasciencecentral.com/topic-modeling-algorithms-techniques-and-application/

Dandala, B., Joopudi, V., & Devarakonda, M. (2019). Adverse drug events detection in clinical notes by jointly modeling entities and relations using neural networks. *Drug Safety*, *42*(1), 135–146.

Das, S. R. (2019). The future of fintech. *Financial Management*, *48*(4), 981–1007.

Ding, D., Chong, G., Chuen, D. L. K., & Cheng, T. L. (2018). *From ant financial to Alibaba's rural Taobao strategy: How fintech is transforming social inclusion?*

Drasch, B. J., Schweizer, A., & Urbach, N. (2018). Integrating the 'troublemakers': A taxonomy for cooperation between banks and fintechs. *Journal of Economics and Business*, *100*, 26–42.

Fahlenbrach, R., & Frattaroli, M. (2021). ICO investors. *Financial Markets and Portfolio Management*, *35*, 1–59.

Financial Stability Board. (2017). *Financial stability implications from fintech*. https://www.fsb.org/2017/06/financial-stability-implications-from-fintech/

Harris, J. L. (2021). Bridging the gap between 'fin' and 'tech': The role of accelerator networks in emerging fintech entrepreneurial ecosystems? *Geoforum*, *122*, 174–182.

Hasan, R., Ashfaq, M., & Shao, L. (2021). Evaluating drivers of fintech adoption in the Netherlands? *Global Business Review*, *25*(6), 1576–1589.

Hendrikse, R., Van Meeteren, M., & Bassens, D. (2020). Strategic coupling between finance, technology and the state: Cultivating a fintech ecosystem for incumbent finance. *Environment and Planning A: Economy and Space*, *52*(8), 1516–1538.

Hoang, Y. H., Nguyen, D. T. T., Tran, L. H. T., Nguyen, N. T. H., & Vu, N. B. (2021). Customers' adoption of financial services offered by banks and fintechs partnerships: Evidence of a transitional economy. *Data Science in Finance and Economics*, *1*(1), 77–95.

Holmes, C., & King, R. (2019). The evolution of business-to-business fintech: What the future holds. *Journal of Payments Strategy & Systems*, *13*(3), 217–225.

Hommel, K., & Bican, P. M. (2020). Digital entrepreneurship in finance: Fintechs and funding decision criteria. *Sustainability*, *12*(19), 8035.

Horobet, A., Boubaker, S., Belascu, L., Negreanu, C. C., & Dinca, Z. (2024). Technology-driven advancements: Mapping the landscape of algorithmic trading literature. *Technological Forecasting and Social Change*, *209*, 123746.

Jagtiani, J., & Lemieux, C. (2018). Do fintech lenders penetrate areas that are underserved by traditional banks? *Journal of Economics and Business*, *100*, 43–54.

Khan, A., Ahmad, A., & Shireen, S. (2021). Ownership and performance of microfinance institutions: Empirical evidences from India. *Cogent Economics & Finance*, *9*(1). https://doi.org/10.1080/23322039.2021.1930653

Knight, E., & Wojcik, D. (2020). Fintech, economy and space: Introduction to the special issue. *Environment and Planning A*, *52*(8), 1490–1497.

Lee, J. M., & Kim, H. J. (2020). Determinants of adoption and continuance intentions toward internet-only banks. *International Journal of Bank Marketing*, *1*, 40–52.

Lin, T.-C., & Pursiainen, V. (2021). The round number heuristic and entrepreneur crowdfunding performance. *Journal of Corporate Finance*, *68*(2), 101894.

Mhlanga, D. (2020). Industry 4.0 in finance: The impact of artificial intelligence (AI) on digital financial inclusion. *International Journal of Financial Studies*, *8*(3), 1–14.

Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. www.bitcoin.org

Nuyens, H. (2019). How disruptive are fintech and digital for banks and regulators? *Journal of Risk Management in Financial Institutions*, *12*(3), 217–222.

Omarova, S. T. (2021). Fintech and the limits of financial regulation: A systemic perspective. In *Routledge handbook of financial technology and law* (p. 18). Routledge.

Park, S., & Park, H. W. (2020). Diffusion of cryptocurrencies: Web traffic and social network attributes as indicators of cryptocurrency performance. *Quality & Quantity: International Journal of Methodology*, *54*(1), 297–314.

Pennacchiotti, M., & Gurumurthy, S. (2011). *Investigating topic models for social media user recommendation* [Paper presentation]. The 20th international conference companion on world wide web, Hyderabad, India, 28 March–1 April 2011.

Polasik, M., & Piotrowski, D. (2016). Payment innovations in Poland: A new approach of the banking sector to introducing payment solutions. Ekonomia i Prawo*, Uniwersytet Mikolaja Kopernika*, *15*(1), 103–131.

Rafay, A. (Ed.). (2019). *Fintech as a disruptive technology for financial institutions*. IGI Global.

Sabeeh, V., Zohdy, M., & Bashaireh, R. A. (2021). Fake news detection through topic modeling and optimized deep learning with multi-domain knowledge sources. In *Advances in data science and information engineering* (pp. 895–907). Springer.

Schulte, P. (2015). *The next revolution in our credit-driven economy: The advent of financial technology.* Wiley.

Sibanda, W., Ndiweni, E., Boulkeroua, M., Echchabi, A., & Ndlovu, T. (2020). Digital technology disruption on bank business models. *International Journal of Business Performance Management*, *21*(1–2), 184–213.

Stulz, R. M. (2022). Fintech, bigtech, and the future of banks. *Journal of Applied Corporate Finance*, *34*(1), 106–117.

Takeda, A., & Ito, Y. (2021). A review of fintech research. *International Journal of Technology Management*, *86*(1), 67–88.

Tao, R., Su, C. W., Xiao, Y., Dai, K., & Khalid, F. (2021). Robo advisors, algorithmic trading and investment management: Wonders of fourth industrial revolution in financial markets. *Technological Forecasting and Social Change*, *163*, 120421.

Tatuev, A., Kutsuri, G., Keferov, M., Milenkov, A., & Ovcharova, N. (2020). Technological challenges to the bases of banking in the context of innovation management. *Amazonia Investiga*, *9*(25), 256–265.

Tepper, N., Hashavit, A., Barnea, M., Ronen, I., & Leiba, L. (2018). *Collabot: Personalized group chat summarization* [Paper presentation]. The 11th ACM international conference on web search and data mining (WSDM '18) (pp. 771–774). Association for Computing Machinery. https://doi.org/10.1145/3159652.3160588

Thakor, A. V. (2020). Fintech and banking: What do we know? *Journal of Financial Intermediation*, *41*, 100833.

Vives, X. (2019). Digital disruption in banking. *Annual Review of Financial Economics*, *11*, 243–272.

Vo, A., & Yost-Bremm, C. (2020). A high-frequency algorithmic trading strategy for *cryptocurrency. Journal of Computer Information Systems*, 60(6), 555–568.

Vucinic, M. (2020). Fintech and financial stability potential influence of fintech on financial stability, risks and benefits. *Journal of Central Banking Theory and Practice*, *9*(2), 43–66.

Wang, D., Zhu, S., Li, T., & Gong, Y. (2009). *Multi-document summarization using sentence-based topic models* [Paper presentation]. The ACL-IJCNLP 2009 conference short papers (pp. 297–300). Association for Computational Linguistics.

Yuan, K., & Xu, D. (2020). Legal governance on fintech risks: Effects and lessons from China. *Asian Journal of Law and Society*, *7*(2), 1–30.

Conceptual Paper

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Abstract

Sustainable development has been cited in a plethora of research time and again. Nevertheless, the emergence of interest from industries and research has significantly surged in recent years as evidenced by innumerable research insights provided every year. This era has been a testament to disruptions and uncertainties like never before. It has challenged mankind to inculcate sustainable practices in our lifestyles and make it a part of our routine. Past events, such as the pandemic, war, economic fluctuations, political instability, mindless infrastructural development and climate change, are a wakeup call for embracing our true self in unison with nature. This calls for tireless efforts and actions to revive the loss and bounce back. The fact of imbibing sustainability has to be adapted across all sectors. Today, where we are selling everything right from basics to luxury products and services, it is all the more important to bear in mind that not only manufacturers but also customers need to have sustainability parameters in what they are producing, and what we are consuming. Therefore, this study is an attempt to dive into the depths of sustainability with a focused mindset to keep doing the right things despite the hardships. Interviews of experts from across industry and society were taken in addition to an in-depth analysis of sustainability models. The research will be helpful to corporate professionals, researchers, academicians and society at large.

Keywords

Sustainable development, sustainable innovation, quality of life, sustainable culture, human well-being, models of sustainability

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Introduction

Sustainable development, a concept gaining momentum in recent decades, is fundamentally concerned with achieving economic, social and environmental progress without compromising the ability of future generations to meet their needs. At its core, sustainable development can be understood in two key components: The meaning of development—encompassing economic growth, the fulfilment of basic needs and the protection of rights—and the conditions required for sustainability. This dual focus has led to an increasing global emphasis on sustainable solutions, reflecting growing concerns from diverse sectors of society and the economy, including influential entities such as the United Nations (2016) and the European Union (2014).

In recent years, there has been a marked shift in the expectations placed on organisations, pushing them towards creating innovations that harmonise economic, environmental and social objectives. This convergence of goals is commonly referred to as sustainable innovation. Sustainable innovation refers to the development and application of new ideas, processes or products that improve sustainability performance—measuring success through ecological, economic and social criteria. As defined by Kneipp et al. (2019), sustainable innovation is the creation of something new that enhances performance across these three interconnected dimensions. It is a process that demands time, as the macro effects—particularly in terms of economic growth and employment—are often slow to materialise, as noted by Freeman (1982).

However, for sustainable development and innovation to truly be meaningful, there must be a focus not only on ecological and economic progress but also on the quality of well-being. The quality of well-being is the corner-stone that ties these concepts together, as it directly influences human flourishing and societal health. Sustainable development cannot be fully realised without ensuring that the well-being of individuals and communities is prioritised, maintained and continuously improved. The definition of the quality of life highlights the significance of human-centric considerations when striving for sustainability. It is not enough to just improve the environment or achieve economic growth; these developments must contribute to a tangible improvement in people's lives, health and holistic happiness. According to research, a person's level of well-being is greatly impacted by a number of factors, including income, social support, healthcare access and environmental quality. According to a study by Helliwell et al. (2020), published in the World Happiness Report, social trust, financial security and physical and mental health are all positively connected with well-being. Furthermore, the study indicates that the environment is important, with access to green spaces and cleaner air both promoting higher levels of well-being. In order to improve the overall quality of life, the study emphasises the necessity of policies that not only promote economic growth but also guarantee social equality and environmental sustainability. Therefore, initiatives to improve well-being by addressing these larger societal drivers must be combined with the quest for sustainable innovation.

Therefore, a key principle in the pursuit of sustainable development is sustainable well-being, which is about ensuring that the quality of life is not only

preserved but also enhanced for current and future generations. In this context, sustainable innovation is not just about technical advancements or resource efficiency—it also entails developing systems and solutions that improve social and emotional well-being, equity and the accessibility of resources for all. This shift in focus underscores the idea that the essence of sustainable innovation lies in its capacity to foster meaningful and equitable improvements in the quality of life for individuals, communities and societies at large.

This article critically examines the role of sustainable development and sustainable innovation in improving the overall quality of life. The article explores various sustainable development models and their implications, seeking to establish a connection between human well-being and ecosystem health. Furthermore, it highlights the importance of integrating sustainability into business practices, focusing on the application of diverse models for sustainable business. These models—diversity, modularity, openness, slack resources and matching cycles—are explored for their potential in promoting sustainability in the production and selling of goods and services. As the earth's resources become increasingly scarce, businesses face the challenge of reducing waste and reliance on virgin materials. The current business model, which often encourages the production of goods at low cost with minimal waste, has contributed to the depletion of resources and environmental degradation. This article, therefore, delves into these challenges, offering insights into how businesses can transition towards more sustainable practices that benefit both the environment and society as a whole, while ensuring that the quality of well-being remains at the forefront of these innovations.

Models of Sustainability

The models of sustainable development take into account eight models that can be adopted as conceptual frameworks to understand how sustainability can be achieved or targeted to make the world a better place to live as shown in Figure 1.

The first is the three-pillar model (United Nations Summit, 2005) (three interlocking circles models) (Thatcher, 2015). This model takes into consideration environmental, economic and social resources as its dimensions. Sustainable development is attained once all three pillars move in unanimity with each other. This model has been associated with its numerous critiques, which include diversion from the primary connection between economy, environment and society, which further assumes that a compromise can be made between any one of the three pillars, and that resources built can alternate for natural resources and systems, as also that it is impracticable to exclude human development from services to humans in the arrangement (Figure 2).

The second model is the prism model (Figure 3), which specifies four dimensions: economic extent (man-made capital), environmental dimension, that is, natural resources, social dimension (human capital), which acts as a base for the fourth one-institutional dimension, that is, social capital (Herath & Rathnayake, 2019).

Figure 4 shows the third model is the egg or three nested dependencies model. Environment is the precondition for the growth of human well-being. This

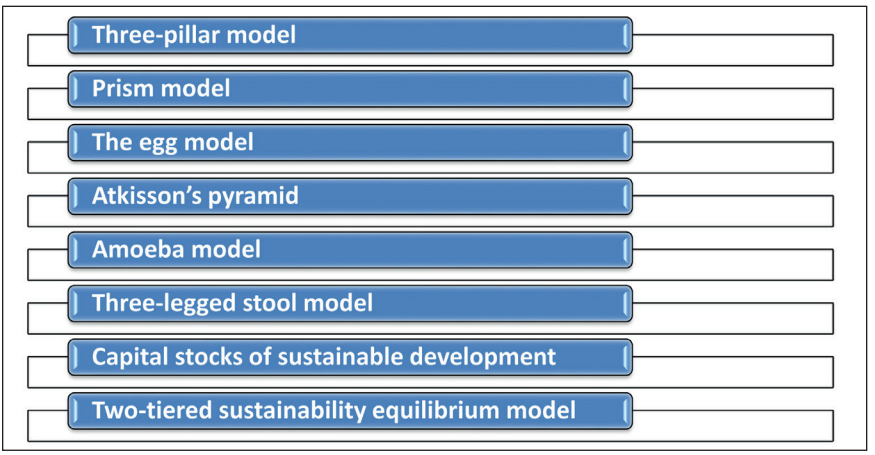

Figure 1. The Models of Sustainable Development.

Source: The author.

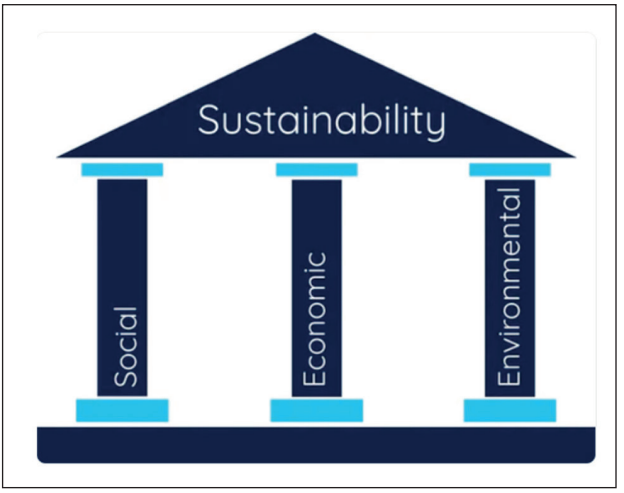

Figure 2. The Three-pillar Model (North Mist).

Source: NorthMist.

sustainability model keeps the environment at the centre and elucidates the correlation between people and the ecosystem in similarity to egg and yolk, that is, one circle inside another. This indicates that people are within the ecosystem and that there is a mutual dependency on one another.

The fourth model is Atkinson's pyramid, which emphasises five steps: (a) indicators, measuring the trend; (b) systems, making the connection; (c) innovations, ideas that make a difference; (d) strategies, from idea to reality; and (e) agreement,

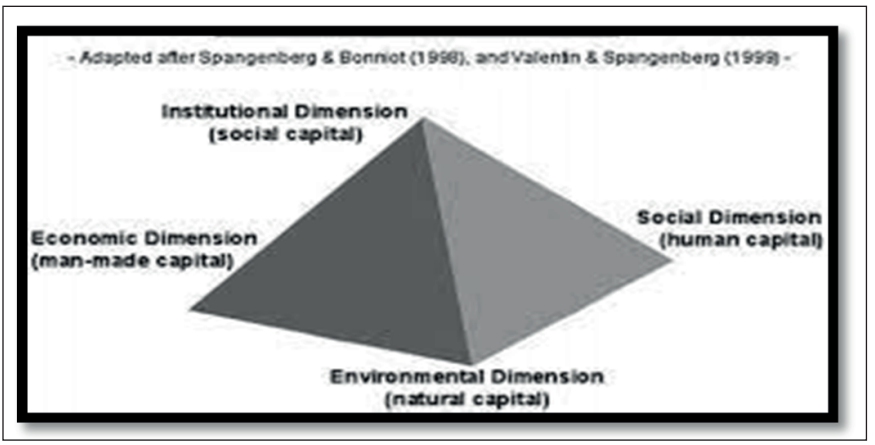

Figure 3. The Prism Model.

Source: Thakshila Ruvini Herath and Prabodha Subhashini Rathnayake (2019).

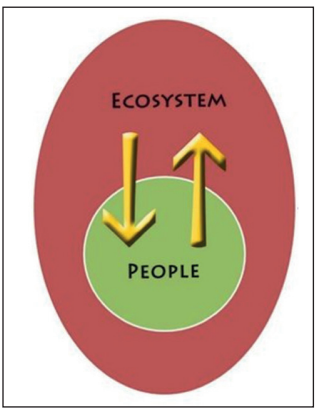

Figure 4. The Egg Model.

Source: The authors' representation based on Robert Prescott Allen.

from workshop to real world. This further assisted communities to move up the sustainability learning curve for action (Figure 5).

The fifth model is the amoeba model. This model is a robust tool for pacing up the innovation process in an effective manner towards achieving sustainable development as shown in Figure 6.

The sixth model is the three-legged stool model. The model stands on the pillars of environment, economy and society and is represented by the three legs of a stool. For this model to work, there has to be unison between the legs without which the model loses its significance (Figure 7).

The seventh model is capital stocks of sustainable development (Figure 8). A rarely used model highlights the fact that the capital stock of environment has

Figure 5. Atkisson's Pyramid.

Source: Atkisson Inc.

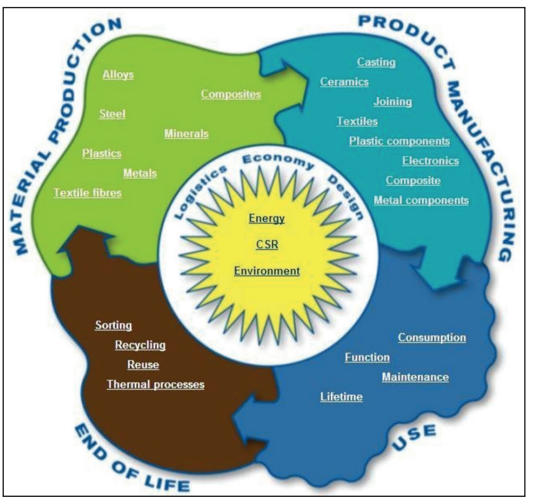

Figure 6. The Amoeba Model.

Source: Atkisson, Believing Cassandra (Hamedani, 2010).

to be kept intact to accomplish sustainability. However, the terms 'interest' and 'capital' have not been explained in the model.

Finally, the eighth model is the two-tiered sustainability equilibrium model of sustainable development. This is a holistic model of sustainable development where the first step is about the interdependence of the social, environmental and economic aspects at a single point in time (Figure 9). The second step involves the factor of time dimension, and the third step, therefore, involves the certainty that sustainability

Figure 7. The Three-legged Stool Model.
Source: Nexus Point Blog.

$$CSD = \sum (CEn, CEc, CS)$$

Where; CSD = Capital stock of sustainable development
CEnv = Capital stock of the environment
CEc = Capital stock of the economy
Cs = Capital stock of society

Figure 8. Capital Stocks of Sustainable Development.
Source: Thakshila Ruvini Herath and Prabodha Subhashini Rathnayake (2019).

is a forever continuous process, thus making time a more crucial aspect of sustainable development.

Besides, sustainable development has been intricately linked with the quality of life. From economic activities, environmental systems and the social set-up

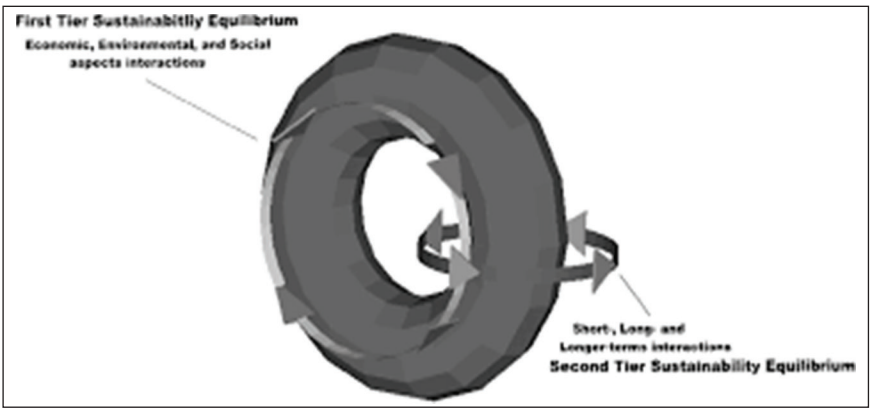

Figure 9. The Two-tiered Sustainability Equilibrium Model.
Source: Lozano (2008).

together aim at providing a healthy and significant life for everyone. As per the study, it is highlighted that an individual's holistic quality of life is cumulated to a community level, which further promotes and enhances its values and goals, thus approaching sustainable development and well-being.

The quality of life cannot be reached unless society is secure and the basic human needs are met. The utilisation of environmental resources should not go beyond the pace of replenishment. The survival of a living society greatly depends on natural resources. Thus, understanding the consequences of human actions towards the environment is highly appreciated. The complex relationship that has been demonstrated by the environmental systems on how they work to support all life, societies and economies shows the success of natural relationships.

Extant research has taken the environment, economy and society as independent constructs, without human intervention. Also, the time dimension has not been well studied and researched barring a few. The article, thus, highlights innovation as the core of sustainable development. The study shows the existence of models discussed above that support the idea.

Literature Review

Sustainable development requires radical and systemic innovations. Such innovations can be more effectively created and studied when building on the concept of business models. This concept provides firms with a holistic framework to envision and implement sustainable innovations while keeping time dimension and sustainable culture in the loop which in turn also contributes in the betterment of quality of life.

Sustainable Development

Sustainable development has been defined as 'meeting the needs of the present without compromising the ability of the future generations to meet their own needs'. Crises, such as climate change, poverty, food and energy, are matters of concern and are highly interconnected. The concept of green economy needs an economic arrangement that can prevent these crises while also shielding and nourishing the earth's ecosystems (Elliott, 2013). Sustainability has, without a doubt, been given primary focus, but what needs to be understood here is that there is equally a dire need of development wherein it is warranted that all human entities shall obtain resources necessary for their survival and development (Mitlin, 1992).

Sustainable Innovation

It has been progressively expected to develop sustainable innovation that converges economic, environmental and social goals. However, the road to achieving this is not straight and an arrangement of existing findings is lacking (Cillo et al., 2019). Peter Drucker rightly has stated that it is not how social responsibility can be profitable for businesses but how profitable businesses can make social responsibility. There are major discoveries happening in every industry; for example, supply chain is getting greener, huge investments are being made in alternative sources of energy such as wind and solar, organic food, organic apparels and designing of sustainable fisheries and farming. From CEO of Walmart around 2009 intending to completely eliminate waste from its operations to the president of Toyota, Katsuaki Watanbe wanting to design a car that purifies air that we breathe, designing has played an instrumental role in sustainable innovation (Zandee & Cooperrider, 2008).

Human Well-being

Many verifiable studies fail to contemplate human well-being and environmental quality together, but it is a significant aspect. To stop snowballing compression on ecological resources, improvement in human well-being is required, and this is at the centre of sustainable development goals agenda (Kassouri & Altıntaş, 2020). In order to stimulate well-being and socio-economic transformations in areas of education, inequality, growth and influence dynamics in lesser income countries should be placed in order and education can be reoriented to achieve the sustainability goals (UNESCO, 2017). According to a research study, which expanded the multiple connections between human well-being and environmental degradation, it was found that globalisation, life expectancy and human capital development, which were the adopted human well-being indicators, have enriched in the short and long term.

Quality of Life

Due to the increased saturation of population growth in urban areas, it is required to create an adaptability to at least a minimum quality of life. Thus, the governance of urban centres requires innovations, creativity and planning to meet these needs and challenges of the social life (Guimarães et al., 2020). There exists extensive agreement that the quality of life is multidimensional, which could be categorised into physical well-being, material well-being, social well-being, emotional well-being, development and activity (Felce & Perry, 1995).

The quality of life cannot be achieved unless society is secure, and the basic human needs are met. The utilisation of environmental resources should not go beyond the pace of replenishment. The survival of living society greatly depends on natural resources. Thus, understanding the consequences of human actions towards the environment is highly appreciated. The complex relationship that has been demonstrated by the environmental systems on how they work to support all life, societies and economies shows the success of natural relationships.

Objectives of the Study

1. To understand the relationship between sustainable development and sustainable innovation;
2. To understand how sustainable development and sustainable innovation contribute to enhanced quality of life;
3. To identify the roadmap to ecosystem well-being;
4. To identify the sustainability models that can promote environmental benefits through the marketing of products and services.

Research Methodology

The article is based on exploratory research, which aims at investigating and presenting a systematic framework for linking sustainable innovation to quality of life through sustainable development. It aims at achieving a more appropriate and more doable mainstream view of sustainability. The article is primarily qualitative in nature. The methodology adopted has been mixed, comprising primary data in the form of interviews and secondary data from research papers and articles. Interviews were conducted with experts from the field of education and genetic counselling and varied journals and articles.

Data Analysis

Interviews with experts were based on the questions of their approach towards sustainable development. How important they feel is the inclusion of sustainable innovation and human well-being in order to better quality of life. Also, what are

the different characteristics that they have come across that will accelerate the journey of sustainable development? According to one of the interviewees, it is of significance to highlight the importance of sustainable culture, which means that individuals should not be told what they are required to do, but it should come naturally by means of the culture in which the individual has been raised. He also mentioned how it is necessary to understand what are we putting in our air and body, it all begins with self and if each one of us care enough it will eventually sum up to a sustainable ecosystem. Based on Urban Sustainability Research (2021), communities that embrace sustainable development concepts, such as energy-efficient buildings, green public transit systems and renewable energy utilisation, have higher citizen satisfaction rates. These variables are critical for promoting pleasant feelings and improving the quality of life.

According to the United Nations Development Programme (UNDP) (2020), community-led sustainable initiatives are highly associated with increased social cohesion, mental health and life satisfaction. People who participate in these activities report greater social bonds, which improves the overall quality of life. In addition to addressing environmental concerns, communities that take the lead in creating and executing sustainable solutions also boost local social capital, promote empowerment and enhance both individual and group well-being. They discovered that sustainable practices, such community farming, ecotourism and renewable energy projects, improve mental health by lowering stress and anxiety while also strengthening resilience and community cohesion. The global environmental conservation community acknowledges that the involvement of local communities is crucial for the success of conservation efforts; however, there is still significant work to be done in integrating conservation with human well-being (Wali et al., 2017).

Scientists and genetic counsellors bring to perspective a new notion of sustainable inheritance, which precedes sustainable development, values which are passed on as a legacy to the next generation. If they are sustainable in nature, it can pace up the growth of sustainable development.

Findings

It has been demonstrated that incorporating sustainable solutions—which include energy efficiency, community involvement and urban planning—significantly improves quality of life for both individuals and communities. It is clear from examining the complex relationship between sustainability and well-being that sustainable practices have a direct positive impact on social interactions, emotional stability and physical health. This emphasises that sustainability is not just an environmental issue; it is inextricably linked to human welfare and is essential to creating a more just and inclusive framework for improving living conditions in both urban and rural areas.

There are real advantages to integrating ecological ideas into daily living. Research has demonstrated that sustainable solutions, such as the use of green energy technology and the construction of environmentally friendly infrastructure,

help lower the health risks related to pollution and resource depletion. For instance, a healthier living environment, lower energy costs and better air quality have all been associated with the installation of renewable energy systems and energy-efficient homes (Ward, 2015). Additionally, by lowering urban heat islands, improving air quality and encouraging community involvement, eco-friendly transit and urban green spaces benefit the environment and society (Purohit, 2025). To boost emotional and psychological well-being, these developments encourage more social engagement, better physical activity and a sense of togetherness.

The contribution of urban green areas to improving community health outcomes has also been recognised by research. The World Health Organization (2018) claims that by offering easily accessible places for leisure and recreation, green spaces in cities have been demonstrated to lower stress levels, increase physical activity and promote mental health. According to Hartig et al. (2014), communities that embrace eco-friendly methods also report improved general health outcomes, such as decreased rates of respiratory ailments, mental health disorders and cardiovascular diseases. Furthermore, sustainable practices, such as using renewable energy sources and energy-efficient equipment in homes, improve living circumstances by lowering exposure to pollutants and poisons, which eventually raises the quality of life.

Furthermore, sustainable urban planning is becoming more widely acknowledged as a vital instrument for improving the urban quality of life. It has been demonstrated that implementing policies that support sustainable development, such as waste reduction initiatives, green building regulations and sustainable transportation networks, enhance social cohesion, lower inequality and cultivates a sense of pride and ownership in local communities (United Nations, 2016). Not only do these rules help to create a cleaner environment, but they also help to democratise access to necessary resources, protect mental health and foster social interactions.

Research on urban sustainability and secondary data from reputable sources, such as the World Health Organization and the United Nations, support the need to connect sustainable innovation to quality of life. According to the World Happiness Report **(**Helliwell et al., 2020), nations that embrace sustainability—through actions such as the adoption of renewable energy and environmental protection laws—report higher levels of happiness and life satisfaction. This suggests a strong relationship between sustainable practices and well-being outcomes.

Furthermore, research indicates that adopting sustainable living habits significantly improves the mental and physical health of both individuals and communities. According to a 2017 study by *Sustainable Cities and Society*, having access to green spaces in cities lowers stress and encourages physical exercise, all of which are directly beneficial to public health (Sai Charan & Venkataraman, 2017). With the economy refocusing on a low-carbon future, what was previously ignored as a climate mitigation option may become the basis of a large, multipronged market under a carbon capture, storage and utilisation framework. Enhanced Oil Recovery is one way that existing infrastructure can best leverage carbon prices to develop a climate mitigation technology for a shifting energy landscape. Similarly,

energy-efficient housing solutions—such as installing solar panels and energy-saving appliances—help lower indoor air pollution and improve general comfort, creating healthier living environments, while also contributing to the reduction of carbon emissions. Together, both approaches play crucial roles in the transition to a sustainable and healthier energy future (Moskal & López, 2019).

To sum up, the results indicate that improving human well-being requires sustainable solutions. Sustainable innovations boost physical, mental and social health by promoting a harmonic balance between environmental stewardship, economic viability and social inclusivity. The relationship between sustainability and quality of life is becoming more evident as cities and communities embrace sustainable practices, providing important insights into how we may create societies that are healthier and more resilient.

Conclusion

Extensive research has brought to light the significance of sustainability, sustainable development and sustainable innovation. Nevertheless, to create a linkage between sustainable development and innovation without separating out the core of every ecosystem, that is, the human element, a dive into creating a safe and quality space for human beings is vital, which this study has attempted. Quality of life is a concept that emerges when innovation and human well-being are effectively addressed. The study effectively addressed how to enhance quality of life, revealing the role of sustainable culture and inheritance. Not only is culture the social behaviour portrayed by a group of people belonging to a particular society, but it is also a set of beliefs and institutions that are passed on from generation to generation. According to Schein (2012), culture brings stability and deals with the aspect of sharing on a consensus basis. When lessons of sustainability are inculcated within the minds of individuals as a part of culture, innovation and development become natural progression to it. Sustainable culture strives to work on sustainability practices at the individual level. When a certain habit becomes a part of an individual, no external motivation is required for the individual to perform the action. Hence, introducing sustainable innovation and human well-being into our cultures can give massive results, thus resulting in overall growth. Our ancestors demonstrated foresight in recognizing the importance of safeguarding nature, which is reflected in certain traditions and rituals that promote the protection of natural resources. The need of the current and future generations is vastly diverse than that of the past generations. Therefore, values unique to us and sustainable in nature should be formed for the upcoming generation. This sustainable inheritance will lead to sustainable innovation and will thus achieve sustainable development. The UNESCO Convention for the Safeguarding of Intangible Cultural Heritage (2003) created the first international agreement aimed at preserving intangible cultural heritage, highlighting its significance as an essential element of sustainable cultural development (Yan & Li, 2023). This research highlights the significant role that sustainable innovations play in enhancing holistic well-being and improving the overall quality of life. The findings underscore the interconnectedness between sustainability, innovation and the

multidimensional aspects of well-being—physical, mental, emotional and social. Through the systematic exploration of sustainable solutions for holistic well-being, it is evident that fostering sustainable development is not only a matter of environmental preservation but also an essential driver of human health and happiness.

Declaration of Conflicting Interests

The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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References

Cillo, V., Petruzzelli, A. M., Ardito, L., & Giudice, M. D. (2019). Understanding sustainable innovation: A systematic literature review. *Corporate Social Responsibility and Environmental Management*, *26*(5), 1012–1025.

Elliott, J. A. (2013). *An introduction to sustainable development.* Routledge.

Felce, D., & Perry, J. (1995). Quality of life: Its definition and measurement. *Research in Developmental Disabilities, 16*(1), 51–74.

Freeman, C. (1982). Competitive advantage of nations and multilateral trade system: How can Lebanon benefit from trade liberalization without enhancing its strategic industries? *The economics of industrial innovation* (2nd ed.). Francis Pinter.

Guimarães, J. F., Severo, E. A., Júnior, L. A., Batista Da Costa, W. P., & Salmoria, F. T. (2020). Governance and quality of life in smart cities: Towards sustainable development goals. *Journal of Cleaner Production*, *253*, 119926.

Hamedani, A. Z. (2010). *The amoeba model sustainability*. ResearchGate.

Hartig, T., Mitchell, R., Vries, S., & Frumkin, H. (2014). Nature and health. *Annual Review of Public Health*, *35*, 207–228.

Helliwell, J. F., Huang, H., Wang, S., & Norton, M. (2020). *World happiness report 2020.* Sustainable Development Solutions Network.

Herath, H. R., & Rathnayake, R. S. (2019). A critical approach towards sustainable development. *International Journal of Agriculture Innovations and Research, 7*(4), 446–454.

Kassouri, Y., & Altıntaş, H. (2020). Human well-being versus ecological footprint in MENA countries: A trade-off? *Journal of Environmental Management, 263*, 110405.

Kneipp, J. M., Gomes, C. M., Bichueti, R. S., Frizzo, K., Perlin, A. P., & Gestão, R. (2019). Sustainable innovation practices and their relationship with the performance of industrial companies. *Emerald Insight, 26*(2), 94–111.

Lozano, R. (2008). Envisioning sustainability three-dimensionally. *Journal of Cleaner Production*, *16*(17), 1838–1846.

Mitlin, D. (1992). Sustainable development: A guide to literature. *Environment and Urbanization*, *4*(1), 111–124.

Moskal, E., & López, V. N. (2019). *Potential of CO_2-EOR for near-term decarbonization*. Frontier Climate.

Purohit, S. (2025). The role of urban green spaces in mitigating urban heat island effect amidst climate change. *Research Journal of Chemistry and Environment, 29*(1). https://doi.org/10.4236/ojapps.2024.1411207

Schein, E. (2012). *The role of organization development in the human resource function.* HarperCollins.

Thakshila Ruvini Herath, H. M., & Prabodha Subhashini Rathnayake, R. M. (2019). A critical approach towards sustainable development models: A review. *International Journal of Agriculture Innovations and Research*, *7*(4), 446–454.

Thatcher, A. (2015). *Defining human factors for sustainable development*. ResearchGate.

UNESCO. (2017). *Education for sustainable development goals: Learning objectives.* UNESCO Digital Library.

Wali, A., Alvira, D., Tallman, P. S., Ravikumar, A., & Macedo, M. O. (2017). A new approach to conservation: Using community empowerment for sustainable well-being. *Ecology and Society,* 22(4). https://doi.org/10.5751/ES-09598-220406

Ward, P. M. (2015). Housing rehab for consolidated informal settlements: A new policy agenda for 2016 UN-Habitat III. *UN-Habitat Conference. Habitat International*, *50*(2). https://doi.org/10.1016/j.habitatint.2015.08.021

Yan, W.-J., & Li, K.-R. (2023). Sustainable cultural innovation practice: Heritage education in universities and creative inheritance of intangible cultural heritage craft. *Sustainability, 15*(2), 1194.

Zandee, D. P., & Cooperrider, D. L. (2008). *Appreciable worlds inspired inquiry.* SAGE Publications.

Empirical Research

The Impact of Happiness on Resilience: The Moderating Role of Mindfulness

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Abstract

This study examines the relationship between pro-social behaviour (PSB) and happiness, with an emphasis on three types of PSB—proactive, reactive and altruistic—and how these behaviours contribute to individual well-being. Additionally, this study also investigates the relationships between happiness and resilience, with a focus on the moderating role of mindfulness. The research aims to explore how happiness influences resilience and how mindfulness may moderate this relationship. Data were collected from a sample of 246 participants through questionnaires assessing psychological well-being and happiness. Regression analysis was used to test the impact of happiness on resilience and psychological well-being, while ANOVA was employed to examine mindfulness as a moderating factor. The findings revealed statistically significant relationships between happiness and both resilience and psychological well-being, with mindfulness showing a significant moderating effect. These results underscore the importance of happiness in enhancing psychological resilience and well-being, highlighting the role of mindfulness as a key factor in strengthening these connections. The study suggests the need for further research into how happiness promotes psychological sustainability and how mindfulness can be effectively applied in enhancing individual well-being.

Keywords

Happiness, resilience, mindfulness, psychological sustainability, pro-social behavior, nudging

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Introduction

In the realm of psychological research, the exploration of factors influencing human well-being and resilience has gained considerable attention, particularly in understanding how happiness and mindfulness contribute to personal growth and psychological sustainability. As individuals navigate the complexities of life, they constantly seek mechanisms that foster emotional stability and resilience, especially in the face of adversity. Among these mechanisms, happiness has emerged as a key element that not only enhances resilience but also promotes overall psychological well-being. Furthermore, mindfulness, a state of focused awareness and presence, has been identified as a potential moderating factor in these relationships, providing individuals with the tools to manage stress and maintain emotional equilibrium.

Happiness has long been regarded as an essential component of psychological well-being, with studies consistently linking it to higher life satisfaction and better mental health outcomes (Diener, 2000; Lyubomirsky et al., 2005). Research has shown that happiness can buffer against negative emotional experiences, fostering greater resilience in individuals (Fredrickson, 2001). Resilience, the ability to adapt to challenging circumstances and bounce back from setbacks, has been closely associated with psychological well-being, as resilient individuals tend to exhibit better coping strategies and emotional regulation (Tugade & Fredrickson, 2004). The dynamic interplay between happiness and resilience, however, remains an area that warrants further exploration, particularly in how these constructs interact to promote long-term psychological health.

Mindfulness, a psychological practice rooted in present-moment awareness, has gained widespread attention for its potential to enhance emotional regulation and mental resilience. By encouraging individuals to remain nonjudgmentally aware of their thoughts and emotions, mindfulness can cultivate a sense of calm and clarity, which may, in turn, influence how individuals navigate stressful situations. As a moderating variable, mindfulness may amplify the effects of happiness on resilience, enabling individuals to harness positive emotions more effectively and cope with challenges in a healthier way.

Through the analysis of data collected from 246 participants, this research aims to provide valuable insights into the ways in which happiness influences resilience and the extent to which mindfulness can play a significant role in reinforcing this relationship. By examining these dynamics, the study contributes to a deeper understanding of the factors that promote psychological sustainability and highlights the potential of mindfulness as a powerful intervention for enhancing resilience and improving overall well-being.

Happiness

The concept of happiness has been widely explored across various academic disciplines, emphasising its role in shaping overall well-being. Scholars have examined whether happiness is derived from feeling good or feeling right, while

others have investigated its interconnectedness with well-being and quality of life. The significance of social capital in influencing happiness levels has also been acknowledged, highlighting the impact of social ties and institutional structures. Additionally, happiness has been linked to physical health benefits and preventive healthcare behaviours, reinforcing its relevance in both psychological and physiological domains. Furthermore, studies have underscored the productivity advantages associated with happiness and subjective well-being, demonstrating its broader economic and organisational implications. These multidimensional insights emphasise the necessity of studying happiness in conjunction with resilience and psychological well-being.

Prosocial Behaviour

Prosocial behaviour (PSB) refers to actions aimed at benefiting others and can be divided into three categories: altruistic, proactive and reactive behaviours. Altruistic behaviours are motivated by a selfless concern for others' well-being, often occurring without any expectation of personal gain or reward. Proactive PSB involves intentional and planned actions to assist others, typically driven by internal values or the anticipation of long-term benefits. In contrast, reactive PSB is a spontaneous response to others' distress or immediate needs, often triggered by situational cues and empathy. Research on early childhood underscores the significant role of early parental influence and emotional regulation in fostering children's helping behaviours, highlighting the importance of socioemotional development in cultivating prosocial actions. Understanding these different forms of PSB provides a comprehensive view of the psychological, cognitive, and social factors that encourage helping behaviours, illustrating the complex interplay of these influences.

How PSB and Happiness Interact

The relationship between PSB and happiness has been the focus of considerable research, revealing that engaging in altruistic actions can significantly boost individual well-being. Studies indicate that both proactive and reactive PSBs contribute to emotional rewards, leading to increased happiness among adults. Altruistic actions, such as volunteering or offering assistance to others without expecting anything in return, often result in a profound sense of happiness and fulfilment. Moreover, proactive PSBs, which involve initiating and organising acts of kindness, promote long-term satisfaction by fostering meaningful relationships and providing a sense of purpose. In contrast, reactive PSBs, which are prompted by immediate needs or requests, enhance happiness by generating immediate positive social connections and a sense of influence. These findings underscore that PSBs universally contribute to well-being, suggesting that promoting such behaviours could be an effective strategy for enhancing happiness in various settings.

The Interplay of Happiness and Resilience

Resilience, the ability to recover from adversity, is essential for sustaining psychological well-being. It acts as a buffer against stressors, enabling individuals to navigate life's challenges with greater ease. Psychological well-being, which encompasses emotional balance, life satisfaction, and a sense of purpose, is often strengthened by resilience (M & M, 2023). Research suggests that happiness plays a crucial role in resilience development, as positive emotional states contribute to an individual's ability to cope with adversity (Tugade & Fredrickson, 2004). Fredrickson's broaden-and-build theory posits that happiness broadens cognitive and behavioural repertoires, fostering adaptive coping mechanisms and resilience over time (Fredrickson, 2001). Studies have shown that happier individuals demonstrate greater psychological flexibility, stronger coping skills and lower susceptibility to stress-related disorders (Cohn et al., 2009).

Moreover, resilience has been found to mediate the relationship between happiness and overall psychological well-being. Individuals who frequently experience positive emotions tend to develop cognitive and emotional resources necessary for resilience, contributing to enhanced life satisfaction and mental health stability (Fredrickson & Joiner, 2002). Understanding these dynamics is essential for promoting long-term psychological sustainability, which refers to the capacity to maintain mental and emotional stability over time. Given these findings, exploring the role of mindfulness as a moderator in the happiness-resilience-well-being relationship is particularly valuable.

Mindfulness as a Moderating Factor

Mindfulness, defined as the practice of maintaining present-moment awareness with a non-judgmental attitude, has gained significant attention for its psychological benefits. Mindfulness-based interventions have been shown to enhance subjective well-being, reduce psychological symptoms and improve emotional regulation (Keng et al., 2011). Brown and Ryan (2003) emphasized that mindfulness enhances present-moment awareness and promotes psychological well-being by fostering self-regulation and emotional clarity. These interventions promote adaptive coping strategies, thereby increasing resilience and reducing emotional reactivity to stress (Keng et al., 2011). Creswell et al. (2014) found that even brief mindfulness meditation significantly improves psychological and neuroendocrine responses to social stress. Research by Bajaj and Pande (2016) further supports the positive association between dispositional mindfulness and psychological well-being, demonstrating that individuals with higher mindfulness levels experience greater life satisfaction and emotional balance. Garland et al. (2011) showed that mindfulness enhances positive reappraisal processes, creating an upward spiral of emotional well-being and reduced stress.

Mindfulness fosters self-awareness and acceptance, key components in developing a resilient mindset that supports long-term psychological sustainability (Garland et al., 2015). Moreover, it has been linked to increased psychosocial-spiritual well-being, underscoring its holistic benefits (Jaiswal et al., 2023).

By enhancing emotional regulation and cognitive flexibility, mindfulness encourages individuals to approach challenges with a more adaptive mindset. The role of mindfulness-based nudging, small behavioural interventions aimed at promoting well-being, has also been explored in influencing psychological sustainability by reinforcing positive habits and self-regulation (Yosep et al., 2023).

Resilience and Psychological Sustainability

Resilience, as a dynamic process, is shaped by cognitive, emotional and behavioural factors (Fletcher & Sarkar, 2013). While some individuals may naturally exhibit higher resilience, it can also be cultivated through targeted interventions, such as mindfulness training and cognitive-behavioural strategies (Robertson et al., 2015). The mediating role of resilience in the happiness-well-being relationship underscores the importance of fostering resilience to enhance mental health outcomes. Studies indicate that mindfulness moderates this relationship by promoting an adaptive mindset, strengthening coping strategies and reducing reactivity to negative experiences (Malinowski & Lim, 2015). Supporting this view, Hu et al. (2015) conducted a meta-analysis revealing strong associations between resilience and improved mental health outcomes across populations.

Additionally, mindfulness-based interventions contribute to psychological sustainability by facilitating long-term emotional stability. Research suggests that mindfulness enhances resilience by fostering positive emotional states, improving self-regulation and reducing stress levels (Keng et al., 2011). By incorporating mindfulness into daily life, individuals can cultivate a sustainable approach to mental health, ultimately enhancing both resilience and psychological well-being.

The interconnections between happiness, resilience and psychological well-being are well-documented in the literature. Happiness fosters resilience by broadening cognitive and emotional resources, while resilience, in turn, enhances psychological well-being by mitigating the impact of stressors. Mindfulness plays a crucial moderating role in this relationship, as it enhances emotional regulation, promotes adaptive coping mechanisms and facilitates long-term psychological sustainability. Understanding these relationships is essential for developing interventions that support mental resilience and well-being. Future research should continue exploring the interplay between these constructs, particularly in applied settings, to inform strategies for promoting sustainable psychological health.

Methodology

This study aims to explore:

1. The impact of different types of PSB on attaining happiness.
2. The moderating role of mindfulness in the relationship between happiness and resilience, and to assess the impact of happiness on resilience.

Two survey forms were circulated to gather data on resilience and happiness. The first questionnaire was derived from the research article titled 'Dutch adaptation of the Prosocial behaviour Questionnaire (PBQ-NL): A validity and reliability study in adolescents and early adults', which is designed to measure various aspects of PSB (Güroğlu et al., 2014). The second survey utilised the Oxford Happiness Questionnaire, a well-established tool for examining overall happiness (Hills & Argyle, 2002).

A sample size of 246 postgraduate students was targeted for this study to ensure a diverse and representative demographic for examining the relationship between psychological resilience and happiness. Data collection was conducted using Microsoft Forms, which provided an efficient and user-friendly platform. All responses were anonymised to maintain confidentiality and adhere to ethical standards.

Data Analysis

Proactive Social Behaviour and Happiness

H_0: There is no significant impact of Proactive Social Behaviour on Happiness.
H_1: There is a significant impact of Proactive Social Behaviour on Happiness.

The model summary (Table 1) of our regression analysis provides insights into the relationship between Proactive Social Behaviour and Happiness. The correlation coefficient (R) is 0.158, indicating a weak positive relationship between the two variables. This suggests that as Proactive Social Behaviour increases, Happiness tends to increase slightly, but the relationship is not strong. The R Square (R^2) value is 0.025, meaning that only 2.5% of the variability in Happiness is explained by Proactive Social Behaviour. This low R^2 value indicates that Proactive Social Behaviour is not a significant predictor of Happiness and that most of the variance in Happiness is due to other factors. The Adjusted R^2, which accounts for the number of predictors in the model, is 0.015. This slight reduction from the R^2 value suggests that even after adjusting for potential overfitting, Proactive Social Behaviour still explains very little of the variance in Happiness. The standard error of the estimate (SEE) is 0.6378078, indicating the average distance that the observed Happiness scores fall from the predicted scores. This value shows considerable variability in Happiness that is not accounted for by Proactive Social Behaviour. In conclusion, Proactive Social Behaviour has a minimal and weak impact on Happiness, explaining only a small

Table 1. Model Summary.

Model	*R*	R^2	Adjusted R^2	Std. Error in the Estimate
1	0.158[a]	0.025	0.015	0.6378078

Note: [a]Predictors: (Constant), proactive score.

Table 2. ANOVA[a]

Model 1	Sum of Squares	*df*	Mean Squares	*F*	Sig.
Regression	1.048	1	1.048	2.577	0.112[b]
Residual	40.680	100	0.407		
Total	41.728	101			

Notes: [a]Dependent variable: Happiness score.
[b]Predictors: (Constant), proactive score.

fraction of its variability. Other factors likely play a more significant role in determining Happiness.

The analysis conducted here delves into the relationship between Proactive Social Behaviour and Happiness through regression analysis, with a focus on the ANOVA table's key values (Table 2). The Sum of Squares for Regression stands at 1.048, portraying the amount of variability in Happiness scores explained by Proactive Social Behaviour. Conversely, the Sum of Squares for Residuals amounts to 40.680, indicating the unexplained variability in Happiness. The Total Sum of Squares, combining both explained and unexplained variability, tallies at 41.728.

Furthermore, Degrees of Freedom shed light on the model's complexity, with one predictor variable (Proactive Social Behaviour) contributing to Regression and 100 observations remaining for Residuals. The Mean Square values for Regression (1.048) and Residuals (0.407) are derived by dividing the respective Sum of Squares by their Degrees of Freedom. The *F*-value, standing at 2.577, is calculated by dividing Mean Square Regression by Mean Square Residual, serving as a test for the null hypothesis regarding the model's adequacy.

The obtained Significance level, or *p* value, at .112, fails to meet the conventional alpha level of 0.05, suggesting the model lacks statistical significance. Thus, there's insufficient evidence to reject the null hypothesis, indicating Proactive Social Behaviour's insignificant impact on Happiness within this sample. Despite some variance in Happiness being explained by the model (as evidenced by the Regression Sum of Squares), it is deemed minimal and statistically nonsignificant. The substantial Residual Sum of Squares further emphasises that factors beyond Proactive Social Behaviour primarily influence Happiness levels.

In essence, while Proactive Social Behaviour may exhibit a slight positive relationship with Happiness, it does not emerge as a significant predictor. This implies that other unexplored variables potentially play more pivotal roles in determining Happiness.

The correlation table (Table 3) indicates the relationship between Happiness Score and Proactive Score. The Pearson correlation coefficient between these two variables is –0.158, suggesting a weak negative correlation. This implies that as Proactive Score increases, there is a slight tendency for Happiness Score to decrease, though the correlation is weak. The significance level (Sig. 2-tailed) associated with this correlation is 0.112. Since this *p* value exceeds the conventional threshold of .05, the correlation is not statistically significant. Consequently, there's insufficient evidence to conclude that there's a significant relationship between Proactive Score and Happiness Score in this sample. Both variables have

Table 3. Correlation Between Happiness Score and Proactive Score.

		Happiness Score	Proactive Score
Happiness score	Pearson Correlation	1	–0.158
	Sig.(2-tailed)		0.112
	N	102	102
Proactive score	Pearson Correlation	–0.158	1
	Sig.(2-tailed)	0.112	
	N	102	102

Table 4. Model Summary.

Model	*R*	R^2	Adjusted R^2	Std. Error in the Estimate
1	0.100[a]	0.010	0.000	0.6427126

Note: [a]Predictors: (Constant), Reactive Score.

a sample size (*N*) of 102, indicating a balanced dataset with equal numbers of observations for each variable. In summary, the correlation analysis suggests that Proactive Score does not significantly correlate with Happiness Score in this dataset. While a weak negative correlation is observed, it is not statistically significant, indicating that factors other than Proactive Score may predominantly influence Happiness Score. Further exploration with larger sample sizes or additional variables could provide deeper insights into the factors affecting the Happiness Score.

Based on the results provided in the analysis, the correct interpretation would be that the null hypothesis (H_0) is correct. This means that there is no significant impact of Proactive Social Behaviour on Happiness in the given sample. The obtained *p* value of .112 is higher than the conventional alpha level of 0.05, indicating that there is insufficient evidence to reject the null hypothesis. Therefore, the correct interpretation is that Proactive Social Behaviour does not significantly impact Happiness in this dataset.

Reactive PSB and Happiness

H_0: There is no significant impact of Reactive Social Behaviour on Happiness.
H_2: There is a significant impact of Reactive Social Behaviour on Happiness.

The model summary (Table 4) provides insights into the relationship between the independent variable (Reactive Score) and the dependent variable (Happiness). The Pearson correlation coefficient (*R*) is 0.100, indicating a very weak positive correlation between Reactive Score and Happiness. This suggests that as Reactive Score increases, there is a slight tendency for Happiness to increase, but the relationship is very weak. The R^2 value is 0.010, indicating that only 1% of the variance in Happiness can be explained by Reactive Score. This means that Reactive Score has a very minimal explanatory power on Happiness, with most of

Table 5. ANOVA.[a]

Model 1	Sum of Squares	*df*	Mean Squares	*F*	Sig
Regression	0.420	1	0.420	1.017	0.316[b]
Residual	41.308	100	0.413		
Total	41.728	101			

Notes: [a]Dependent Variable: Happiness Score.
[b]Predictors: (Constant), Reactive Score.

Table 6. Correlation Between Reactive Score and Happiness Score.

		Reactive Score	Happiness Score
Reactive score	Pearson Correlation	1	–0.100
	Sig.(2-tailed)		0.316
	N	102	102
Happiness score	Pearson Correlation	–0.100	1
	Sig.(2-tailed)	0.316	
	N	102	102

the variability in Happiness remaining unexplained. The SEE is 0.6427126, representing the average deviation of the observed Happiness scores from the predicted scores. This value shows considerable variability in Happiness that is not accounted for by Reactive Score alone. The model summary indicates that Reactive Score has a negligible and statistically insignificant impact on Happiness. The weak correlation and extremely low R^2 values suggest that Reactive Score does not significantly predict Happiness, highlighting the need to consider other factors that may influence Happiness more substantially.

The ANOVA table (Table 5) evaluates the overall significance of the regression model in predicting Happiness Score based on the predictor variable, Reactive Score. Sum of Squares 0.420. This value indicates the variability in Happiness Score that is explained by the model's predictor, Reactive Score. Sum of Squares 41.308 represents the unexplained variability in Happiness Score that is not accounted for by the model. With an F-value of 1.017 and a p value of .316, the model is not statistically significant at the conventional alpha level of 0.05. This indicates that Reactive Score does not significantly predict Happiness Score in this model. While the model explains some variability in Happiness Score, the lack of significance suggests that other factors not included in the model may have a more substantial influence on Happiness Score. Therefore, based on this analysis, Reactive Score alone does not appear to be a significant predictor of Happiness Score.

The correlation table (Table 6) presents the relationship between Reactive Score and Happiness Score. The Pearson correlation coefficient between Reactive Score and Happiness Score is –0.100, indicating a very weak negative correlation. This implies that as Reactive Score increases, there is a slight tendency for Happiness Score to decrease, though this relationship is very weak. The significance level (Sig. 2-tailed) associated with the correlation is 0.316. This p value indicates the probability of observing this correlation by chance. Since

the *p* value is greater than the conventional alpha level of 0.05, the correlation is not statistically significant. The sample size (*N*) for both Reactive Score and Happiness Score is 102, suggesting a balanced dataset with no substantial difference in sample sizes. While there is a weak negative correlation observed, it is not statistically significant, implying that other factors may play a more crucial role in determining Happiness Score. Further investigation with larger samples or additional variables may provide deeper insights into the factors influencing Happiness Score. Based on the results provided in the analysis, the correct interpretation would be that the null hypothesis (H_0) is correct. This means that there is no significant impact of Reactive Social Behaviour on Happiness in the given sample. The obtained *p* value of .316 is higher than the conventional alpha level of 0.05, indicating that there is insufficient evidence to reject the null hypothesis. Therefore, the correct interpretation is that Reactive Social Behaviour does not significantly impact Happiness in this dataset.

Altruistic PSB

H_0: There is no significant impact of Altruistic Social Behaviour on Happiness.
H_3: There is a significant impact of Altruistic Social Behaviour on Happiness.

The Pearson correlation coefficient (*R*) is 0.094, indicating a very weak positive correlation between Altruistic behaviour and Happiness Score (Table 7). This suggests that as Altruistic behaviour increases, there is a slight tendency for Happiness Score to increase, although the relationship is very weak. The R^2 value is 0.009, indicating that only 0.9% of the variance in Happiness Score can be explained by Altruistic behaviour. The Adjusted R^2 is –0.001, which suggests that the model does not improve the prediction of Happiness Score compared to using the mean of the dependent variable alone. This indicates that including Altruistic behaviour as a predictor does not enhance the model's explanatory power. The SEE is 0.6431356, representing the average deviation of the observed Happiness Score from the predicted score. The weak correlation and extremely low R^2 values indicate that Altruistic behaviour does not significantly predict Happiness Score, underscoring the need to explore additional variables that may influence Happiness Score more substantially.

The ANOVA table (Table 8) presents the relationship between Happiness Score and Altruistic behaviour. The Pearson correlation coefficient between the two variables is –0.094, indicating a very weak negative correlation. This suggests that as Altruistic behaviour increases, there is a slight tendency for Happiness Score to decrease, though the relationship is very weak. The significance level (Sig. 2-tailed) associated with the correlation is 0.349, indicating the probability

Table 7. Model Summary (Altruistic Social Behaviour on Happiness).

Model	*R*	R^2	Adjusted R^2	Std. Error in the Estimate
1	0.094[a]	0.009	–0.001	0.6431356

Note: [a]Predictors: (Constant), Altruistic.

Table 8. ANOVA[a] (Happiness Score & Altruistic Behaviour).

Model 1	Sum of Squares	*df*	Mean Squares	*F*	Sig
Regression	0.366	1	0.366	0.884	0.349[b]
Residual	41.362	100	0.414		
Total	41.728	101			

Notes: [a]Dependent Variable: Happiness Score.
[b]Predictors: (Constant), Altruistic.

Table 9. Descriptive Statistics.

	Mean	Std. Deviation	*N*
Resilience_score	3.5248	0.98926	246
happiness_score	3.3049	1.67240	246

Table 10. Correlations.

		Resilience_score	happiness_score
Pearson Correlation	Resilience_score	1.000	0.732
	happiness_score	0.732	1.000
Sig. (1-tailed)	Resilience_score	.	0.000
	happiness_score	0.000	.
N	Resilience_score	246	246
	happiness_score	246	246

of observing this correlation by chance. Since the p value is greater than the conventional alpha level of 0.05, the correlation is not statistically significant. Therefore, there is insufficient evidence to conclude that there is a meaningful relationship between Altruistic behaviour and Happiness Score in this sample. The sample size (N) for both Happiness Score and Altruistic behaviour is 102, suggesting a balanced dataset with no substantial difference in sample sizes. While there is a weak negative correlation observed, it is not statistically significant, implying that other factors may play a more crucial role in determining Happiness Score. The hypothesis that would be accepted is H_0: There is no significant impact of Altruistic Social Behaviour on Happiness. Descriptive statistics for Resilience and Happiness scores are presented in Table 9.

Resilience and Happiness

H_0: There is no significant impact of happiness on resilience.
H_4: There is a significant impact of happiness on resilience.

The correlation table (Table 10) presents the relationship between Resilience Score and Happiness Score. The Pearson correlation coefficient between Resilience Score and Happiness Score is 0.732, indicating a strong positive correlation. This suggests that as Happiness Score increases, Resilience Score

Table 11. Model Summary[b] (Happiness and Resilience).

					Change Statistics				
Model	*R*	R^2	Adjusted R^2	Std. Error of the Estimate	R^2 Change	F Change	df^1	df^2	Sig. F Change
1	0.732[a]	0.536	0.534	0.67556	0.536	281.371	1	244	0.000

Notes: [a]Predictors: (Constant), happiness_score.
[b]Dependent Variable: Resilience_score.

tends to increase significantly, and vice versa. The significance level (Sig. 1-tailed) is 0.000, which is below the conventional alpha level of 0.05. This indicates that the correlation is statistically significant, meaning the relationship observed is unlikely to be due to random chance. The sample size (*N*) for both Resilience Score and Happiness Score is 246, ensuring a robust dataset for the correlation analysis. Given the strong and statistically significant correlation, the results suggest that Happiness has a meaningful impact on Resilience. This supports the hypothesis that higher levels of Happiness are associated with greater Resilience. However, while the correlation is strong, it does not imply causation, and other influencing factors may still contribute to the observed relationship.

The model summary (Table 11) provides insights into the relationship between the independent variable (Happiness) and the dependent variable (Resilience). The Pearson correlation coefficient (*R*) is 0.732, indicating a strong positive correlation between Happiness and Resilience. This suggests that as Happiness increases, Resilience tends to increase significantly. The R^2 value is 0.536, indicating that 53.6% of the variance in Resilience can be explained by Happiness. This means that Happiness has a substantial explanatory power on Resilience, though 46.4% of the variability remains unexplained and may be influenced by other factors. The Adjusted R^2 value is 0.534, which is very close to R^2, confirming that the model remains stable and generalisable to the population. The SEE is 0.67556, representing the average deviation of the observed Resilience scores from the predicted scores. A lower SEE suggests a more precise prediction model. The F-statistic (281.371) and the significance value ($p = .000$) indicate that the overall model is statistically significant, meaning the relationship between Happiness and Resilience is unlikely to be due to random chance. Overall, it suggests a strong and statistically significant relationship between Happiness and Resilience, with Happiness serving as a strong predictor of Resilience, hence proving our alternate hypothesis true.

Moderating Behaviour of Mindfulness to Moderate Resilience Through Happiness

H_5: Mindfulness moderates resilience through happiness.
H_0: Mindfulness does not moderate resilience through happiness.

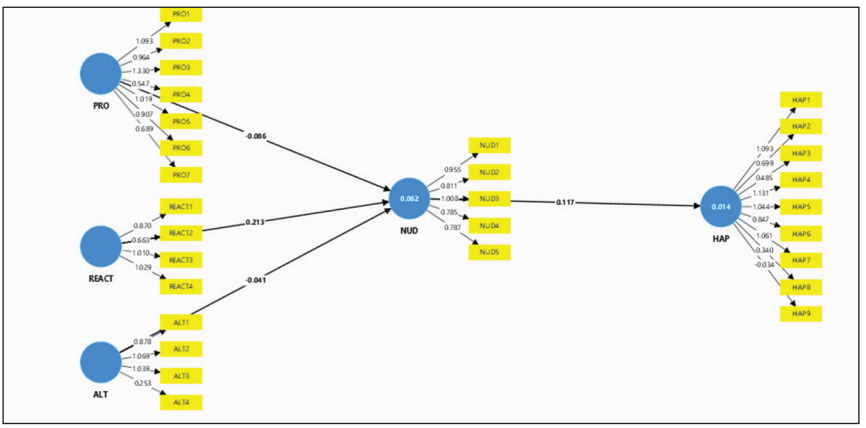
The ANOVA (Table 12) results show a significant difference in Resilience Score across different groups defined by the interaction between Mindfulness and

Table 12. ANOVA (Happiness and Resilience).

Resilience_score					
	Sum of Squares	*df*	Mean Square	*F*	Sig.
Between groups	192.914	106	1.820	5.399	0.000
Within groups	46.854	139	0.337		
Total	239.768	245			

Happiness (F (106, 139) = 5.399, $p < .001$). The between-group sum of squares is 192.914, which indicates variability between the different groups, while the within-group sum of squares is 46.854, indicating variability within the groups. The mean square values are 1.820 (between groups) and 0.337 (within groups), with the F-statistic of 5.399, which is statistically significant at $p < .001$.

This significant result suggests that the interaction between Mindfulness and Happiness significantly impacts Resilience, supporting the hypothesis that Mindfulness moderates the relationship between Resilience and Happiness. The findings indicate that as the levels of Mindfulness and Happiness change, they influence the Resilience Score, validating the hypothesis that Mindfulness plays a moderating role in the relationship between Resilience and Happiness. Therefore, the hypothesis that 'Mindfulness moderates resilience through happiness' is supported by these results.



1. Construct Reliability and Validity—Overview

Construct	Cronbach's Alpha	Composite Reliability (ρ_a)	Composite Reliability (ρ_c)	AVE
ALT	0.956	1.001	0.917	0.764
HAP	0.926	1.002	0.942	0.694
NUD	0.942	0.950	0.941	0.764
PRO	0.995	1.023	0.989	0.933
REACT	0.948	0.969	0.946	0.819

All constructs demonstrate high internal consistency, with Cronbach's alpha and Composite Reliability values exceeding the recommended threshold of 0.70 (Hair et al., 2019). Moreover, AVE values for all constructs exceed 0.50, indicating that more than 50% of the variance is captured by the latent construct rather than measurement error. These results confirm satisfactory reliability and convergent validity.

2. Discriminant Validity—Fornell-Larcker Criterion

	ALT	HAP	NUD	PRO	REACT
ALT	0.874				
HAP	0.015	0.833			
NUD	–0.078	0.117	0.874		
PRO	0.164	–0.071	–0.120	0.966	
REACT	–0.105	–0.002	0.229	–0.129	0.905

According to the Fornell-Larcker criterion, the square root of the AVE (diagonal elements) should be greater than the correlations among constructs (off-diagonal elements). As seen in Table 2, this condition is satisfied for all constructs, indicating adequate discriminant validity.

3. Discriminant Validity—HTMT (Heterotrait-Monotrait Ratio)

	ALT	HAP	NUD	PRO	REACT
ALT		0.116	0.114	0.164	0.112
HAP			0.133	0.093	0.070
NUD				0.115	0.226
PRO					0.126

The HTMT values are all well below the conservative threshold of 0.85, further confirming discriminant validity (Henseler et al., 2015). The highest HTMT value observed is 0.226 (NUD–REACT), which is far below even the liberal threshold of 0.90.

Managerial Implications

The findings of this study have critical implications for practitioners, policy-makers, educators and organisational leaders aiming to foster happiness and well-being through pro-social initiatives.

1. **Reframing Pro-social Interventions**

   The study revealed that proactive, reactive and altruistic pro-social behaviours (PSBs) exhibited weak and statistically insignificant direct effects on happiness. From a managerial standpoint, this suggests that interventions aimed at promoting happiness should not rely solely on encouraging generic forms of PSB. Instead, organisations and institutions should:

- Customise PSB strategies to match individuals' intrinsic motivations and values.
- Recognise that contextual factors (e.g., organisational culture, social support) likely mediate the effect of PSB on well-being.
- Shift focus towards intentional, meaningful engagement, rather than transactional or obligatory forms of helping behaviour.

2. **Rethinking Nudging as a Behavioural Strategy**

Although nudging is widely endorsed as an effective behavioural tool, the SEM analysis demonstrated that nudging did not significantly moderate the relationship between PSB and happiness in this study. This indicates a need for more nuanced and targeted nudging techniques. Managers and policy designers should:

- Develop personalised nudges based on behavioural profiling (e.g., emotional preferences, goal orientation).
- Integrate emotive and social nudges (such as storytelling, peer influence, or public commitments) that appeal to individual aspirations.
- Evaluate nudge effectiveness periodically and adjust design elements such as frequency, tone and medium of delivery.

3. **Embedding Purpose-driven Engagement**

Despite the limited statistical impact of individual PSB dimensions, the broader literature supports the role of purpose and meaning in driving sustained happiness. Managers can leverage this by:

- Encouraging purposeful social initiatives, like mentorship programs, peer support systems and community engagement.
- Aligning employees' or students' pro-social actions with personal growth or career development goals.
- Promoting autonomy in social contribution, which research suggests enhances intrinsic motivation and well-being.

4. **Data-driven Personalisation of Happiness Programs**

Given the variability in how different forms of PSB relate to happiness, organisations should adopt data-informed decision-making to optimise well-being programs. This involves:

- Segmenting participants based on behavioural data and psychological profiles.
- Designing differentiated well-being interventions (e.g., some individuals may benefit more from reflective activities like journaling than from social volunteering).
- Using feedback loops to fine-tune behavioural interventions in real-time.

5. **Policy Implications for Educational and Workplace Settings**
   In educational institutions such as business schools or corporate training environments:

   - Integrate pro-social behaviour into the curriculum via experiential learning, but ensure it is tied to reflective happiness exercises.
   - Avoid assuming a linear impact of pro-sociality on happiness; instead, facilitate self-awareness and psychological resilience alongside social behaviour training.
   - Encourage dialogues around intrinsic values and social impact, creating safe spaces for individuals to explore what happiness and contribution mean to them.

Discussion & Conclusion

The analysis of the relationship between different types of social behaviour (Proactive, Reactive and Altruistic) and happiness reveals that none of these behaviours significantly predict happiness. The correlation coefficients for proactive, reactive, and altruistic behaviours (R = 0.158, 0.100 and 0.094, respectively) indicate weak relationships, and the low R^2 values (0.025, 0.010 and 0.009, respectively) suggest minimal explanatory power. The lack of significance is further supported by the ANOVA results, which show high p values (.112, .316 and .349, respectively) for all the models.

These results suggest that happiness is impacted by a wide range of intricate characteristics that go beyond these simple social behaviours. Happiness is most likely influenced by psychological, environmental, economic and other social factors more significantly. In order to better understand the factors that influence happiness, future studies should take a more comprehensive approach, recognising that social behaviours are not the main predictors of happiness, even though they may have some influence.

The findings of this study indicate that happiness plays a significant role in enhancing resilience, as evidenced by the strong positive correlation (r = 0.732, $p < .001$). The results support the hypothesis that higher levels of happiness are associated with greater resilience, highlighting the psychological interplay between positive emotions and adaptive coping mechanisms. The regression model further demonstrated that happiness accounts for 53.6% of the variance in resilience, underscoring its substantial predictive power. However, while these findings establish a strong association, causality cannot be inferred, and other unexamined factors may also contribute to resilience development.

Furthermore, the moderating role of mindfulness in this relationship was confirmed through ANOVA results, which indicated a significant interaction effect (F (106, 139) = 5.399, $p < .001$). These results align with previous research emphasising mindfulness as a key factor in emotional regulation and adaptive coping (Dhanabhakyam & Sarath, 2023). The interaction between mindfulness and happiness suggests that individuals with higher mindfulness levels may

experience a stronger link between happiness and resilience, reinforcing the importance of psychological interventions that incorporate mindfulness training to enhance well-being and resilience.

These findings contribute to the growing body of literature on psychological well-being by reinforcing the significant relationship between happiness and resilience while also highlighting the moderating effect of mindfulness. Previous studies have suggested that happiness fosters adaptive responses to stress and adversity, thereby enhancing resilience (Tugade & Fredrickson, 2004). This study further supports that notion by demonstrating that mindfulness strengthens this relationship, allowing individuals to process emotions more effectively and cultivate a resilient mindset.

From a practical perspective, these results have implications for mental health interventions and resilience-building programs. Psychological interventions that focus on increasing happiness, such as gratitude exercises and positive psychology strategies, may lead to greater resilience in individuals. Additionally, incorporating mindfulness-based practices in therapeutic and educational settings could further enhance the beneficial effects of happiness on resilience by promoting self-awareness and emotional regulation.

While this study provides valuable insights, it also has some limitations. First, the cross-sectional design restricts the ability to establish causality. Future research should employ longitudinal studies to examine the temporal dynamics of these relationships. Second, unexamined variables such as personality traits, cultural influences, and life experiences may also play a role in resilience development, warranting further investigation. Finally, expanding the study to diverse populations could provide a more comprehensive understanding of how happiness, mindfulness and resilience interact across different demographic groups.

Overall, these findings emphasise the importance of fostering happiness and mindfulness as key strategies for enhancing resilience. Future research should continue to explore additional moderating variables and intervention strategies to further refine our understanding of psychological resilience and well-being. Southwick et al. (2014) argued that understanding resilience requires an interdisciplinary approach, incorporating psychological, social, and biological frameworks.

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References

Bajaj, B., & Pande, N. (2016). Mediating role of resilience in the impact of mindfulness on life satisfaction and affect as indices of subjective well-being. *Personality and Individual Differences*, *93*, 63–67. https://doi.org/10.1016/j.paid.2015.09.003

Brown, K. W., & Ryan, R. M. (2003). The benefits of being present: Mindfulness and its role in psychological well-being. *Journal of Personality and Social Psychology*, *84*(4), 822–848. https://doi.org/10.1037/0022-3514.84.4.822

Cohn, M. A., Fredrickson, B. L., Brown, S. L., Mikels, J. A., & Conway, A. M. (2009). Happiness unpacked: Positive emotions increase life satisfaction by building resilience. *Emotion*, *9*(3), 361–368. https://doi.org/10.1037/a0015952

Creswell, J. D., Pacilio, L. E., Lindsay, E. K., & Brown, K. W. (2014). Brief mindfulness meditation training alters psychological and neuroendocrine responses to social evaluative stress. *Psychoneuroendocrinology*, *44*, 1–12. https://doi.org/10.1016/j.psyneuen.2014.02.007

Dhanabhakyam, M., & Sarath, M. (2023). Psychological wellbeing: A systematic literature review. *International Journal of Advanced Research in Science, Communication and Technology*, *3*(4), 603–607. https://doi.org/10.48175/IJARSCT-8345

Fletcher, D., & Sarkar, M. (2013). Psychological resilience: A review and critique of definitions, concepts, and theory. *European Psychologist*, *18*(1), 12–23. https://doi.org/10.1027/1016-9040/a000124

Fredrickson, B. L. (2001). The role of positive emotions in positive psychology: The broaden-and-build theory of positive emotions. *American Psychologist*, *56*(3), 218–226. https://doi.org/10.1037/0003-066X.56.3.218

Fredrickson, B. L., & Joiner, T. (2002). Positive emotions trigger upward spirals toward emotional well-being. *Psychological Science*, *13*(2), 172–175. https://doi.org/10.1111/1467-9280.00431

Garland, E. L., Farb, N. A., Goldin, P. R., & Fredrickson, B. L. (2015). The mindfulness-to-meaning theory: Extensions, applications, and challenges at the attention–appraisal–emotion interface. *Psychological Inquiry*, *26*(4), 377–387. https://doi.org/10.1080/1047840X.2015.1064294

Garland, E. L., Gaylord, S. A., & Fredrickson, B. L. (2011). Positive reappraisal mediates the stress-reductive effects of mindfulness: An upward spiral process. *Mindfulness*, *2*(1), 59–67. https://doi.org/10.1007/s12671-011-0043-8

Güroğlu, B., van den Bos, W., & Crone, E. A. (2014). Sharing and giving across adolescence: An experimental study examining the development of prosocial behavior. *Frontiers in Psychology*, *5*, 291. https://doi.org/10.3389/fpsyg.2014.00291

Hills, P., & Argyle, M. (2002). The Oxford Happiness Questionnaire: A compact scale for the measurement of psychological well-being. *Personality and Individual Differences*, *33*(7), 1073–1082. https://doi.org/10.1016/S0191-8869(01)00213-6

Hu, T., Zhang, D., & Wang, J. (2015). A meta-analysis of resilience and mental health. *Personality and Individual Differences*, *76*, 18–27. https://doi.org/10.1016/j.paid.2014.11.058

Jaiswal, A., Singh, A. R., & Gupta, A. (2023). Psychosocial-spiritual well-being is related to resilience and mindfulness: A study among university students during COVID-19 pandemic. *BMC Psychology*, *11*(1), 1–12. https://doi.org/10.1186/s40359-023-00894-w

Keng, S. L., Smoski, M. J., & Robins, C. J. (2011). Effects of mindfulness on psychological health: A review of empirical studies. *Clinical Psychology Review*, *31*(6), 1041–1056. https://doi.org/10.1016/j.cpr.2011.04.006

M, D., & M, S. (2023). Psychological wellbeing: A systematic literature review. *International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)*, 603–607. https://doi.org/10.48175/IJARSCT-8345

Malinowski, P., & Lim, H. J. (2015). Mindfulness at work: Positive affect, hope, and optimism mediate the relationship between dispositional mindfulness, work engagement, and well-being. *Mindfulness*, *6*(6), 1250–1262. https://doi.org/10.1007/s12671-015-0442-x

Robertson, I. T., Cooper, C. L., Sarkar, M., & Curran, T. (2015). Resilience training in the workplace from 2003 to 2014: A systematic review. *Journal of Occupational and Organizational Psychology*, *88*(3), 533–562. https://doi.org/10.1111/joop.12120

Southwick, S. M., Bonanno, G. A., Masten, A. S., Panter-Brick, C., & Yehuda, R. (2014). Resilience definitions, theory, and challenges: Interdisciplinary perspectives. *European Journal of Psychotraumatology*, *5*(1), 25338. https://doi.org/10.3402/ejpt.v5.25338

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *Journal of Personality and Social Psychology*, *86*(2), 320–333. https://doi.org/10.1037/0022-3514.86.2.320

Yosep, I., Mardhiyah, A., & Sriati, A. (2023). Mindfulness intervention for improving psychological wellbeing among students during the COVID-19 pandemic: A scoping review. *Journal of Multidisciplinary Healthcare*, *16*, 1425–1437. https://doi.org/10.2147/JMDH.S411849

Empirical Research

Transforming Rural Communities on Lombok Island Through Education and Tourism

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Abstract

The transformation of rural communities on Lombok Island, West Nusa Tenggara (NTB, Indonesia) through education and tourism has made a significant contribution to improving the welfare of the local population. This research aims to explore what and how this transformation occurs. Lombok was chosen because it is included in the Super Priority Destinations (DSP) and the Indonesian Ministry of Tourism and Creative Economy has implemented a free Cleanliness, Health, Safety and Environment Sustainability (CHSE) certification program for the tourism industry in Lombok. Qualitative methodology was used in this research. Data were obtained through observation techniques, semi-structured interviews with the Deputy Governor of NTB, the head of the NTB regional research agency, and Focus Group Discussions (FGD) between MSME representatives and researchers in the Bilebante tourist village, Central Lombok. Qualitative data were analysed regarding community transformation related to education and tourism.

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Supporting data is taken from the Central Statistics Agency (BPS). Several informants were involved to explain how the involvement of education and tourism in the transformation process had a positive impact on their welfare. The results show that Lombok's regional income (including education and tourism) has increased, where indicators of physical progress can be seen, namely modern Islamic boarding school education and Lombok tourism which is increasingly known to the world.

Keywords

Transformation, society, education, tourism, Lombok

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Introduction

Education and tourism are two elements that are closely related to achieving the prosperity of a nation. Through education, the quality of tourism human resources can be improved, and simultaneously welfare will increase along with the large number of tourists who come as a result of quality tourism human resources (Fitri, 2019; Pristiwasa, 2021; PBB, 2016). Education and tourism in Lombok, NTB, have undergone a transformation from a traditional atmosphere to a modern atmosphere. This study will discuss the transformation of rural communities in Lombok, NTB from the perspective of education and tourism launched by the NTB regional government. Previous research regarding the close relationship between education and tourism and the transformation of rural communities in Lombok has been carried out, including research by Padabain and Nugroho (2018) which examined the implementation of the Community Empowerment Tourism Village Program in Mas Village, Ubud Regency, Gianyar Regency, Bali Province. This research explores the transformation of education and tourism in Lombok, NTB.

A study of the role and relationship between tourism and education in improving the welfare of local communities shows that these two sectors support each other and can contribute significantly to sustainable development. Here are some international cases that illustrate how tourism and education work together to improve the welfare of local communities, namely in Bali Indonesia, Costa Rica, Bhutan and Kenya.

In terms of tourism, Bali is one of the most famous tourist destinations in the world. Tourism has become a major economic pillar, creating jobs and increasing the income of local communities. In terms of education, many schools and universities in Bali offer study programs that focus on tourism and hospitality (Clifton & Benson, 2006). For example, the Bali Tourism College provides special education in tourism management. Tourism-focused education helps create a skilled workforce that can meet the needs of the tourism industry. This improves the quality of services and tourist experiences, which in turn supports local economic growth. Training programs and short courses organised by educational institutions also

provide opportunities for local residents to improve their skills, so as to compete in an increasingly competitive tourism labour market Krisna Balinese souvenirs, Sukawati Art Market, Joger Bali, Ubud Art Market, the Bali Basket offers a unique concept as a souvenir centre that combines the concept of souvenir shops, tourist attractions, restaurants, and training centres (Bali Tourism Board, 2023).

In terms of tourism, Costa Rica is known for its ecotourism, which utilises natural riches and biodiversity as the main attraction. In terms of education, universities in Costa Rica, such as the University of Costa Rica, offer study programs that focus on environmental conservation and ecotourism (Honey, 2008). Educational programs that emphasise the importance of environmental conservation help create awareness among local Costa Rican communities about the importance of preserving the natural environment for sustainable tourism. The involvement of local Costa Rican communities in ecotourism programs, supported by adequate education, helps create jobs that support the local economy without damaging the environment (University of Costa Rica, 2023).

Bhutan has adopted a tourism model based on high quality and low volume, with a focus on cultural and environmental preservation. Bhutan's education system integrates lessons about the importance of preserving culture and the environment, in line with the country's philosophy of Gross National Happiness (Royal Government of Bhutan, 2018). Education that promotes cultural and environmental preservation prepares local people to become tour guides who can provide authentic experiences to tourists, while maintaining the authenticity of Bhutan's culture and environment (Ritchie & Crouch, 2003). Revenue from tourism is reinvested in the education system, strengthening the reciprocal relationship between these two sectors.

Tourism in Kenya relies heavily on safari tourism and biodiversity. Kenya Wildlife Service (KWS) and various educational institutions offer training programs for local communities in wildlife management and sustainable tourism. Training and education in wildlife management help local communities manage natural resources in a sustainable way, thereby supporting long-term tourism. Involvement of local communities in sustainable tourism through education increases community acceptance and support for conservation efforts, ultimately improving their economic well-being through tourism revenues (Akama & Kieti, 2007; KWS, 2023).

Literature Review

The case of tourism and education in Lombok needs to be analysed for four reasons: first, Lombok tourist destinations are developing rapidly. Lombok experienced significant growth in tourism, especially after the creation of the Mandalika Special Economic Zone, which aimed to improve tourism infrastructure and attract international visitors. Untapped Potential: In contrast to Bali, Lombok is still relatively underdeveloped, providing a unique opportunity to study the impact of tourism in the early stages of its development.

Second, socio-economic context, tourism can improve the local economy by creating jobs, increasing income, and encouraging small businesses. Understanding

these impacts on Lombok can provide insight into how similar areas might develop. In terms of Education and Skills Development, assessing the role of education programs in equipping the local workforce with the skills needed in the tourism industry is very important. This can help design better education policies that suit economic needs.

Third, cultural and environmental considerations. Lombok offers a rich cultural and traditional experience. Analysing the impact of tourism on the preservation and promotion of local culture can provide valuable lessons for sustainable tourism practices. As a growing tourist destination, studying Lombok can help understand how tourism affects natural resources and what steps can reduce negative impacts, ensuring long-term sustainability.

Fourth, Comparative Analysis with Bali. While Bali is an established tourism hub, Lombok provides a contrast as a developing destination. Comparing the two can highlight different developmental stages and strategies that are successful or need improvement.

Fifth, Government Support and Policy: The Indonesian Government shows strong support for developing Lombok as a major tourist destination. Studying this area can reveal the effectiveness of government policy and its role in regional development.

Other scientific reasons can be studied from Law number 10 of 2009 article 4 which states that tourism aims to: increase economic growth; improving community welfare; eradicating poverty; overcoming unemployment; preserving nature, the environment and resources; promote culture; raising the nation's image; foster a sense of love for the country; strengthening national identity and unity; and strengthening international friendship (Law No. 10 of 2009).

To realise this tourist destination, support from various facilities and services provided by the community, entrepreneurs, the Government and the Regional Government is needed. Lombok was chosen because it is included in the Super Priority Destinations (DSP) and the Indonesian Ministry of Tourism and Creative Economy has implemented a free Cleanliness, Health, Safety and Environment Sustainability (CHSE) certification program for the tourism industry in Lombok, NTB.

According to K. Krapt and Hunziker (in Yoeti, OK, 2008) tourism is a human activity carried out manually with the awareness that they receive services alternately between people in their own country/abroad, including the residence of people from other areas temporary. looking for satisfaction that is varied and different from what he experienced, where he got a permanent job. According to Meyers (2009), Tourism is the activity of travelling with the aim of obtaining enjoyment, seeking satisfaction, knowing something, improving health, enjoying exercise or rest, fulfilling duties, going on a pilgrimage and so on. Kane and Tucker (2004) define tourism as a trip that people undertake temporarily, from one place to another, leaving their place of origin, with a plan and with the intention of not trying or making a living. in different places visited, but solely for the pleasure of sightseeing and recreational activities or to fulfil various desires (Akib, 2020; Sunaryo et al., 2022).

Developing tourism in Lombok requires community empowerment. Padabain and Nugroho (2018) stated that community empowerment aims to create an independent

and prosperous society, able to explore and utilise the potential that exists in their respective regions and help communities to be free from backwardness or poverty. Therefore, Lombok, with its people's ability to utilise natural and cultural resources, has the potential to build economic acceleration, which is now starting to be seen in several sectors (Padabain & Nugroho, 2018).

An indicator of the success of tourism development in Lombok can be seen from the relocation of rural communities who are still in harmony with residents who have become part of the modernity of Lombok Island, giving rise to a sense of satisfaction (Akib, 2020). Community satisfaction is achieved through social interactions that strengthen social culture, not property/comfort consumption. Developing rural-regional marketing strategies that can better articulate the socio-cultural dimensions of communities can increase awareness of place-based values/characteristics prior to relocation to avoid conformity and costs to poor communities (Ragusa, 2022).

Tourism is a variety of tourist activities supported by various facilities and services provided by the community, entrepreneurs, government and local governments. In Indonesia, tourism aims to: increase economic growth; improving community welfare; eradicating poverty; overcoming unemployment; preserving nature, the environment and resources; promote culture; raising the nation's image; foster a sense of love for the country; strengthening national identity and unity; and strengthen friendship between nations (Republic of Indonesia Tourism Law, 2009). The function of tourism development is emphasised for the welfare of the Indonesian people, including rural communities on the island of Lombok, NTB (Akib, 2020).

Lombok is one of the islands which is separated by Lombok Strait from Bali next to the West and Alas Strait East of Sumbawa. This island is round with a kind of 'tail' on the side, Southwest, which is approximately 70 km long. The island's area of 5,435 km² places it in 108th place list of islands by region in the world. Lombok was chosen in this research because it has many unique things in terms of nature, culture, various foods and many others. However, what has been talked about most recently is the natural beauty of Lombok Island. Starting from Senggigi Beach, Malimbu Beach, Sekotong Beach, Kuta Beach, Central Lombok, Sendang Gile Waterfall, Tiu Kelep Waterfall and many more beautiful things on Lombok Island. It is not surprising that many tourists, both foreign and domestic, come through Lombok International Airport (picture 4) to spend time together enjoying the natural beauty of Lombok Island (Rimbakita, 2022; Tempo, 2018; Wulandari, 2021). Figure 6 shows the Lombok International Airport where researchers and tourists enter Lombok Island.

Figure 1 shows the beautiful island of Lombok seen from the coast with fishing boats and also for tourists who come who want to witness the beauty of Lombok Island directly from close range. Lombok Strait marks the boundaries plant and fauna of Asia. Starting from Lombok Island to the east, the flora and fauna show more similarities to the flora and fauna found in Indonesia and Australia than in Asia. The scientist who first stated this was Alfred Russell Wallace, an English citizen in the 19th century. From 1854 to 1862, this British researcher travelled around Indonesia to collect biological specimens (Nailufar, 2020; Rimbakita, 2022). In honour of him, this boundary is called the Wallace Line.

Figure 2 shows the Wallace Line, an imaginary line that separates Central Indonesia (including Lombok) and Eastern Indonesia. This line was created because there are differences in the characteristics of flora and fauna in the area. This line is named after its discoverer, Alfred Russel Wallace.

The line stretches across Southeast Asia, across the narrow waters between Borneo and Sulawesi and between Bali and Lombok. While not an official border, the Wallace Line acts as a natural barrier for many animals, demonstrating how physical barriers can divide habitats even if they are close together.

Figure 1. Lombok Island.

Source: https://en.wikipedia.org/wiki/Lombok

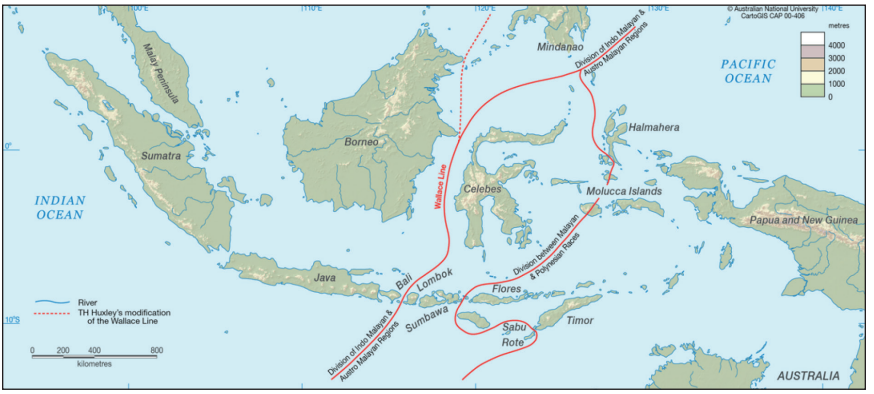

Figure 2. Wallace Line.

Source: Prakoso (2025).

The Wallace Line plays a significant role in the evolution of species. The striking differences between the fauna on either side of the line inspired Alfred Russel Wallace to develop the theory of evolution with Charles Darwin. Wallace observed that species do not arise randomly, but evolve according to their environment. (Source:https://www.tempo.co/sains/mengenal-garis-wallace-batas-alam-yang-tidak-dilewati-spesies-apa-pun-1209846) The topography of Lombok Island is dominated by the beautiful volcano Rinjani, which reaches 3,726 meters above sea level and makes it the third highest in Indonesia. This volcano last erupted in June-July 1994. In the year of 1997, the mountainous area and the Segara Anak lake in the middle were declared protected by the government. The southern region of the island of Lombok mostly consists of fertile land used for agricultural commodities commonly grown in this region include corn, paddy, coffee, tobacco and cotton.

The people of Lombok are also known to have high tolerance. The harmonious combination of tourism and religion made Lombok awarded as the World's Best Halal and the World's Best Halal Honeymoon 2015 in Dubai, United Arab Emirates.

Lombok Island is included in the Lesser Sunda Islands. The small islands that surround Lombok Island are called Gili. There are three Gilis which are tourist favourites for snorkelling, diving and fishing activities, including Gili Trawangan, Gili Air and Gili Meno. Not only these three dykes, other dykes in the archipelago also have very beautiful charm. As an island community, the people of Lombok are not yet familiar with organisational culture (Hermawan & Loo, 2019; Irawanto et al., 2011a, 2011b; Selvarajah & Meyer, 2017; Selvarajah et al., 2016). There are strong indications that cultural norms in Lombok's legacy of social interaction are the 'soul' of modern business. This requires transformation. The problem is, what is the picture and form of community transformation on Lombok Island through education and tourism? Has this transformation succeeded in making the people of Lombok better and more prosperous?

Method

Qualitative research methods (Creswell, 2012; Ismawati, 2016; Sosa-Díaz & Valverde-Berrocoso, 2022) used in this research included observation, semi-structured interviews and focus group discussions (FGD). The qualitative research approach in this study uses in-depth interviews: namely, conducting interviews with key stakeholders such as deputy governors, tourism managers, school teachers, lecturers and local communities to gain an in-depth view of the impact of tourism and education in Lombok on the local economy. FGD, namely holding FGDs with various stakeholders to understand the dynamics and perceptions regarding the role of tourism and education in the local economy, was held at the house of the deputy governor, at Mataram University, at Nahdatul Wathan University, at Hamzanwadi University, at the NTB regional research office, at the industry office, and at the NTB Language office. Figure 7 shows the campus of Mataram University where researchers held an FGD with the rector and lecturers regarding education and tourism on Lombok Island.

Table 1. Research Team from Indonesian Universities Who Came to Lombok.

University Name	Campus Address
Widya Dharma University	Klaten, Central Java, Indonesia
University 17 August 1945	Semarang, Central Java, Indonesia
Mangunwijaya Catholic Polytechnic	Semarang, Central Java, Indonesia
As'adiyah Islamic Institute	Sengkang, South Sulawesi, Indonesia
LPP Polytechnic	Jogjakarta, Indonesia
Slamet Riyadi University	Surakarta, Central Java, Indonesia
UNISNU	Jepara, Central Java, Indonesia
PGRI University	Semarang, Central Java, Indonesia
STIT MADINA	Sragen, Central Java, Indonesia
Lambung Mangkurat University	Banjarmasin, South Kalimantan, Indonesia
Kendari Muhammadiyah University*	Southeast Sulawesi, Indonesia
PGRI Nusantara University	Kediri, East Java, Indonesia
Alma Atta University	Jogjakarta, Indonesia
Nahdlatul Wathan University	Mataram, NTB, Indonesia
STIKES Yarsi	Mataram, NTB, Indonesia
Hamzanwadi University	East Lombok, NTB, Indonesia
Krisnadwipayana University	Jakarta, Indonesia
Mataram University	Mataram, NTB, Indonesia

Note: *Absent.

In-depth observations were also carried out when researchers were in Lombok during the 2022 holidays so that they could produce a more comprehensive study on education. and tourism in Lombok. Semi-structured interviews were conducted at the official residence of the deputy governor of NTB with sources from the deputy governor of NTB and the head of the NTB regional research service.

In this study, the research team came from 17 universities (Suara NTB, 2022) from Lombok Island and from outside Lombok Island and had to travel by land or air to make observations. Several observation models were used in this research. Participatory observation is a data collection method used to collect research data through observation and sensing, where researchers are involved in the daily lives of informants. Also, unstructured observations, namely observations carried out without using observation guidelines, so that researchers develop their observations based on developments that occur in the field. Group observation is an observation carried out by a research team on a problem that is the object of research.

The final method used to collect data is through FGD, which is an effort to find the meaning of a problem by a group of researchers through discussion, so that there are no misunderstandings by the researcher. FGDs were held at Mataram University, Nahdlatul Wathan Mataram University, and Hamzanwadi University.

The names of universities that participate in research and community service on the island of Lombok provided in Table 1. They consist of 17 universities from various regions in Indonesia. Apart from the research team from 17 universities, this research also involved several informants, including: informant from East Lombok Regency High School Supervisor, informant from Nahdlatul Wathan Anjani High School Teacher, informant from Benteng Vocational School Teacher,

informant from East Lombok State 1 Madrasah Aliyah Teacher, informant from State 2 Elementary School Teacher, informant from Selong Model State Madrasah Tsanawiyah Teacher, Head informant Madrasah Aliyah Negeri 1 East Lombok, informant, Religion Teacher at SD Negeri 5 Pringgajurang. Also, resource persons from the Deputy Governor of NTB and the NTB Provincial Government Team who were present at the official residence of the Deputy Governor of NTB, namely the Head of the Tourism Service, the Head of the Regional Research Agency, and the Director of the Bilebante Tourism Village, as well as the Head of Bilebante Village, Central Lombok, NTB.

Implementation of Interviews and FGDs

The methodological details regarding what exactly was done and how exactly the method was applied are as follows. First, we submitted a proposal to the NTB Deputy Governor that we, from 17 universities in Indonesia, would hold an academic gathering in the NTB province to see firsthand the transformation of potential tourist destinations through improving the education system and the progress of tourism development in NTB and its impact on the community through direct interviews. Figure 3 shows FGD participants who came from 17 universities in Indonesia. They took a photo with the Deputy Governor of NTB, Mrs Siti Rohmi D (in white in the middle of the front row) at the official residence of the

Figure 3. FGD participants at the NTB Deputy Governor's Office.

Figure 4. Sasak Tribe Tourist Village.

deputy governor of NTB. The NTB Deputy Governor responded to our proposal and expressed her willingness to receive us at the NTB Deputy Governor's official residence (photo attached). In this agreement, the NTB Deputy Governor, together with the head of the tourism office, the head of the NTB regional research agency, the head of the statistics office, and other related officials, received us in an FGD at the NTB Deputy Governor's official residence. The NTB Deputy Governor and NTB officials invited by the NTB Deputy Governor acted as resource persons, and we, representatives from 17 universities, acted as questioners. It so happened that the NTB Deputy Governor was our friend when we were studying for our master's at the Surabaya Institute of Technology. From the Deputy Governor's official residence, we continued with field observations.

Our first observation was conducted in the traditional village of the Sasak tribe, the observation was conducted by interviewing UMKM actors regarding the progress of the tourism sector, especially by seeing the many Sasak Tribe people who are looking for additional income by making various souvenirs, not only woven fabrics, but also various culinary delights and the many home stays and productive tourist villages. The interview results were validated with statistical data presented in the research results section. Figure 4 shows a traditional Sasak house in Lombok where researchers obtained typical Sasak souvenirs in the form of woven cloth and various wooden souvenirs made by local residents.

The composition and number of Focus Group Interviews conducted with details of the questions asked are as follows: interviews regarding Education transformation were conducted with the head of the regional research agency, and

continued with FGD at Mataram University led by the rector of Mataram University, continued with FGD at Hamzanwadi University led by the vice rector for academic affairs, and FGD at Nahdlatul Wathan University, Mataram, led by the vice rector for academic affairs. So that FGDs were conducted four times, namely at the official residence of the NTB deputy governor and at the three universities mentioned above. The FGD also discussed Secondary Macroeconomic Data, taken from various sources, which were requested by FGD participants.

Results and Discussion

Transformation in Education

From the informants, it is known that there has been a transformation of education in Lombok, from Islamic boarding school-style education to modern education. From the informants, it is known that the people of Lombok are known as a religious society, so that the education system in Lombok is known as Islamic boarding school education, which has transformed into a modern Islamic boarding school with learning English and Arabic as international languages. A well-known and respected figure in the world of Lombok education is *Tuan Guru Kyai Haji* (TGKH) Muhammad Zainuddin Abdul Madjid (Noor et al., 2014). Another name is HAMZANWADI which is an abbreviation of *Haji Muhammad Zainuddin Abdul Madjid Nahdlatul Wathan Diniyah Islamiah* because he founded the Nahdlatul Wathan school as a forum for struggle with three focuses of struggle, namely the fields of da'wah, social and education.

The field of da'wah is realised in the form of lectures (recitations) which are carried out from one village to another, from one mosque to another (Hamdi, 2018; Noor et al., 2014). Struggle in the social and educational fields is manifested in the form of formal and non-formal institutions. Social sector institutions that are still standing strong and running today are the Darul Arkam NW Pancor Orphanage and several other orphanages spread across several villages, as well as educational institutions that are widely spread from kindergartens to universities. The parent educational institution, which is the focus of the struggle in the education sector, is named NWDI (Asyári et al., 2015).

Establishing educational institutions at a time when society was still colonised and some ulama only focused on guiding their congregation, HAMZANWADI realised that only through educational institutions (madrasas) would the output be more effective, systematic and measurable so that they could compete on the global stage. market (Hamdi, 2018). This is a real transformation in the field of education.

The spirit of building a generation through education has been Hamzanwadi's commitment from the start, that all his students must be able to prepare themselves by mastering knowledge in all fields in order to become human beings who are able to compete in the future. This can be seen from the message contained in the mass reflection testament in stanza 115 (Hamzanwadi, 1998). The spirit of becoming people who are able to compete in the future inspires residents on Lombok Island and NTB Province, which in 2022 will have a total of 5,800 students. Details can be seen in Table 2.

Table 2. Percentage of Male and Female Population Aged 7–24 Years by Regency/City and Education Status, 2022.

Regency/City	No/Never Attended School	Still Attended School				No Longer at School	Total
		ES/IES/ Package A	JHS/IJHS/ Package B	SHS/ VS/ISHS/ Package C	College		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
West Lombok	0,03	35,90	14,28	12,40	8,00	29,38	100,00
Central Lombok	0,52	40,24	12,14	13,08	5,54	28,49	100,00
East Lombok	0,19	37,88	13,47	14,11	6,45	27,90	100,00
Sumbawa	1,26	35,13	12,84	14,49	8,72	27,56	100,00
Dompu	0,35	33,81	16,51	18,88	4,90	25,54	100,00
Bima	0,48	31,15	16,13	17,71	7,04	27,49	100,00
West Sumbawa	0,28	40,57	15,52	14,90	5,17	23,57	100,00
North Lombok	1,03	33,82	17,81	10,32	5,26	31,76	100,00
Mataram	0,27	36,39	14,30	13,96	13,63	21,44	100,00
Bima	0,01	35,47	19,85	14,53	6,81	23,33	100,00
West Nusa Tenggara	**0,40**	**35,36**	**14,27**	**14,22**	**7,31**	**27,25**	**100,00**

Source: Susenas, March 2022. (https://silastik.bps.go.id/v3/index.php/mikrodata/detail/VTJ5WXltN2hQZE9KWDFKOGNPdTFXZz09)

The educational transformation that occurred in Lombok was a change in the traditional Islamic boarding school education model to a modern Islamic boarding school by adding the study of cultural aspects, tourism and English and Arabic to communication practices in Islamic boarding schools, so that it also had a positive impact. the influence on economic growth with the large number of students who come from various corners of Indonesia, Malaysia, Brunei, etc.

Meanwhile, economic growth data shows that the economy of West Nusa Tenggara in the first quarter of 2023, compared to the first quarter of 2022, grew by 3.57%. In terms of production, Construction experienced the highest growth of 12.76%. In terms of expenditure, the PMTB component experienced the highest growth of 6.21% (BPS, 2023). From the results of interviews with the deputy governor of NTB, it is known that the economy of West Nusa Tenggara in the first quarter of 2023, compared to the previous quarter, experienced a contraction of 2.37% (q-to-q). From the production side, the Processing Industry Business Field experienced the deepest contraction of 15.23%. Meanwhile, in terms of expenditure, the Export of Goods and Services component experienced the highest contraction of 20.17% (BPS, 2023).

Gross regional domestic product in Table 3 above is the total gross value added arising from the entire economy in Lombok and West Nusa Tenggara. Calculating gross regional domestic product aims to assist NTB policymaking or evaluate development results, which can provide information regarding the economic performance of Lombok and NTB.

From Table 3 above, it can be seen that NTB's Gross Domestic Product has increased significantly, which shows that economic conditions are getting better. Improvements related to tourism include points H and I, namely H. Transportation and Warehousing, which includes:

1. Railway Transportation
2. Land Transportation
3. Sea Transportation
4. River, Lake and Ferry Transport
5. Air Freight
6. Warehousing and Transportation, Postal and Courier Support Services. Meanwhile, another aspect that is directly related to tourism is component I, namely

I. Provision of accommodation and food and drink, which includes:

1. Provision of accommodation
2. Providing food and drinks

The Uniqueness of Educational Transformation in Lombok

Table 4 shows the names of Islamic boarding schools in Lombok that have transformed from a traditional education model to a modern education model. Education in Lombok is Islamic boarding school-based and the majority is managed by the Islamic Foundation. Objective: To perfect the sentence of Allah Izzul Islam

Table 3. NTB Gross Regional Domestic Product (GRDP) 2021–2022.

GRDP Based on Current Prices According to Business Sector (Million Rupiah)		
GRDP Sub Category	2021	2022
A. Agriculture, forestry and fisheries	31932659.95	33568409.97
1. Agriculture, livestock, hunting and agricultural services	25015629.12	26099789.24
A. Plants	13335727.74	13909006.85
B. Horticultural plants	3759169.55	3921907.26
C. Plantation crops	1983899.19	2036943.88
D. Livestock	5462398.44	5746654.32
E. Agricultural and hunting services	474434.20	485276.93
2. Forestry and logging	118339.13	124792.64
3. Fisheries	6798691.69	7343828.10
B. Mining and quarrying	24283231.44	31964964.23
1. Oil, gas and geothermal mining	0.00	0.00
2. Coal and coal mining	0.00	0.00
3. Metal ore mining	19865195.95	27464490.00
4. Mining and other excavations	4418035.49	4500474.23
C. Processing industry	5603558.34	5906730.84
1. Coal industry and oil and gas refining	0.00	0.00
A. Coal industry	0.00	0.00
B. Oil and gas refinery	0.00	0.00
2. Food and beverage industry	2921380.47	3082420.39
3. Tobacco processing	1350469.28	1421809.00
4. Textile and apparel industry	227426.26	239354.18
5. Leather industry, leather goods and footwear	0.00	0.00
6. Wood industry, goods made from wood and cork as well as woven goods made from bamboo, rattan and the like	356297.37	382339.13
7. Paper and paper products industry, printing and recording media reproduction	81312.41	88150.80
8. Chemical, pharmaceutical and traditional medicine industries	19095.77	19957.67
9. Rubber, rubber and plastic products industry	4810.15	5124.58
10. Non-metallic mineral goods industry	294107.91	302242.73
11. Basic metal industry	11555.93	12289.95
12. Metal, computer, electronic goods, optical and electrical equipment industries	71745.54	76360.54
13. YTDL machinery and equipment industry	0.00	0.00
14. Transportation equipment industry	97466.36	101494.43
15. Furniture industry	116656.34	122256.14
16. Other processing industries, repair and installation services for machinery and equipment	51234.56	52931.30
D. Procurement of electricity and gas	120381.04	133160.39
1. Electricity	120180.02	132946.17
2. Gas procurement and ice production	201.01	214.22
E. Water supply, waste management, waste and recycling	113928.76	124102.51
F. Construction	13667297.64	14126877.64

(Table 3 continued)

(Table 3 continued)

GRDP Based on Current Prices According to Business Sector (Million Rupiah)		
GRDP Sub Category	2021	2022
G. Wholesale and retail trade; car and motorcycle repair shop	19596830.10	21743431.47
1. Car, motorcycle and repair trading	2619447.98	2900702.52
2. Wholesale and retail trade, not cars and motorbikes	16977382.12	18842728.95
H. Transportation and warehousing		
1. Railway transportation	6995554.040.00	8663005.130.00
2. Land transportation	3471502.25	3946130.90
3. Sea transportation	268512.62	311590.92
4. River lake and ferry transport	1681457.88	2016217.19
5. Air freight	1239997.06	1962698.52
6. Warehousing and transportation, postal and courier support services	334084.24	426367.60
I. Provision of accommodation and food and drink	1973000.85	2577170.32
1. Provision of accommodation	928207.13	1261803.30
2. Providing food and drinks	1044793.71	1315367.02
J. Information and communication	3095890.63	3248688.30
K. Financial services and insurance	5943618.42	6481037.60
1. Financial intermediary services	4941038.60	5354700.35
2. Insurance and pension funds	216345.09	229374.56
3. Other financial services	785048.49	895352.03
4. Financial support services	1186.24	1610.66
L. Real estate	4464723.83	4734495.26
M, N. Corporate services	240308.79	272250.82
O. Government administration, defence and mandatory social security	9096020.43	9492361.98
P. Education services	7168635.16	7611141.21
Q. Health services and social activities	2930916.41	3043232.45
R, S, T, U. Other services	2889410.34	3252993.86
Regional gross domestic product	140115966.15	156944054.00

Source: Badan Pusat Statistik Provinsi Nusa Tenggara Barat (2023).

wal Muslimin and happiness in the world and the hereafter. Efforts made to achieve these goals, which are also stated in the AD are: (a) Improving mutt: education and culture in accordance with Islamic teachings. (b) Establishing madrasas/schools, student dormitories, places of worship and health centres. (c) Broadcasting the Islamic religion through tabligh-tablig, recitations, publications and other da'wah media. (d) Turn on a fertile soul, ask for help, increase social charity and charity. (e) Organising courses, libraries and reading parks. (f) Maintaining Islamic brotherhood and community peace. (g) Cooperate with other groups.

Based on the results of observations and interviews conducted with education supervisors, teachers and school principals, information can be obtained about the transformation of Islamic boarding school education into modern education with santri culture on Lombok Island at the basic education level. socio-cultural values. A manifestation of the transformation of Islamic boarding school education on

Table 4. Transforming Islamic Boarding Schools in Lombok.

Name of the Islamic Boarding School	Superiority
Syeh Zainuddin NW Anjani Islamic Boarding School	It has 12 educational units, both formal and informal, consisting of elementary to tertiary levels, with thousands of students.
Darunnahdlatain Islamic Boarding School	Often wins at the West Nusa Tenggara provincial level.
Nurul Harmain Islamic Boarding School NW Narmada	It has 2,000 students from various regions in Indonesia, with a communication system between students using Arabic and English.
Lendang Nangka Tohir Yasin Islamic Boarding School	Become a centre for Islamic boarding-based community economic development.
Ulil Albaab Islamic Boarding School NW Gegek	Has many business institutions as a source of income for Islamic boarding schools. Has digital-based financial management and is committed to developing the surrounding community.
Nurul Hakim Islamic Boarding School, Kediri	Using English and Arabic, has students who come from various regions. Implementing a modern education system by adopting formal and informal curricula.
Islahudiny Kediri Islamic Boarding School	Islamic boarding schools that were born before Indonesian independence. Studying the Yellow Book, Nahwu and Syaraf. The students come from all over Indonesia.
Munirul Arifin Islamic Boarding School NW Praya	Prioritises religious studies and general studies, uses Arabic and English in daily communication.
Al Kasyif Modern Islamic Boarding School	Students are taught the spirit of leadership at this Islamic Boarding School, and also study a lot of religious lessons
DLM NW Aiklomak Ulama Islamic Boarding School	Integrating Sasak culture into the Islamic boarding school, the entire building is made with rice barns and Sasak buildings. uses Arabic and English (Debate Champion) and has seven sources.
Ibnu Mas'ud Islamic Boarding School	Full student learning for 24 hours
Darul Muhajirin Praya Islamic Boarding School	Use Arabic and English in the Islamic boarding school environment.
Abu Hurairah Islamic Boarding School, Mataram	The best Islamic boarding school in Lombok with a focus on becoming Tahfidz
As-Sunnah Islamic Boarding School	The students come from within and outside the province. NTT. Java, Claimantan, and Aceh.
Qomarul Huda Islamic Boarding School, Lombok	Providing junior high school, high school and university-level education.
Anas bin Malik Islamic Boarding School, East Lombok	Combining religious curriculum and curriculum from the government to produce a generation that is muttafaqih fiddin, becoming a cadre of leaders for society/nation,
Tahfidz Al Madani Islamic Boarding School, East Lombok	has many levels, but what is special is the Quran tahfidz program. with three programs.
Tahfidz Al Madani Islamic Boarding School, East Lombok	has many levels, but what is special is the Quran tahfidz program, with three programs.

Lombok Island into modern education is the pattern of moral education, namely, elementary school students are taught the tak'lim muta'alim method (how to learn and teach). Students are taught how to have good morals by teachers in order to obtain knowledge that is blessed (useful). The form of ethics that is instilled is that students are taught to greet and kiss the teacher's hand when they come to school.

In the socio-cultural field, the transformation of Islamic boarding school education can be seen in the way they dress. Schools require students to dress like santri when they come to school on certain days, for example, on Fridays and religious holidays organised by the school. Students are required to wear Muslim clothing, it has even been made into a mandatory uniform to wear on certain days. Clothing is the most striking attribute as evidence of the transformation of Islamic boarding school education into modern education with a *santri* culture.

The transformation of Islamic boarding school education into modern education with *santri* culture at the middle and high school levels is often found in schools under the auspices of the Ministry of Religion, although it is also reflected in state schools under the auspices of the Ministry of Education and Culture. Islamic boarding school education, which has undergone a transformation into modern education at the junior and senior secondary education levels, is not much different from the basic education level, however, the style of Islamic boarding school education is more prominent when compared to elementary schools. The transformation of Islamic boarding school education is not only in the field of moral development, the practice of religious teachings, but also in the field of curriculum, which is outlined in extracurricular activities with the addition of ecotourism studies.

Apart from that, the Islamic boarding school education pattern that is developing in modern santri-based schools on Lombok Island is very closely related to tourism organisations, so that the Islamic boarding school education pattern that is developing in schools on Lombok Island is an ecotourism-based Islamic boarding school that prepares its students to become skilled tourist guides (Kementerian Agama Republik Indonesia, 2020).

There are also universities that open tourism departments, namely the College of Tourism and Muhammadiyah University of Mataram, which are open to all sons of the Indonesian nation. In general, private educational institutions located throughout West Nusa Tenggara have religious and national motivations with the aim of overcoming the difficulties of children who are not accommodated in state schools due to difficulties in educational facilities and infrastructure. and assist the Government in efforts to make the nation's life smarter through tourism skills. One of the private universities in Mataram that is developing is Nahdhatul Wathan University, with a total of 7,000 students in 2022, which is also opening tourism studies in the LPPM.

Transformation in Tourism

Realising the tourism potential of Lombok Island, the local government is collaborating with various parties, especially universities, to launch a work program in the tourism sector by adding several typical Lombok icons (Sunaryo et al., 2022).

Universities are centres of information and learning for students and the community in Lombok. Universities also play an important role in solving various problems that arise in society, including tourism problems. Education for Sustainable Development is a learning method for solving community problems through formal, informal and non-formal education with additional information about tourism in Lombok. This program aims to change the orientation of education and learning so that every individual has the same opportunity to acquire knowledge, skills, values, attitudes and behaviour that can strengthen themselves in contributing to sustainable development, especially regarding tourism development in Lombok. Figure 8 shows a traditional house of the Sasak tribe in Lombok. The researchers are wearing traditional Sasak clothes.

One form of learning for the community carried out by universities in Lombok is by providing various life skills training to women's tourism organisations in Lombok, for example, typical Lombok weaving as souvenirs. Providing important training to solve various problems faced by women and men in Lombok society in the fields of education, agriculture, health and tourism, for example, in making souvenirs for tourists, making typical Lombok food as souvenirs for tourists.

The dynamics of higher education on the island of Lombok show tremendous enthusiasm among the younger generation, as has been researched by Garci (2022) in Central America and Binder et al. (2022) in Australia on the Experiences and Expectations of the Young Generation from Poor Environments (Garci, 2022). In Lombok, the younger generation also contributed great enthusiasm (interviews with lecturers from Hamzanwadi University and Nahdlatul Wathan and their students), showing that they are enthusiastic about rising and transforming towards a modern and religious society through tourism. Figure 5 shows the Nahdlatul Wathan Mataram University campus where the researcher held an FGD with the vice chancellor and lecturers.

Figure 5. Nahdlatul Wathan University Mataram (Photo by Researcher).

Figure 6. Icons at Lombok International Airport.
Source: Lombok Island (2012).

Figure 7. FGD Participants at the University of Mataram.

Figure 8. Sasak Tribe Traditional House in Lombok and Today's Tourists (Photo by Researcher).

Several Lombok tourism achievements have received international and national recognition. Kembang Kuning Tourism Village, East Lombok, won first place in the 2019 Archipelago Tourism Village Competition held by the Ministry of Tourism and the Ministry of Development of Disadvantaged Regions of the Republic of Indonesia and received a CHSE Certificate (Cleanliness, Health, Environmental Safety). Then, the tourist village of Sesaot, West Lombok district, received the 2019 Indonesia Sustainable Tourism Award in the environmental sector from the Ministry of Tourism and Creative Economy.

Also, the 2021 Sustainable Tourism Village Award and Certification with Bilebante Village, Central Lombok and Kembang Kuning Tourism Village, East Lombok. Not to forget, Tetebatu Tourism Village was successfully selected to represent Indonesia at the Best Tourism Award event held by UNWTO. This International Class Tourism Village Competition provides pride for the Indonesian people, especially the people of NTB, as well as an effort to advance Indonesian tourism at the global level. The harmonious combination of tourism and religion made Lombok awarded as The World's Best Halal and The World's Best Halal

Figure 9. FGD Participants on Lombok Tourism at Hamzanwadi University.
Source: Hamzanwadi Team.

Honeymoon 2015 in Dubai, United Arab Emirates.

The five strategic programs of the regional government 'NTB Gemilang' are contained in the vision and mission of the Regional Medium Term Development Plan of the NTB Provincial Government, namely, superior tourism, industrialisation, developing human resource competitiveness, investment-friendly NTB, developing regional connectivity and accessibility, as well as a clean and sustainable NTB (Results of a semi-structured interview with the Deputy Governor of NTB 2022). In the mainstay tourism sector, there are six programs, namely, development of small island (Gili) tourism, Mandalika Special Economic Zone, development of the Unesco Rinjani Global Geopark, development of the Tambora National Geopark, development of world-class halal tourism, and alleviating poverty with a poverty alleviation approach. community-based tourism (with the formation of 99 tourist villages).

Based on records from the NTB Tourism Office, at least 15,000 tourism sector workers were affected by the COVID-19 pandemic. With details in the hospitality sector 6,150 people, in the tourism awareness group sector 2,421 people, in the travel/guide sector 1,383 people, porters 636 people, homestay 213 people, then the Creative Economy/IKM sector 2,241 people, Art Studio 363 people, Culinary 229 people, 531 Boatmen and 833 cleaners,

> The 99 tourist villages program is producing results. The proof is that tourist villages in NTB have won various awards and championships. Of the 25 priority tourist villages for development by the NTB Provincial Government in 2019, a number of villages have received awards from the central government. 'Among them, the Bilebante Green

> Tourism Village, Central Lombok Regency, which was selected as the winner of two nature categories in the 2021 BCA Tourism Village Award competition, became a model village that received Tourism Village Certification in 2020 and various other awards'. (Interview with Deputy Governor of NTB)

The Deputy Governor of NTB stated that:

> NTB's economy in the first quarter of 2023 compared to the first quarter of 2022 grew by 3.57%. In terms of production, Construction experienced the highest growth of 12.76%. 'In terms of expenditure, the PMTB component experienced the highest growth of 6.21%'. For more details see (BPS, 2023)

With the development of the Mandalika circuit with support from the central government, NTB has succeeded in hosting the 2021 World Superbike and 2022 MotoGP. This event has stimulated NTB's tourism to become lively with skyrocketing tourist visits. The Samota-Sumbawa Motocross World Championship Series succeeded in leaving a good impression in the eyes of the international world, so that he was awarded the MXGP Best Media Opportunity category at the 2022 MXGP Awards in Turkey (2022). MXGP produces money circulating in the NTB area of up to IDR. 154.03 billion with the biggest impact on domestic circulation in the business sector of providing accommodation and food and drink, which reached Rp. 34.99 billion (Farida, 2022).

Another transformation of Lombok society is in the health sector. There are no health facilities with Islamic characteristics for the people of Lombok. The local government collaborated with religious leaders to form an Islamic-based foundation, namely the West Nusa Tenggara Islamic Hospital Foundation (YARSI) and established the Siti Hajar Mataram Islamic Hospital, which is located in the city of Mataram. With the existence of the competency education regulations for nursing staff, YARSI has upgraded education from an academy to a College of Health (STIKES Yarsi Mataram).

Conclusion

The description and form of transformation of rural communities on Lombok Island through education and tourism is taking place very quickly and enthusiastically because all components involved, namely rural communities, universities, provincial government and other stakeholders, are synergising and helping each other non-stop, without stopping. waiting for funds from the central government. Transformation in the education sector can be seen in the physical form of modern schools and modern Islamic boarding schools, while transformation through tourism can be seen in the large number of rural communities involved in tourism activities. These two transformations succeeded in making Lombok society better, and Lombok Island became more widely known to local and foreign tourists while maintaining local wisdom as a religious society, but not a priori towards modernity. The transformation of Lombok society can be an example for communities in other parts of the world.

Figure 10. Mandalika Circuit in Lombok.
Source: Wikipedia (2025).

Figure 11. STIKES Yarsi Mataram Campus (Photo by Researcher).

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References

Akama, J. S., & Kieti, D. M. (2007). Tourism and socio-economic development in developing countries: A case study of Mombasa resort in Kenya. *Journal of Sustainable Tourism*, *15*(6), 735–748.

Akib, E. (2020). Overview of tourism in education: Studies towards the era of the industrial revolution. *Heirloom. Journal of Tourism, Hospitality, Travel and Events Business*, *2*(1), 1–8.

Asyári, H., Muhiddin, A., & Rafiuddin. (2015). *NW study: Education, social affairs and da'wah*. HIMMAH NW Press.

Badan Pusat Statistik Provinsi Nusa Tenggara Barat. (2023). *Produk Domestik Regional Bruto Atas Dasar Harga Berlaku Menurut Lapangan Usaha (Seri 2010)*. Retrieved, 24 April 2025, from https://ntb.bps.go.id/indicator/52/352/1/-seri-2010-pdrb-atas-dasar-harga-berlaku-menrut-field-usaha.html

Binder, M. J., Barrett, E., & Beattie, J. (2022). We do big things from small things: Home employee and volunteer well-being in rural environments. *International Journal of Community and Social Development*, *3*(1), 68–83. https://doi.org/10.1177/2516602621998106

BPS. (2023). *Statistik Indonesia.* https://www.bps.go.id/id/publication/2023/02/28/18018f9896f09f03580a614b/statistik-indonesia-2023.html

Clifton, J., & Benson, A. M. (2006). Planning for sustainable ecotourism: The case for research ecotourism in developing country destinations. *Journal of Sustainable Tourism*, *14*(3), 238–254.

Creswell, J. W. (2012). *Educational research: Planning, conducting, and evaluating qualitative research*. University of Nebraska–Lincoln.

Farida, B. (2022). Zul-Rohmi's 4 year tourism record: Promises, implementation and recommendations. https://lombokpost.jawapos.com/opini/19/09/2022/note-pariwisata-4-tahun-zul-rohmi-promise-implementation-dan-rekomendasi/

Fitri, M. R. (2019). Progress in the implementation of Sustainable Development Goals (SDGs) in Indonesia. www.infid.org

Garci, C. S. (2022). Experiences and hopes of young residents in poor neighborhoods in Central America. *International Journal of Community and Social Development*. https://doi.org/10.1177/251660262211232343

Hamdi, S. (2018). Integration of culture, education and politics in the da'wah of Nahdlatul Wathan (NW) in Lombok: Biographical study of TGH. Zainuddin Abdul Madjid. *Walisongo Journal of Sociology*, *2*(2), 105–122.

Hamzanwadi. (1998). *A period of reflection on new experiences*. Hamzanwadi Press.

Hermawan, M. S., & Loo, M. K. (2019). Kinship construction as Indonesian organizational culture. *Literature*, *31*(1). https://doi.org/10.22146/jh.v31i1.4281

Honey, M. (2008). *Ecotourism and sustainable development: Who owns paradise?* Island Press.

Irawanto, D. W., Ramsey, P. L., & Ryan, J. C. (2011a). The challenges of leading in Javanese culture. *Asian Ethnicity*, *12*(2), 125–139.

Irawanto, D. W., Ramsey, P. L., & Ryan, J. C. (2011b). Adapting leadership theory to Indonesian culture. *Global Business Review*, *12*(3), 355–366.

Ismawati, E. (2016). *Language and literature education research methods*. Ombak.

Kane, M. J., & Tucker, H. (2004). Adventure tourism: Freedom to play with reality. *Tourism Studies*, *4*(3), 217–234.

Kementerian Agama Republik Indonesia. (2020). *Statistik Pondok Pesantren*. Direktorat Pendidikan Diniyah dan Pondok Pesantren. Retrieved, April 24, 2025, from https://ditpdpontren.kemenag.go.id/pdpp/statistik?id=52

Kenya Wildlife Service. (2023). *Official website*.

Lombok Island. (2012, June 21). *Lombok International Airport*. Traveling to Lombok. https://travelingtolombok.blogspot.com/2012/06/lombok-international-airport.html

Meyers, K. (2009). *Understanding tourism*. https://drive.google.com/file/d/0B9JtpWUzKcwkOUIwdnRTU045aUE/edit?resourcekey=0-7C2WaUnLHkiuDlF9IbTSZg

Nailufar, N. N. (2020). Weber trail, Wallace trail, and Lydekker trail. https://www.kompas.com/skola/read/2020/03/28/080000469/garis-weber-garis-wallace-dan-garis-lydekker

Noor, M., Habib, M., & Zuhdi, M. H. (2014). *Vision of religious nationality: Tuan Guru Kiyai Haji Muhammad Zainuddin Abdul Madjid 1904–1997*. Nahdlatul Wathan Islamic Boarding School Jakarta & Al-Quran Printing Institute.

NTB Central Statistics Agency. (2023). *NTB economic growth [Economic growth of West Nusa Tenggara]*. https://ntb.bps.go.id/pressrelease/2023/05/05/931/ntb--tw1-2023--perkerjaan-bisnis-nusa-tenggara-barat.html

NTB Provincial Government. (2018). *Regional medium term development plan (RPJMD), NTB Provincial Government: Five strategic programs*. https://ntb.bps.go.id/id/publication/2018/08/16/90d3aad9541199a1fe6f0e97/provinsi-nusa-tenggara-barat-dalam-angka-2018.html

Padabain, F. A., & Nugroho, S. (2018). Implementation of the tourism village program in the context of community empowerment in Mas Village, Ubud District, Gianyar Regency, Bali Province. *Journal of Tourism Destinations*, *5*(2), 145–154..

PBB. (2016). *UNWTO Tourism Highlights, 2016 Edition.* https://www.unwto.org/archive/global/publication/unwto-tourism-highlights-2016-edition

Prakoso, A. A. (2025). *Garis Wallace dan Weber – Pengertian, Sejarah dan Pembagian*. RimbaKita.com. https://rimbakita.com/garis-wallace-dan-weber/

Pristiwasa, I. W. T. K. (2021). New opportunities for the tourism sector [New opportunities for the tourism sector]. https://batamnow.com/peluang-baru-dan-pembangunan-berkebesaran-sdgs-sektor-pariwisata/

Ragusa, A. T. (2022). Escaping the city and community fit: Finding 'place' in Australia. *International Journal of Community and Social Development*, *4*(1), 61–88. https://doi.org/10.1177/25166026211070374

Republic of Indonesia. (2009). *Undang-Undang Pariwisata.* https://peraturan.bpk.go.id/Details/38598/uu-no-10-tahun-2009

Rimbakita. (2022). *Pesona Lombok [Charm of Lombok]*. https://www.bing.com/images/search?q=artikel+tentang+lombok+di+rimba+kita&qpvt=Artikel+tentang+Lombok+di+Rimbakita&form=IGRE&first=1

Ritchie, J. R. B., & Crouch, G. I. (2003). *The competitive destination: A sustainable tourism perspective*. CABI Publishing.

Royal Government of Bhutan. (2018). *Gross National Happiness Commission*. https://www.mfa.gov.bt/embassies-missions-and-consulates-abroad/

Selvarajah, C., & Meyer, D. (2017). Human capacity development in Indonesia: Leadership and managerial ideology in organizations in Java. *Asia Pacific Business Review*, *23*(2), 264–289.

Selvarajah, S., Todd, I., Tighe, P. J., John, M., Bolton, C. E., Harrison, T. W., & Faircough, L. C. (2016). Multiple circulating cytokines are coelevated in chronic obstructive pulmonary disease. *Mediators of Inflammation*, 3604842. https://doi.org/10.1155/2016/3604842

Sosa-Díaz, M. J., & Valverde-Berrocoso, J. (2022). Grounded theory as an educational technology research methodology. *International Journal of Qualitative Methods*, *21*, 1–13. https://doi.org/10.1177/1609406922113322

Suara NTB. (2022). UNW and 17 universities (ADLPTI) impact on education progress on Lombok Island. https://www.bangunantb.com/2022/09/29/universitas-nahdlatul-wathan-mataram-jalin-kerja-sama-dengan-association-dosen-lintas-perguruan-tinggi-indonesia/

Sunaryo, A., & Yuli, K. W. (2022). The iconic shape of the traditional javanese food Oblok-Oblok. *KnE Social Sciences*, 465–470. https://doi.org/10.18502/kss.v7i14.11998

Tempo. (2018). *Pesona wisata island Lombok*. https://national.tempo.co/read/1151655/pesona-wisata-island-lombok

The Bali Tourism Board. (2023). *Official website*. https://bali.bps.go.id/en/pressrelease/2024/01/02/717889

University of Costa Rica. (2023). *Official website*. https://www.iau-hesd.net/university/university-costa-rica

Wikipedia. (2025, April 24). *Sirkuit Internasional Mandalika*. https://id.wikipedia.org/wiki/Sirkuit_Internasional_Mandalika

Wulandari, T. (2021). Knowing the differences between the fauna of western and central Indonesia. https://www.detik.com/edu/detikpedia/d-5707726/menkenal-garis-pemisah-fauna-indonesia-timur-dan-tengah

Applying Leader Member Exchange (LMX) Model to Investigate Leadership Styles and Leadership Effectiveness in Higher Education Institutions

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Abstract

Indian higher education sector is phenomenally growing, thereby posing a challenge to education leaders to manage their institutions effectively. The present article is aimed at investigating different styles of leadership and their impact on leadership effectiveness in higher education institutions (HEIs), studying gender as a moderating variable. LMX model has been used to examine different leadership styles. structural equation modelling (SEM) and an Independent Sample *t*-test were applied on a sample of 361 respondents who were randomly selected from the population of leaders and followers working in HEIs in Jammu and Kashmir. The study found that different leadership styles impact leadership effectiveness differently. Further, the study revealed that gender makes a significant difference in different leadership styles, and males and females lead differently, which was coherent in the light of the existing research in HEIs. The study has added significant insights into the domain of leadership by adopting a sound methodology for different leadership styles and leadership effectiveness using LMX perspective. The present research contributes to existing literature by investigating the moderating effects of gender on leadership effectiveness.

Keywords

Leadership styles, leadership effectiveness, gender leadership, leader–member exchange (LMX), HEI

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Introduction

Social scientists have studied leadership in academic settings for many years (Badura et al., 2022), and yet there is no agreement upon what defines leadership (Jyoti & Bhau, 2015). There is no single dominant paradigm for studying leadership (Evans, 2022), as researchers have approached it from different perspectives (Sajjad et al., 2024). Research reveals the significant relationship of leadership on organisational performance (Wachira & Wainaina, 2025) and has gained continuous attention among academicians and practitioners (Igbaekemen & Odivwri, 2015; Khajeh, 2018). A recent Web of Science search for leadership turned up over 165,000 articles, demonstrating the growth of leadership research in academia. The leadership styles are seen to be crucial for accomplishing organisational objectives and motivating subordinates to succeed (Farhani et al., 2025). Research reveals how a leader's style affects the organisation's success (Kaiser et al., 2008). Although leadership theory and research emerged more than a century ago, scrupulous theory development and empirical research on leadership were stagnant until around 1990 (Gardner et al., 2010) when there was a renaissance of interest in charismatic leadership (Conger & Kanungo, 1987) and transformational leadership (Bass, 1997). The leadership field continued to thrive and remained vibrant during the past three decades, with many new perspectives being tested (Dinh et al., 2014).

Beyond the idea that people are born leaders, researchers have been concentrating on how to create effective leaders. In higher education institutions (HEIs), the significance of leadership has been recognised, particularly in allocating resources to train future generations as leaders. A search of the top 50 universities as ranked by US News and World Report (2018) showed that every department in the ranking list offers some form of leadership development for the students. However, little is known about the efficacy of leadership development approaches, despite their apparent widespread use. Leadership has been suggested to be a dispositional trait (Judge et al., 2002), although research suggests that it can also be developed through experience (Day et al., 2014; Lacerenza et al., 2017).

Theoretical Background

Katz and Kahn developed Leader–Member Exchange (LMX) model in the late 1960s, which deals with the interpersonal interactions between leaders and followers. Higher levels of trust, involvement, support, and rewards are characteristics of high-quality exchanges compared to low-quality ones. The LMX, also referred to as vertical dyad linkage, is concerned with relationships between a leader and a member. Although there are not many studies that look at transformational leadership and LMX combined, early research found a strong correlation between transformational leadership traits and high-quality LMX (Basu & Green, 1997; Deluga, 1992; Howell & Hall-Merenda, 1999).

LMX Dynamics and Leadership Styles

The relationship between LMX and leadership styles remains an area of immense importance for the present work, given its implications for employee

engagement, performance, and organisational success. While LMX model highlights the differentiated, dyadic relations among leaders and individual followers, leadership styles describe broad patterns of leader behaviours that influence the quality of these exchanges. Transformational leadership behaviours—idealised influence, inspirational motivation, intellectual stimulation, and individualised consideration—align closely with the relational dimensions of high LMX. Transformational leadership positively predicts LMX quality through enhanced psychological empowerment and trust. Recent longitudinal research by Breevaart and Bakker (2018) further supports the notion that transformational leadership fosters high-quality exchanges, which in turn improve engagement with work over time. While less relational in nature, transactional leadership—especially contingent reward—can promote moderate LMX quality through clear expectations and fairness. Liao and Chuang observed that contingent reward behaviours strengthen LMX quality when paired with consistent leader communication and perceived procedural justice.

Authentic leadership, categorised by self-awareness, relational transparency, and moral behaviour, enhances openness and trust, which are critical to LMX quality. Hassan and Ahmed (2017) demonstrated that authentic leadership is significantly related to LMX, with trust mediating this effect. More recently, Schoemaker et al. highlighted the role of authentic leadership in nurturing relational-based exchanges in public sector organisations. Krasikova et al. (2017) showed that destructive leadership behaviours, including authoritarianism, diminish LMX and contribute to negative follower outcomes.

Literature Review and Hypotheses Development

Leadership Styles and Leadership Effectiveness

Even though research on leadership has grown significantly over the last 75 years, there are still concerns about how male and female leaders experience leadership and achieve successful outcomes. Leadership style is defined as a certain behaviour that a leader in an organisation uses to inspire staff members to accomplish the intended results (Haque et al., 2015; Igbaekemen & Odivwri, 2015). Xenikou (2017) revealed that leadership style is the way in which a leader chooses to act towards his/her subordinates.

There is no agreement on what constitutes ‘the best style’ of leadership (Bolman & Deal, 2017). There is an adequate amount of research which substantiates the fact that leaders exhibit different leadership styles and produce outcomes differently (Andersen, 2015; Zacher & Rosing, 2015). Further, research reveals that gender plays a significant role in exhibiting different leadership styles and has an impact on leadership effectiveness (Anna Gorska, 2016; Eagly & Miller, 2016; Zenger & Folkman, 2019).

The classical research in leadership reveals different fundamental approaches of leadership as autocratic, democratic, task-oriented and relationship-oriented (Bass & Avolio, 1990; Eagly & Karau, 2002). Autocratic leadership has been defined by researchers as the leader making choices completely by themselves

without consulting the group members (De Cremer, 2007). Autocratic bosses constantly want their staff to follow their instructions (Al Khajeh, 2018) and therefore, retain the decision-making rights with them (Obiwuru et al., 2011).

On the other hand, *democratic* leadership is participative, consultative and involves the group in decision-making (Bass & Avolio, 1990; Gastil, 1994; Nwokocha & Iheriohanma, 2015). Nwokocha and Iheriohanma (2015) suggest that there is a possibility of poor decision-making by the subordinates as a result of the leader depending on subordinates. Lewin et al. (1939) found that the democratic style is better because it enhances autonomy, satisfaction, and group effectiveness. However, more recent meta-analyses (Foels et al., 2000) have revealed the impact of certain variables that could moderate these results. Leaders who use a *task-oriented* style mainly emphasise achieving the group task, whereas the *relationship-oriented* leaders emphasise the quality of relations with members (Hersey & Blanchard, 1982).

Full range leadership (FRL) Model (Bass, 1985) discusses three styles, namely transformational, transactional and laissez-faire. The model comprises nine leadership factors: idealised influence (behaviour), idealised influence (attributed), individualised consideration, inspirational motivation, intellectual stimulation, management-by-exception (active), contingent reward, management-by-exception (passive) and laissez-faire. Transformational leadership has attracted substantial attention from researchers and practitioners because of its significant impact on organisational outcomes. It has become the dominant paradigm over the past 20 years (Kennedy, 1994; Tourish, 2008) and has emerged as the most favoured approach of leadership in organisational settings by practice and empirical evidence (Pawar, 2016). Bass and Avolio (2004) have conceptualised four behavioural components of transformational leadership.

Idealised influence

The ability to articulate vision clearly, display very high moral standards and do the right things (Yukl, 1998), have charisma (Bass, 1985) and the ability to be a role model for subordinates (Bass, 1985; Bass et al., 2003). The major attributes of idealised influence are integrity, respect, risk-sharing, trust, and vision (Stone & Patterson, 2005). *Inspirational Motivation:* It describes how leaders motivate their followers to accomplish both individual and group objectives (Judge & Piccolo, 2004). *Intellectual stimulation:* Leadership that inspires followers to question their own opinions and ideas and to solve problems creatively (Bass, 1985). *Individualised consideration:* It enables leaders to establish a solid rapport with every follower. There is more to the relationship than just an exchange.

Bass and Avolio (1994) found transactional leadership as a type of contingent-reward leadership that had active and positive exchanges between leaders and followers, whereby followers are rewarded or recognised for accomplishing agreed-upon objectives. *Contingent reward*: Contingent reward leadership focuses on achieving the desired objectives. This leadership behaviour surfaced because of human appreciation for concrete, tangible, and material rewards in exchange for their efforts (Bass & Avolio, 2004). *Management by exception (active)*: Leaders following management by exception (active) have an inherent trust in

their workers to end the job to a satisfactory standard. This type of leadership does not inspire workers to achieve beyond expected outcomes (Bass & Avolio, 2004). *Management by exception (passive)*: Style of transactional leadership in which the leaders avoid specifying agreement, and fail to set goals and standards to be achieved by staff. According to Gill (2014), Laissez-faire leaves subordinates to complete tasks and jobs in the way they choose without adherence to any strict policies or procedures. Leaders who practise laissez-faire show little involvement in important organisational issues.

According to a substantial analysis of 162 studies, women exhibited somewhat less dictatorial and autocratic leadership styles and more democratic and participatory leadership styles (Eagly & Johnson, 1990). Women were shown to have more democratic and participatory leadership styles than men in the meta-analysis of gender differences in leadership conducted by Eagly and Johnson (1990). The study also discovered that there were no gender-based differences in task-oriented approaches and that female leaders were somewhat more relationship-oriented than male leaders.

The meta-analytical results (Eagly & Carli, 2003; Eagly & Johnson, 1990; van Engen & Willemsen, 2004) showed that female leaders adopt democratic and transformational leadership styles to a greater extent than male leaders. Compared to women, men are more likely to choose autocratic and passive leadership styles. Therefore, a significant amount of research regarding leadership suggests that there is a gender effect on leadership and the term leadership has a bias associated with it (Bass & Avolio, 1990; Yoder & Sinnett, 1985). This bias typically favours men and the masculine gender role (Brenner & Bromer, 1981).

Despite the enormous research in LMX theory development, leadership research has not yet approached the phenomenon from the leadership styles, leadership effectiveness and gender difference perspective in a single study. In this context, we try to explore the base of LMX theory in developing new practical insights through theory building between LMX and leadership effectiveness in terms of leadership styles and gender differences in leadership. Based on the above facts, the following hypotheses have been formulated.

H_1: Different leadership styles impact leadership effectiveness differently.
H_2: In the LMX, Leadership styles are perceived differently by leaders themselves and their followers.
H_3: In the LMX, Leadership effectiveness is perceived differently by leaders themselves and their followers.
H_4: Gender difference in leadership styles has a significant positive impact on leadership effectiveness in the process of LMX.

Conceptualisation of the Study

The study has identified various leadership styles as well as the moderating role of gender that determine leadership effectiveness in HEIs. Leadership styles and gender are presumed to be independent variables that would affect leadership

effectiveness. Leadership effectiveness is presumed to be a dependent variable in the model. To test the various causal relationships between variables in the model, structural equation modelling (SEM) has been used. First, the measurement model has been developed and validated, and then the structural model has been tested, and various path estimates were determined.

Methodology

Measurement Scales and Items

The seven dimensions of Leadership Styles (i.e., Autocratic leadership Style, Democratic leadership Style, Task Oriented Leadership Style, Relationship Oriented Leadership Style, Transformational Oriented Leadership Style, Transactional Oriented Leadership Style and Laissez-faire Leadership Style) have been identified and measured from the exiting contemporary literature in the area of leadership. The measurement scales have been adopted from the prominent research studies, including Avolio et al. (1999), Bergman and Hallberg (2002), Bass and Avolio (1990), Boyd (2008), Luthar (1996). The 15-item scale of leadership effectiveness has been adopted from Christina (2005). The statements were developed on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Questionnaire Development and Administration

The list of items were developed on the basis of a literature review representing each dimension. The items were discussed with experts in the field, and the questionnaire was tested for its face and content validity. The necessary changes were incorporated in the final version of the questionnaire.

Sample and Data Collection

The study employed a purposive sampling technique followed by a systematic random sampling method to collect the data from the universe. There are various studies which explore the application of purposive sampling and discuss its combination with other sampling methods, including systematic sampling, to address specific research needs (Campbell et al., 2020). The whole population was divided into three regions, namely Jammu, Kashmir and Ladakh. Keeping in view the proper gender proportion out of 22 districts, which comprise these three regions, 10 districts were drawn purposively. The final sample from the institutes selected was drawn randomly from the available sampling frame. The study was conducted among male and female leaders at different capacities, holding key positions and also among the individuals working in various higher educational institutions. The reason behind selecting the higher education sector is the immense significance of effective leadership in higher educational institutions in providing quality output. Also, the under-representation of females at top positions in universities and colleges across the state of Jammu and Kashmir was a key factor in taking up the present study. This study estimated the required sample size based on the ratio of sample size to variables/items under examination. For that

reason, 5:1 ratio is regarded as minimum, 10:1 ratio is considered more acceptable (Hair et al., 2010). With 44 items explored in this study, a sample size of a minimum of 440 (i.e., 44 × 10 = 440) was considered adequate (Hair et al., 2010). Thus, 450 respondents were approached for data collection, and after data cleaning, 361 questionnaires were retained for final examination, resulting in an 80.2% response rate (i.e., 361/450 = 80.2%).

Application of Statistical Tools and Results

Confirmatory Factor Analysis, Reliability and Validity Analysis

SEM and AMOS software were used to run factor analysis. First CFA was performed for validity analysis (Hair et al., 2010). The results illustrated the model's acceptable fit to the data: $\chi^2 = 577.474$; $df = 197$; $\chi^2/df = 2.93$; CFI = 0.96; NFI = 0.94; TLI = 0.95; GFI = 0.87; ($p < .000$), RMSEA = 0.075; and SRMR = 0.48 (Bentler, 1992).

Further, to evaluate the performance of the second-order measurement model, a hierarchical (or second-order) confirmatory factor analysis was conducted using AMOS 20 through maximum likelihood estimation. This analysis modelled autocratic leadership styles, democratic leadership styles, task-oriented leadership styles, relationship-oriented leadership, transformational leadership styles, transactional leadership styles and laissez leadership style correlated constructs measured in this study. The results have been presented in Figure 1, as per the results, the loadings of second-order factors were in the accepted range of 0.73–0.91, which is above the recommended threshold, and the entire factor loadings were statistically significant at $p < .005$. However, items AS4, ROS2, ROS5, TAS4 and a single item of Laissez leadership style have been subjected to deletion due to weak loading of less than 0.50, thus resulting in a six-dimensional leadership style construct. The fit indices show that the measurement model achieved a good fit for the sample data, with fit indices mentioned in Table 1 (see also Figure 2). Construct reliability was also evaluated by using Cronbach's alpha, as displayed in Table 1. As indicated, each of the values surpassed the critical threshold of >0.7, thus representing an adequate scale reliability.

Structural Model

Model's fitness to the data was evaluated by drawing on the χ^2 statistic, comparative fit index (CFI), normed fit index (NFI), goodness of fit index (GFI), and tucker-Lewis index (TL1), and root mean square error of approximation (RMSEA) (Bentler, 1992). Model fit is considered satisfactory if CFI>0.95, NFI>0.90, GFI>0.90, TLI>0.90, and RMSEA<0.07 (Hair et al., 2010). The proposed model provided an adequate overall fit: $\chi^2 = 233$, $p = .05$, $df = 79$, $\chi^2/df = 2.949$, CFI = 0.948, NFI = 0.939, GFI = 0.929, TLI = 0.938, and RMSEA = 0.057. The SEM results indicate that different leadership styles impact leadership effectiveness differently, hence supporting H_1 (Table 3).

Independent Sample t-test

It was hypothesised that 'Leadership styles are perceived differently by leaders themselves and their followers'. To verify the hypothesis, an independent sample *t*-test was applied. The hypothesis was tested at 0.05 level of significance.

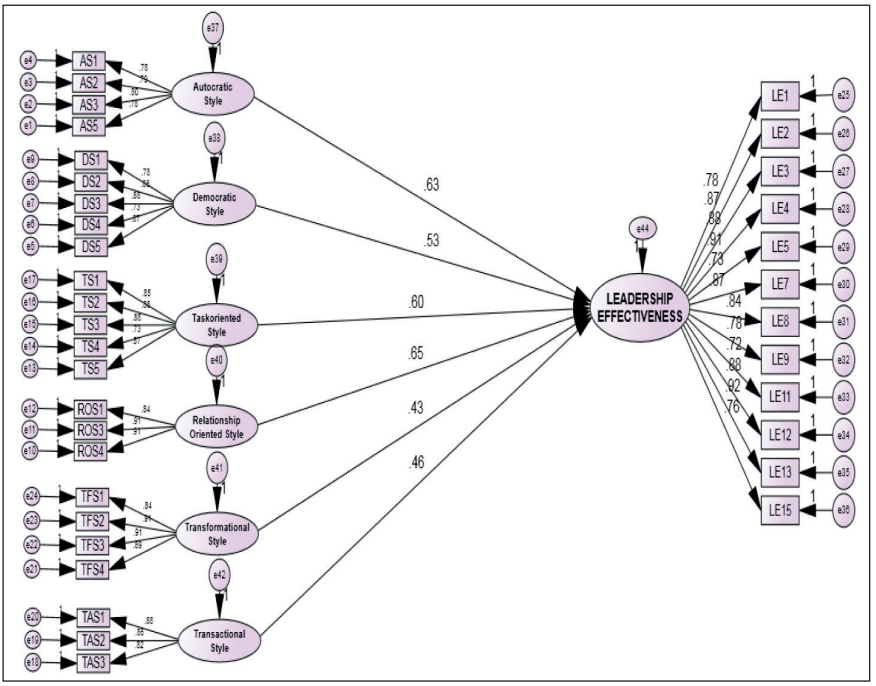

Figure 1. Structural Model Analysis.

Source: Authors Analysis using AMOS.

Table 1. Psychometric Properties of the Measurement Scale.

Construct and Item	SL	CR	AVE	α
Leadership styles				
Autocratic style (AS)		0.956	0.778	0.934
AS1	0.78			
AS2	0.79			
AS3	0.80			
AS5	0.78			
Democratic style (DS)		0.943	0.824	0.942
DS 1	0.78			
DS 2	0.85			
DS 3	0.88			
DS 4	0.73			
DS 5	0.87			

(Table 1 continued)

(Table 1 continued)

Construct and Item	SL	CR	AVE	α
Task-oriented style (TS)		0.968	0.845	0.932
TS1	0.85			
TS2	0.86			
TS3	0.88			
TS4	0.73			
TS5	0.87			
Relationship oriented style (ROS)		0.973	0.819	0.915
ROS1	0.84			
ROS3	0.91			
ROS4	0.91			
Transformational style		0.946	0.831	0.925
TFS1	0.84			
TFS2	0.94			
TFS3	0.91			
TFS42	0.89			
Transactional style (TAS)		0.954	0.826	0.931
TAS1	0.88			
TAS2	0.86			
TAS3	0.82			

Source: Authors Analysis using SEM.

Note: SL = Standard loadings, α = Cronbach's alpha, CR = Composite reliability, AVE = Average variance extracted.

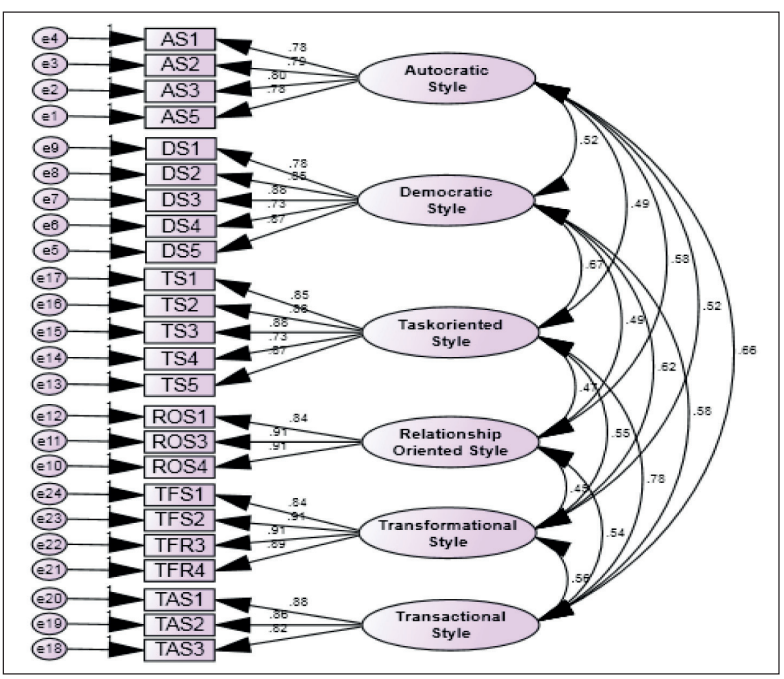

Figure 2. First Order Confirmatory Factor Analysis.

Source: Authors Analysis using AMOS.

Figure 3 given above shows the results of second order confirmatory factor analysis. The model achieved a good fit as all the fit indices were as per the recommended threshold value.

The Table 2 shows the results of discriminant validity analysis. The diagonal axis denotes average variance explained and horizontal axis denotes squared correlations. Discriminant validity was achieved as all the values were significant at recommended threshold values.

Table 4 depicts the mean scores of leaders of HEIs and their subordinates with reference to Leadership Styles dimension on 5-point Likert scale. The mean score

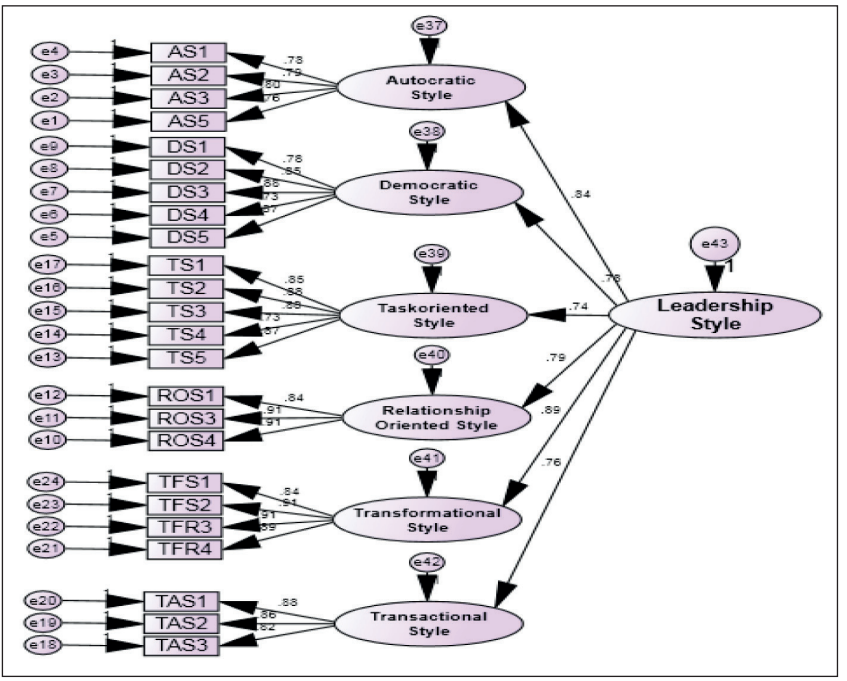

Figure 3. Second Order Confirmatory Factor Analysis.

Source: Authors Analysis using AMOS.

Table 2. Discriminant Validity.

Variables	AS	DS	TS	ROS	TFS	TAS
Autocratic leaders	**0.61***					
Democratic style	0.27	**0.62***				
Task-oriented leadership	0.24	0.44	**0.70***			
Relationship-oriented style	0.33	0.24	0.22	**0.78***		
Transformational leadership	0.27	0.35	0.30	0.20	**0.78***	
Transactional leadership	0.43	0.33	0.59	0.29	0.31	**0.72***

Note: Diagonal axis (*) = AVE and horizontal axis is square correlation, AS = Autocratic leaders, DS = Democratic style, TS = Task-oriented leadership, ROS = Relationship-oriented style, TFS = Transformational leadership, TAS = Transactional leadership.

Table 3. Results of SEM Model.

Paths			Estimate *(ß)*	C.R
Autocratic leadership style	→	Leadership effectiveness	0.63	14.32**
Democratic leadership style	→	Leadership effectiveness	0.53	5.20**
Task-oriented leadership style	→	Leadership effectiveness	0.60	13.98**
Relationship-oriented leadership style	→	Leadership effectiveness	0.45	9.32**
Transformational-oriented leadership style	→	Leadership effectiveness	0.43	15.32**
Transactional-oriented leadership style	→	Leadership effectiveness	0.46	11.32**

Source: Authors Analysis using SEM.
Note: ** denotes that the relationship between the variables is highly significant.

Table 4. Result of Independent Sample *t*-test.

Leadership Styles	Statistics	Leaders	Subordinates	*t*-value
Autocratic style	Mean	3.8	3.29	*3.69***
	SD	0.994	0.986	
Democratic style	Mean	3.17	3.01	*2.42**
	SD	0.993	0.992	
Task-oriented style	Mean	3.42	3.50	*2.20**
	SD	1.03	1.01	
Relationship-oriented style	Mean	3.25	3.8	*1.13*
	SD	0.965	0.995	
Laissez-faire	Mean	3.33	3.52	1.23
	SD	0.967	0.889	
Transformational style	Mean	3.2	4.01	*3.10***
	SD	0.789	0.865	
Transactional style	Mean	3.6	3.4	*1.04*
	SD	0.973	0.921	

Source: Authors Analysis using SEM.
Notes: **significant at 99% confidence level.
*significant at 95% confidence level.

of leaders was found between 3.2 and 3.8. While the mean score of subordinates was slightly higher, with a mean ranging between 3.01 and 4.01.

The difference in the mean scores of Leadership Styles dimension across the two groups, that is, leaders and the subordinates, was found significant for autocratic style (*t*-value = 3.69), democratic style (*t*-value = 2.42), task-oriented style (*t*-value = 2.20) and transformational style (*t*-value = 3.10). However, the mean scores, which were found insignificant, are relationship-oriented style (*t*-value = 1.13), laissez-faire style (*t*-value = 1.23) and transactional style (*t*-value = 1.04). Since the differences in mean scores for all the leadership styles were not found statistically significant, it was concluded that the H_2 is partially rejected.

The third hypothesis of the study was that 'leadership effectiveness is perceived differently by leaders themselves and their followers'. To verify the hypothesis, an

independent sample *t*-test was applied. The hypothesis was tested at 0.05 level of significance.

The mean score of leaders scored high (Mean = 3.9) with respect to leadership effectiveness as compared to the subordinates working under their supervision (Mean = 3.1), and this difference is significant at 99% confidence level (see Table 5). Since the difference between the two groups was significant, we accept the hypothesis and conclude that leadership effectiveness is perceived differently by leaders and followers.

The fourth hypothesis of the study aimed at measuring the relationship between gender with leadership styles and their influence on leadership effectiveness. Moderation analysis was done to test the hypothesis. The effect of gender, the independent and dependent variable, was assessed by path estimates. Moderation analysis was performed using AMOS 20. Path estimates across the genders were assessed along with *Z*-scores to check the significance of the difference, as shown in Table 6. The values in Table 6 clearly show that gender has a moderating role on leadership styles, which in turn has a bearing on leadership effectiveness. For this purpose, gender was converted into the dichotomous variables of male and female groups.

The results reveal that the path estimates of Model 1 for gender difference that have significant *Z*-scores are AS →LE (*Z*-score = 3.063), DS → LE (*Z*-score = –4.69) and TO →LE (*Z*-score = –3.82). The paths that show the insignificant *Z*-scores are RO→LE (*Z*-score = 0.250), TR→ LE (*Z*-score = 0.171) and TA→LE (*Z*-score = 0.014). So, the

Table 5. Results of Independent Sample *t*-test.

Leadership Effectiveness	Statistics	Leaders	Subordinates	*t*-value
	Mean	3.9	3.1	*0.069***
	SD	.994	.986	

Source: Authors Analysis using SEM.
Note: **significant at 99% confidence level.

Table 6. Moderating Impact of Gender on Path Estimates of SEM Model-1.

		Gender		
Variable	Category	Male	Female	*Z*-score
Paths	**AS → LE**	0.655**	0.340**	3.603**
	DS → LE	0.468*	0.498**	–4.69**
	TO → LE	0.612**	0.368**	–3.82**
	RO → LE	0.515**	0.762**	0.250
	TR → LE	0.497*	0.438**	0.171
	TA → LE	0.784**	0.141**	0.014

Source: Authors Analysis using SEM.
Notes: AS = Autocratic leadership style, DS = Democratic leadership style, TO = Task-oriented leadership style, RO = Relationship-oriented leadership style, TR = Transformational-oriented leadership style, TA = Transactional-oriented leadership style and LE = Leadership effectiveness.
1. The significance of path estimates was represented by (**) and (*) at 99% and 95% confidence level with *p* value of < .01 and < .05, respectively.
2. *Z*-score results represent significance difference across the genders at 99% confidence level with (**) having *p* value < .01 and 95% confidence level with (*) having *p* value < .05.

H_4 is partially rejected, and we conclude that gender differences lead to differences in leadership styles, which in turn impact the overall leadership effectiveness.

The findings are in consonance with earlier research, which reveals that gender influences leadership styles. Meta-analyses by Eagly and Carli (2018) and Madsen et al. (2021) suggest that women leaders in higher education are more likely to adopt transformational, collaborative, and relational leadership approaches, while men more often exhibit transactional or directive styles. Chin (2020) emphasised that women leaders tend to prioritise consensus-building, empowerment, and communication—styles increasingly recognised as effective in complex, diverse educational environments. However, Tzanakou and Pearce (2019) caution that framing women's leadership as inherently 'soft' can reinforce restrictive gender stereotypes and devalue women's authority.

Recent research reveals that gendered perceptions affect how leadership effectiveness is judged. Hoyt and Murphy (2016) demonstrated that both men and women are subject to role incongruity bias—where leadership is stereotypically associated with masculine traits, disadvantaging women in leadership evaluation. Moreover, Miller et al. found that women leaders in education often face double binds: they are expected to display both assertiveness (traditionally male-coded) and warmth (female-coded), with deviations from either norm resulting in penalisation or diminished legitimacy. Grogan and Shakeshaft (2017) found that women principals are more likely to implement inclusive practices, foster positive school climates, and improve teacher morale and student engagement. Recent scholarship emphasises strategies to advance gender equity in educational leadership. Madsen et al. (2021) advocate for targeted leadership development programs, mentorship, and gender-sensitive institutional policies.

Discussion

Our research primarily focused on how leadership approaches contribute to the diverse HEIs. Firstly, there is not a single leadership approach that works best for leading the diversity agenda in higher education. Instead, leaders use a combination of transformational, democratic, autocratic, task-oriented, relationship-oriented, and transactional leadership styles, which is very similar to full-range leadership (Adserias et al., 2018; Kezar & Eckel, 2008). Second, each leader requires to know when to execute a certain approach because different situations require different approaches. The findings of this research revealed that leadership styles (like transformational, democratic, autocratic, task-oriented, relationship-oriented and transactional leadership styles) significantly influenced leadership effectiveness. This study also adds to literature by exploring the possible moderating effects of gender on leadership effectiveness. Therefore, the purpose of this study is to offer a unifying and comprehensive perspective on the body of literature exploring the factors which contribute to leadership styles and investigate the possible combinations of factors that lead to leadership effectiveness. In the process, this research offers many notable theoretical and managerial contributions.

Theoretical Contribution

Through our conceptualisation, we have attempted to fill a gap in leadership management literature by linking leadership styles and leadership effectiveness in HEIs. This study is a first attempt to understand leadership styles and leadership effectiveness among HEIs in India. Research also claims that the underlying mechanism of gender moderation in leadership effectiveness is less clear and needs to be further explored. The present study thereby contributes to the literature by examining the possible moderating effects of gender on leadership effectiveness. Theoretically, our analyses also contribute to the development of LMX-based insight by uncovering effects of specific leadership styles on ensuing leadership effectiveness in HEIs, thus responding to Adserias et al. (2018)'s call for future research on leadership dynamics in a higher education context. Further, leaders exhibit different leadership styles to influence their followers. The present study revealed that it is better for leaders to exercise transformational leadership approach which is characterised by articulating and representing vision, influencing the ideas of followers, emphasise a collective sense of mission and values, challenging the assumptions of followers` beliefs, considering the individual needs of followers and encouraging a two-way exchange in communication etc. The results are consistent with previous research (e.g., Dvir et al., 2002; Erkutlu, 2008; Testa, 2002). The second leadership style, which scored high on mean values in this study, is a relationship-oriented style which is characterised by providing encouragement and support to followers, backing employees up, giving credit to employees, consulting employees, providing opportunities to employees, etc.

On the other hand, task-oriented style, transactional leadership style and autocratic leadership styles are characterised by 'not providing a clear explanation to employees, not determining what resources are needed, focusing on clearly defined tasks, believing in active management by exception, intervening only after errors have been detected, determining policies and procedures, managing group with iron hand, taking responsibility for assigning work and refusing participative decision making' etc. Such factors lead to boredom and demotivation among followers and, therefore, should not be predominantly exhibited as leadership styles in higher education. Interestingly, the democratic leadership style, which is characterised by making policies as a matter of discussion, encouraging group decision making, sharing information with the group, encouraging group members to make choices, making everyone free to work with whomever one chooses, etc., scored the lowest mean values. This gives a clear indication that leaders do not create a real democratic setup for followers to work with enthusiasm, which has an adverse impact on their performance in particular and the higher educational sector in general.

Practical Implications

The findings of this study have several practical implications. Leaders should identify that leading people requires a number of judgments every day, which needs sensitivity and understanding of various leadership strategies. Each

leadership style is a mixture of different types of behaviour and characteristics of leaders. If there is a need to make an instant decision and take necessary action, a leader may depend on the autocratic style. If the group is poorly organised and undisciplined, the autocratic leadership style is more efficient. The transformational leadership style matches with attempts to encourage followers to reorganise their needs by transcending self-interests and striving for higher-order needs. Relatedly, transactional strategies have been most likely to be adopted by leaders of middle-phase or stage institutions, as they sought to 'broaden the ownership' (Kezar & Eckel, 2008) of the agenda, and began to utilise data to drive decision-making processes and implement accountability measures. Similarly, the democratic leadership style matches with a well-organised and stable group. In the longer term, the democratic style of leadership, which includes giving employees a certain freedom and involving them in decision-making, is more productive. The results suggest the need for more transformational and relationship-oriented leaders to reform higher education sector and to address contemporary challenges. Transformational and relationship-oriented leadership has been widely recognised as the most sustainable and effective style of leading people for better results (Adserias et al., 2018; Kezar & Eckel, 2008; Pounder, 2003).

Relatedly, one of the prominent inputs for policymakers, as revealed by the current study, is that in the LMX, leadership effectiveness is perceived differently by leaders themselves and their followers in HEIs. Therefore, the systems and processes of evaluating leadership effectiveness in HEIs need to be strengthened. The findings of the study revealed that gender makes a difference in leadership styles and males and females lead differently, which was coherent in the light of the existing research by Ozga (1993) and Currie et al. (2002) in higher education management. Since men and women have been created with various physiological differences, have different upbringings, cultural orientations, etc., these differences have an impact on how an individual will behave in a particular role. Furthermore, this study contributes to providing suggestions for the people who hold the top ranks in HEIs to formulate the policies oriented at transformation and change, which is substantiated by the existing research (Knight & Trowler, 2001; Young, 2004). The findings of this study can be replicated by the managers in different sectors to enhance leadership effectiveness and to make their organisations gender friendly by promoting gender equality at all levels within their organisations, which is consistent with the earlier research (McKinsey & Company & Manyika, 2017). In conclusion, leadership in HEIs should be cognizant of their leadership style. In addition, leadership styles should be continuously reviewed and modified if required. The efforts should be constantly made to create a successful linkage between leadership styles and leadership effectiveness.

Specific Policy Recommendations

The Indian HEIs require transformational leadership to compete with the best practices and competencies existing at the global level. Leadership is the primary tool to take Indian universities into the world's best rankings, which is not evident at present, as hardly any Indian universities fall in the QS 100 world rankings. The current study offers policy recommendations based on the findings of the research. Leadership in

HEIs should adopt a holistic and inclusive governance model that emphasises shared decision-making and stakeholder engagement, ensuring that faculty, students, staff, and external partners have meaningful voices in institutional affairs. Policies in educational leadership should promote equity, diversity, and inclusion by embedding measurable goals in recruitment, curriculum design, and campus climate initiatives. Embracing data-informed strategic planning is critical, where evidence-based insights guide academic offerings, resource allocation, and long-term sustainability. Leaders must foster academic innovation and lifelong learning by supporting interdisciplinary programs, flexible learning modalities, and continuous education to meet the evolving needs of diverse learners. Enhancing student success and wellbeing through comprehensive support services—such as academic advising, mental health resources, and career development—is imperative. Concurrently, investing in faculty and staff development through professional growth opportunities and equitable career pathways strengthens institutional capacity. A forward-looking approach to technology and digital transformation should prioritise the integration of emerging tools to enhance teaching, research, and administration while safeguarding digital accessibility and cybersecurity. Finally, robust financial stewardship and global engagement—through diversified funding streams, international partnerships, and transparent accountability measures—will ensure institutional resilience and global competitiveness.

Limitations and Future Research

Although this research contributes to the leadership literature, it also comes with some limitations that offer opportunities for further research. Firstly, this research is specific to a single culture (Indian) and service context (higher education). Thus, to generalise this study's findings, further exploration (e.g., because of the replication of our research design) across different cultures and service settings (e.g., retailing, banking, tourism) to further validate the model is recommended.

Secondly, due to the cross-sectional design of this research, the data collected does not allow for an assessment of the direction of causality. Results for this research should thus be considered exploratory. This study offers new doors for further research. For purposes of causality, it will be interesting to replicate this study in a longitudinal design to determine if the findings of the relationships tested are likely to be sustained. Third, as this study particularly focused on just seven leadership styles, it will be helpful to include other leadership styles (like ethical, authentic, and servant) in future research. Finally, the insertion of extra predictor variables (such as the leader's age and tenure) can allow for the predictive role of leadership style to be placed in context.

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References

Adserias, R. P., Charleston, L. J., & Jackson, J. F. (2018). What style of leadership is best suited to direct organizational change to fuel institutional diversity in higher education? *Building the Anti-Racist University*, 26–42.

Al Khajeh, E. H. (2018). Impact of leadership styles on organizational performance. *Journal of Human Resources Management Research*, *2018*, 1–10.

Avolio, B. J., Bass, B. M., & Jung, D. I. (1999). Re-examining the components of transformational and transactional leadership using the Multifactor Leadership Questionnaire. *Journal of Occupational and Organizational Psychology*, *72*, 441–462.

Badura, K. L., Galvin, B. M., & Lee, M. Y. (2022). Leadership emergence: An integrative review. *Journal of Applied Psychology*, *107*(11), 2069–2100. https://doi.org/10.1037/apl0000997

Bass, B. M. (1985). Leadership: Good, better, best. *Organizational Dynamics*, *13*(3), 26–40.

Bass, B. M. (1997). Does the transactional–transformational leadership paradigm transcend organizational and national boundaries? *American Psychologist*, *52*(2), 130.

Bass, B. M., & Avolio, B. J. (1990). Developing transformational leadership: 1992 and beyond. *Journal of European Industrial Training*, *14*(5).

Bass, B. M., & Avolio, B. J. (1993). Transformational leadership: A response to critiques. In M. M. Chemers & A. Ayman (Eds.), *Leadership theory and research: Perspectives and directions* (pp. 49–80). Academic Press.

Bass, B. M., & Avolio, B. J. (Eds.). (1994). *Improving organizational effectiveness through transformational leadership*. Sage Publications.

Bass, B. M., & Avolio, B. J. (2004). *Multifactor Leadership Questionnaire: MLQ; manual and sampler set*. Mind Garden.

Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformational and transactional leadership. *Journal of Applied Psychology*, *88*(2), 207.

Bentler, P. M. (1992). On the fit of models to covariances and methodology to the Bulletin. *Psychological Bulletin*, *112*(3), 400.

Bergman, B., & Hallberg, L. R. M. (2002). Women in a male-dominated industry: Factor analysis of a women workplace culture questionnaire based on a grounded theory model. *Sex Roles*, *46*(9–10), 311–322.

Bolman, L. G., & Deal, T. E. (2017). *Reframing organizations: Artistry, choice, and leadership*. John Wiley & Sons.

Boyd, D. M. (2008). *Taken out of context: American teen sociality in networked publics*. University of California.

Brenner, O. C., & Bromer, J. A. (1981). Sex stereotypes and leaders' behavior as measured by the agreement scale for leadership behavior. *Psychological Reports*, *48*, 960–962.

Campbell, S., Greenwood, M., Prior, S., Shearer, T., Walkem, K., Young, S., Bywaters, D., & Walker, K. (2020). Purposive sampling: Complex or simple? Research case examples. *Journal of Research in Nursing*, *25*(8), 652–661.

Chin, J. L. (2020). Women and leadership: Transforming visions and diverse voices. *Journal of Leadership Studies*, *14*(1), 7–13.

Conger, J. A., & Kanungo, R. N. (1987). Toward a behavioral theory of charismatic leadership in organizational settings. *Academy of Management Review*, *12*(4), 637–647.

Currie, J., Hens, T., & Thiele, B. (2002). *Gendered universities in globalised economies*. Lexington Books.

Day, D. V., Fleenor, J. W., Atwater, L. E., Sturm, R. E., & McKee, R. A. (2014). Advances in leader and leadership development: A review of 25 years of research and theory. *The Leadership Quarterly*, *25*(1), 63–82.

De Cremer, D. (2007). Emotional effects of distributive justice as a function of autocratic leader behavior. *Journal of Applied Social Psychology*, *37*, 1385–1404.

Dinh, J. E., Lord, R. G., Gardner, W. L., Meuser, J. D., Liden, R. C., & Hu, J. (2014). Leadership theory and research in the new millennium: Current theoretical trends and changing perspectives. *The Leadership Quarterly*, *25*(1), 36–62.

Dvir, T., Eden, D., Avolio, B. J., & Shamir, B. (2002). Impact of transformational leadership on follower development and performance: A field experiment. *Academy of Management Journal*, *45*(4), 735–744.

Eagly, A. H., & Carli, L. L. (2003). The female leadership advantage: An evaluation of the evidence. *The Leadership Quarterly*, *14*(6), 807–834.

Eagly, A. H., & Carli, L. L. (2018). Women and the labyrinth of leadership. In *Contemporary Issues in Leadership* (pp. 147–162). Routledge.

Eagly, A. H., & Johnson, B. T. (1990). Gender and leadership style: A meta-analysis. *Psychological Bulletin*, *108*(2), 233.

Eagly, A. H., & Karau, S. J. (2002). Role congruity theory of prejudice toward female leaders. *Psychological Review*, *109*, 573–598.

Eagly, A. H., & Miller, D. I. (2016). Scientific eminence: Where are the women? *Perspectives on Psychological Science*, *11*(6), 899–904.

Erkutlu, H. (2008). The impact of transformational leadership on organizational and leadership effectiveness: The Turkish case. *Journal of Management Development*, *27*(7), 708–726.

Evans, L. (2022). Is leadership a myth? A 'new wave' critical leadership-focused research agenda for recontouring the landscape of educational leadership. *Educational Management Administration & Leadership*, *50*(3), 413–435.

Farhani, M. F., Rismayadi, B., & Pertiwi, W. (2025). Analysis of leadership style in improving the performance of employees of the National Narcotics Agency of Karawang District. *International Journal of Management, Economic, Business and Accounting*, *4*(1), 55–73.

Foels, R., Driskell, J. E., Mullen, B., & Salas, E. (2000). The effects of democratic leadership on group member satisfaction: An integration. *Small Group Research*, *31*, 676–701.

Gardner, W. L., Lowe, K. B., Moss, T. W., Mahoney, K. T., & Cogliser, C. C. (2010). Scholarly leadership of the study of leadership: A review of *The Leadership Quarterly*'s second decade, 2000–2009. *The Leadership Quarterly*, *21*(6), 922–958.

Gastil, J. (1994). A meta-analytic review of the productivity and satisfaction of democratic and autocratic leadership. *Small Group Research*, *25*, 384–410.

Gill, E. (2014). What is laissez-faire leadership? How autonomy can drive success. http://online.stu.edu/laissez-faire-leadership

Grogan, M., & Shakeshaft, C. (2017). *Women and educational leadership*. Jossey-Bass.

Hair Jr, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2010). SEM: An introduction. In *Multivariate data analysis: A global perspective* (5th ed., pp. 629–686).

Haque, A. U., Faizan, R., Zehra, N., Baloch, A., Nadda, V., & Riaz, F. (2015). Leading leadership style to motivate cultural-oriented female employees in IT sector of

developing country: IT sectors' responses from Pakistan. *International Journal of Academic Research in Business and Social Sciences*, *5*, 280–302.

Hersey, P., & Blanchard, K. H. (1982). *Management of organizational behavior: Utilizing human resources* (4th ed.). Prentice-Hall.

Hoyt, C. L., & Murphy, S. E. (2016). Managing to clear the air: Stereotype threat, leadership self-efficacy, and gender. *The Leadership Quarterly*, *27*(3), 387–399.

Igbaekemen, G. O., & Odivwri, J. E. (2015). Impact of leadership style on organization performance: A critical literature review. *Arabian Journal of Business and Management Review*, *5*(5), 1–7.

Jyoti, J., & Bhau, S. (2015). Impact of transformational leadership on job performance: Mediating role of leader–member exchange and relational identification. *SAGE Open*, *5*(4), 2158244015612518.

Judge, T. A., Bono, J. E., Ilies, R., & Gerhardt, M. W. (2002). Personality and leadership: A qualitative and quantitative review. *Journal of Applied Psychology*, *87*(4), 765–780.

Judge, T. A., & Piccolo, R. F. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, *89*(5), 755–768.

Kaiser, R. B., Hogan, R., & Craig, S. B. (2008). Leadership and the fate of organizations. *American Psychologist*, *63*(2), 96.

Kennedy, J. G. (1994). *The individual's transformational learning experience as a cross-cultural sojourner: Descriptive models* (Doctoral dissertation). Fielding Institute.

Kezar, A. J., & Eckel, P. D. (2008). Advancing diversity agendas on campus: Examining transactional and transformational presidential leadership styles. *International Journal of Leadership in Education*, *11*(4), 379–405.

Knight, P., & Trowler, P. (2001). *Departmental leadership in higher education*. McGraw-Hill Education.

Lacerenza, C. N., Reyes, D. L., Marlow, S. L., Joseph, D. L., & Salas, E. (2017). Leadership training design, delivery, and implementation: A meta-analysis. *Journal of Applied Psychology*, *102*(12), 1686.

Lewin, K., Lippitt, R., & White, R. K. (1939). Patterns of aggressive behavior in experimentally created 'social climates'. *The Journal of Social Psychology*, *10*(2), 269–299.

Luthar, H. K. (1996). Gender differences in evaluation of performance and leadership ability: Autocratic vs. democratic managers. *Sex Roles*, *35*, 337–361.

Madsen, S. R., Longman, K. A., & Daniels, J. R. (2021). Women's leadership development in higher education: A global perspective. *Journal of Leadership & Organizational Studies*, *28*(2), 160–175.

Martinez, M. R. (1982). A comparative study on the relationship of self-perceptions of leadership styles between Chicano and Anglo teachers (Doctoral dissertation, Bowling Green State University). *Dissertation Abstracts International*, *43*, 766A.

McKinsey & Company & Manyika, J. (2017). *Technology, jobs, and the future of work*. McKinsey Insights.

Nwokocha, I., & Iheriohanma, E. B. J. (2015). Nexus between leadership styles, employee retention and performance in organizations. *European Scientific Journal*, *11*(13), 186–209.

Obiwuru, T. C., Okwu, A. T., Akpa, V. O., & Nwankwere, I. A. (2011). Effects of leadership style on organization performance: A survey of selected small scale enterprises in Ikosi-Ketu Council Development Area of Lagos State, Nigeria. *Australian Journal of Business and Management Research*, *1*(7), 100–111.

Ozga, J. (Ed.). (1993). *Women in educational management*. Open University Press.

Pawar, A. (2016). Transformational leadership: Inspirational, intellectual and motivational stimulation in business. *International Journal of Enhanced Research in Management & Computer Applications*, *5*(5), 14–21.

Pounder, J. S. (2003). Employing transformational leadership to enhance the quality of management development instruction. *The Journal of Management Development*, *22*(1), 6–13.

Sajjad, A., Eweje, G., & Raziq, M. M. (2024). Sustainability leadership: An integrative review and conceptual synthesis. *Business Strategy and the Environment*, *33*(4), 2849–2867.

Stone, A. G., & Patterson, K. (2005, August). The history of leadership focus. *Servant Leadership Research Roundtable*, Regent Publishing, 1–23.

Testa, M. R. (2002). Leadership dyads in the cruise industry: The impact of cultural congruency. *International Journal of Hospitality Management*, *21*(4), 425–441.

Tourish, D. (2008). Challenging the transformational agenda: Leadership theory in transition? *Management Communication Quarterly*, *21*(4), 522–528.

Tzanakou, C., & Pearce, R. (2019). Moderate feminism and the politics of the university workplace. *Gender, Work & Organization*, *26*(8), 1113–1129.

Van Engen, M. L., & Willemsen, T. M. (2004). Sex and leadership styles: A meta-analysis of research published in the 1990s. *Psychological Reports*, *94*(1), 3–18.

Wachira, M. W., & Wainaina, L. (2025). Strategic leadership and organizational performance: A case of National Bank of Kenya. *International Academic Journal of Human Resource and Business Administration*, *5*(1), 1–18.

Xenikou, A. (2017). Transformational leadership, transactional contingent reward, and organizational identification: The mediating effect of perceived innovation and goal culture orientations. *Frontiers in Psychology*, *8*, 1754.

Yoder, J. D., & Sinnett, L. M. (1985). Is it all in the numbers? A case study of tokenism. *Psychology of Women Quarterly*, *9*, 413–418.

Young, P. (2004). Leadership and gender in higher education: A case study. *Journal of Further and Higher Education*, *28*(1), 95–106.

Yukl, G. (1998). An evaluation of conceptual weaknesses in transformational and charismatic leadership theories. *The Leadership Quarterly*, *10*(2), 285–305.

Zacher, H., & Rosing, K. (2015). Ambidextrous leadership and team innovation. *Leadership & Organization Development Journal*, *36*(1), 54–68.

Zenger, J., & Folkman, J. (2019). Women score higher than men in most leadership skills. *Harvard Business Review*, *92*(10), 86–93.

Can Artificial Intelligence Revolutionise India's Judiciary System?

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Abstract

Adoption of artificial intelligence (AI) is increasingly shaping India's economic and judicial landscape. This commentary article aims to examine: (a) AI's potential to leverage micro, small and medium enterprise (MSME) and (b) understand the usages of AI tools such as SUPACE (Supreme Court Portal for Assistance in Court Efficiency) and SUVAS (Supreme Court Vidhik Anuvaad Software) in the judiciary system of India. Although AI offers opportunities for the economy to grow efficiency, it also raises concern about trust and accountability, particularly in the legal system of a state. Therefore, the article advocates for cautious adoption and the development of AI-centric laws to ensure that AI's benefits are realised while minimising risks.

Keywords

Artificial intelligence, economic policy, judicial process, policy

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Introduction

Artificial intelligence (AI) represents a core topic in Industry 4.0; the presence of AI in various sectors is evident from the adoption of this programmed replication of supreme human intelligence in judiciary, financial sectors and also micro, small and medium enterprise (MSME). According to reports from The Economic Times, around 63 million MSMEs roughly contribute to one-third of the nation's Gross

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Domestic Product (GDP), which is about 45% of manufacturing output and 40% of direct and indirect exports.

The annual AI index report published by the Stanford University documented that India saw the fifth highest investment in the year 2023 in various start-ups based on AI products and services. The importance of AI is taken as paramount by the Government of India. One such initiative by the Ministry of Electronics and Technology is IndiaAI (A portal which promotes and features articles on AI by policy makers, researchers, columnists, etc.).

Another, collaborative initiative by the National E-governance Division of the Ministry of Electronics and Information Technology and Intel India is the Responsible AI for Youth (YUVAi) programme, which aims to develop a more AI friendly, AI literate and a new-tech mindset needed in the market to understand relevant skills with the introduction of AI. Such initiatives will equip and empower students from the very introductory level, with the required knowledge in the new age of AI.

AI usage in India and in various institutional activities governing the state has changed the way institutions function in their day-to-day activities, be it financial sectors, IT sectors or the Indian Judiciary System. Various tools like SUPACE (Supreme Court Portal for Assistance in Court Efficiency) and SUVAS (Supreme Court Vidhik Anuvaad Software) have been introduced.

The former, introduced by the Supreme Court of India, is used for providing decision-making information, while the latter acts as a catalyst in reducing regional linguistic barriers by translating judgments into various regional languages (Dhar, 2023).

The National Judicial Data Grid (NJDG) documented that around 3,89,41,148 cases are pending at the District and Taluka levels and 58,43,113 are still unresolved at the high courts. The delay in outcomes and the anxiety in the process of delivering justice take immense time, resources, reliable information and proper assistance.

The article aims to understand: (a) adoption of AI in India's economic landscape by understanding how it can transform India's MSME and (b) the introduction of AI tools in the Indian Judiciary System. The article in the subsequent section gives insights on how AI can transform India's MSME, followed by AI adoption in the judiciary system of India, USA and China, with a lens of debatable questions, and finally concludes.

Theoretical Background

The integration of AI into different features of the economy prompts an investigation grounded in a few hypothetical systems that shed light on its suggestions for business flow and financial structures (Moloi & Marwala, 2020). One conspicuous hypothetical system is the concept of Mechanical Unemployment in MSME, which hypothesises that quick headways in innovation, especially AI and mechanisation, might lead to work uprooting and workforce disturbances.

This system underlines concerns approximately the potential outdated quality of certain work parts due to the quick integration of AI. Dialogs on the forecasted work

relocations and creation of modern parts, as laid out in considers such as McKinsey Global Institute, 2017, also referred to as 'McKinsey Worldwide Established Report', and World Financial Gathering projections, adjust with this hypothesis. Additionally, the aptitudes jumble and re-skilling hypothesis centre on the potential bungle between the advancing work prerequisites driven by innovative advance and the accessible ability sets of the workforce (Mazurek & Jarek, 2019).

The fast advancement of AI and its transformative effect on work parts require ceaseless upskilling and reskilling activities. This hypothesis emphasises the versatile nature of the workforce to meet the requests postured by an AI-centric economy.

In addition, the adoption of AI in India's judiciary system aligns with the 'Theory of Technological Accessibility and Inclusion'. Moreover, inclusion tools like SUPACE and SUVAS in the Indian Judiciary System not only aim to make justice more accessible and efficient. But it also reflects a broader theoretical notion of AI functioning as an important part of a democratic management system, such as the Judiciary.

Literature Review

The transformative drive of AI penetrates different circles, inciting broad investigation into its impacts on instruction, development, business and buyer flow. Moreover, Ilkka's report for the European Union (2018) gave the foundational experiences, emphasising the need for organised arrangement systems to tackle AI's openings whereas exploring its challenges, especially in instruction.

Various existing articles extended this story by understanding AI's potential not as it were to improve existing forms but to on a very basic level by rethinking the advancement ideal model and investigate its structures. Their work highlighted AI's part as a catalyst, reshaping innovation techniques and organisational elements inside R&D, posturing charming suggestions for the end of learning and advancement (Pop et al., 2021).

In addition, later reports highlight AI's optimisation of customer encounters and operational efficiencies. Be that as it may, they too inspire concerns among representatives with respect to work uprooting and the disintegration of human abilities and character.

The criticalness of comprehensive examinations including different divisions and firms inside India has been emphasised by McKinsey Global Institute, 2017, also referred to as 'McKinsey Worldwide Established Report', and the Indian FS AI Selection Study (2021). While the selection of unused innovation within the budgetary division has made strides in execution within the managing an account framework (Singh, 2021), it has concurrently heightened fears of work uprooting among Indian labourers (NITI Aayog, 2022).

Can AI Transform India's MSME Landscape?

MSME is the backbone of India's economy. The contribution of MSME to the socio-economic development across the demographic landscape of the Indian

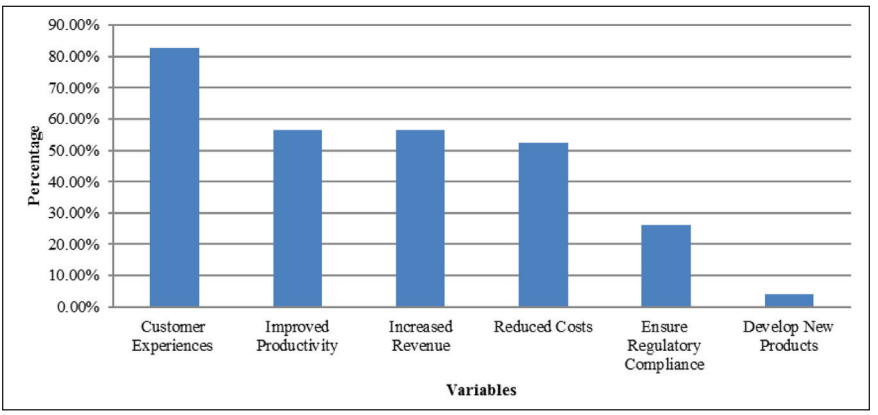

Figure 1. Determinants for AI Adoption in India.

Source: Indian FS AI Adoption Survey 2021.

economy is immensely important with 45.83% share of exports of goods produced by MSME up to November, 2023 (*The Hindu*, 2024). Understanding the importance of MSME in the development of India, the Ministry of MSME, Government of India, emphasises on the development of business environment, by introducing collateral-free loans by Pradhan Mantri Mudra Yojana. To understand how AI adoption can navigate India's MSME growth (refer Figure 1), we have taken into account two aspects: (a) AI literacy or AI awareness and (b) acceptance of AI.

AI Literacy

The campaign 'AI Literacy for All' by Uttar Pradesh government is an initiative to introduce the presence of AI and make people more familiar with the new technology. As India takes steps to be the Global Innovative Hub for technologies, the New Education Policy (NEP) 2023 understands the importance of AI-driven workforce, and the potential linkages between AI literacy and job opportunities.

The adoption of policies to educate the entrepreneurs or students (who might be entrepreneurs in future) will help the coming generation to understand the importance of AI and its collaboration as tools to various businesses, which will only contribute to the growth and efficiency of the enterprise (Observer Research Foundation, 2024). Also, using tools built as AI to manage finance and other managerial works can only help the entrepreneur in saving time and money.

However, the awareness and literacy to use the tool by the manager or the entrepreneur is important to avoid any miscalculated results for their respective businesses. This also strongly aligns with the findings of Ng et al. (2021), which advocated that understanding advanced AI technologies using AI tools and their benefits is important in building a classic AI literacy. This shall not only build an AI literacy ecosystem, but also build a solid theoretical and conceptual framework for AI development.

Acceptance of AI

The acknowledgment of AI in MSME has been documented in various academic research papers. With the advent of Industry 4.0, AI has been the global topic revolving around. It emerged as one of the big players in the adoption across various sectors, and MSME has been no exception, to accept the new age of AI (Simone et al., 2023).

Key industries which included or adopted AI have been textiles, machinery and parts, mining and quarrying, basic metal industries, electrical machinery and apparatus, transport equipment and parts, paper products and printing, food products, chemical and chemical products, leather, wood, rubber, plastic and other non-metallic mineral products, beverages and tobacco products (Sharma et al., 2022).

However, given the constraint that the adoption of AI in India's MSME has not been fully documented or the process is in its early stage. Therefore, drawing a conclusion on 'Merit/Demerit' of AI adoption in MSME will be a hasty generalisation.

We now report the factors that have potentially defined the adoption of AI in various sectors, including MSME.

Further by employing the data from the Indian FS AI Adoption Survey 2021, it shows that factors such as 'Customer Experiences', 'Improved Productivity', 'Increased Revenue' and 'Reduced Costs' have significantly determined the adoption of AI in India. Since the reduced cost in employing an AI tool is much cheaper than labour, and it not only improves the quality of the firm's work, but also increases its revenue, further improving productivity and cost minimisation.

AI and Judiciary: Insights from India, USA and China

The use of AI, like COMPAS (Correctional Offender Management Profiling for Alternative Solutions) in the United States of America, assists judges in delivering judgments, by analysing factors to predict, the likelihood of recidivism, and the presence of AI usage in the Chinese Judiciary System is evidenced by China's Smart Court system, which aids judges in delivering quicker and faster decisions using AI-backed technologies and from the stored data of past cases to deliver decisions for similar or related cases (Prabhu, 2023).

The introduction of AI tools like, SUPACE and SUVAS in the Indian Judiciary System and increased usage of technology in communicating, delivering and providing easier and understandable judgments (with translations of decisions to regional languages by SUVAS) have made the institution function more productively and efficiently, leading to faster delivery of judgments and in reducing regional and linguistic disparity in a country like India with a multi-linguistic cultural identity.

Usages of AI: India's Context

1. Administrative: The integration of AI in governing the daily activities has not only reduced human mistakes in keeping records, but has also improved

the administrative system to function efficiently and smoothly, improving the infrastructural governance of the administration.

2. Reduction in regional and linguistic disparity: The incorporation of SUVAS in the Indian judiciary system has combated the long tension of inclusion of various linguistic identities in understanding the proceedings and judgements of the courts. The translation of judgements using SUVAS has not only brought a larger chunk of the population in getting familiar with the judiciary. But, has also framed a more inclusive India under the judiciary banner.
3. Court efficiency: The introduction of SUPASS into the justice delivery system, to provide efficient information, has further mobilised the institutional functioning of the system as an efficient decision-maker. The era of data (which is valuable than Gold), the use of SUPASS has made the functioning of the court efficient and productive.

Debate on AI in the Judiciary: Evaluating Trust, Reliability and Accountability

The debate brings two important questions to the table: (a) 'Whether to trust AI or not?' and (b) 'Can it be trusted with reliability in the Judiciary System?' Most importantly, the generalisation in delivering quicker judgments based on evidence from past cases stored as data in the AI system can challenge the 'Judgment Astuteness' of a system exercising the judiciary functions of a state (Rehman, 2024). In cases of misleading legal advice due to the absence of a professional code of conduct in Machine Learning Systems, who will be held accountable?

However, to address such unforeseen issues in the judiciary system, many developed states like the United Kingdom and members of the European Union have adopted and advocated for an 'Artificial Intelligence Act'. This amendment aims to reduce the impact of biases in AI algorithms. In the context of India, NITI Aayog has developed a set of principles that include Safety, Equality, Inclusivity, Non-discrimination and Accountability.

Additionally, the Digital Personal Data Protection Bill (Ministry of Electronics and Information Technology) advocates for the right of an individual to inquire about the data collected from them by any entities.

The use of AI by the judiciary system can be both beneficial and dangerous (if not anchored in the reliability and trustworthiness of the designer or developer of the particular AI tool used in the Judiciary).

Though the usage of SUVAS and SUPACE in India has had a positive impact on delivering judgments to a multi-linguistic population in a nation like India, the rise in AI usage globally, with the introduction of more systems and tools like COMPAS in the US and China's Smart Court System, helps judges deliver quicker decisions based on behavioural (historical) evidence of individuals.

This can indeed be a revolution in the system itself. However, blind reliability, with no accountability and law enforcement in the judiciary (to protect the data and individuals), can be dangerous and question the judiciary system's ability to deliver justice.

To monitor AI in judiciary system, European Union and some Western States have adopted and advocated for an 'Artificial Intelligence Act'. This amendment aims to reduce the impact of biases in AI algorithms. In the context of India, the Personal Data Protection Act (Ministry of Electronics and Information Technology) advocates for the right of an individual to inquire about the data collected from them by any entities.

Conclusion

AI has the potential to revolutionise India's MSME, the adoption of AI to improve efficiency and productivity has been a key factor documented in various research papers. As the backbone of India's economy, the channelised and proper adoption of AI in the MSME can reduce the cost of operation, improve customer experience and also increase revenue. Various initiatives, such as IndiaAI and YUVAi by Ministry of Electronics and Information Technology, Government of India, are a commendable approach to educate, aware and introduce the population and workforce in the new environment of AI-driven world. However, a more inclusive and on-the-ground awareness campaign in rural and hilly regions of India might be a policy suggestion. While the benefits of AI are promising, it's important to recognise that the transition will not be without challenges. The early stages of AI adoption in MSMEs indicate that there is much to learn and develop, before the full potential can be realised. Therefore, a cautious yet optimistic approach, supported by continuous learning and adaptation, will be essential to ensure AI's role to transform India's MSMEs into the engines of economic growth in the era of Industry 4.0.

Also, the use of AI by the judiciary system can be both beneficial and dangerous (if not anchored in the reliability and trustworthiness of the designer or developer of the particular AI tool used in the Judiciary). Though the usage of SUVAS and SUPACE in India had a positive impact on delivering judgments to a multi-linguistic population in a nation like India, the rise in AI usage globally, with the introduction of more systems and tools like COMPAS in the US and China's Smart Court System. However, blind reliability, with no accountability and law enforcement in the judiciary (to protect the data and individuals), can be dangerous and question the judiciary system's ability to deliver justice. However, with proper amendments of laws, or to be precise 'New AI-centric Laws' to guard privacy can be a suggestive measure. One such remarkable step is initiated by the Ministry of Electronics and Information Technology, Government of India, by proposing and implementing the Personal Data Protection Act, 2023.

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References

Dhar, P. (2023). *India: Role of artificial intelligence in justice delivery system*. Warwick Legal Network.

Mazurek, G., & Jarek, K. (2019). Marketing and artificial intelligence. *Central European Business Review*, *8*(2), 46–55.

McKinsey Global Institute. (2017). *Jobs lost, jobs gained: Workforce transitions in a time of automation*. McKinsey & Company.

Moloi, T., & Marwala, T. (2020). Introduction to artificial intelligence in economics and finance theories. In *Artificial intelligence in economics and finance theories* (pp. 1–12). Springer. https://doi.org/10.1007/978-3-030-42962-1_1

Ng, D. T. K., Leung, J. K. L., Chu, S. K. W., & Qiao, M. S. (2021). Conceptualizing AI literacy: An exploratory review. *Computers and Education: Artificial Intelligence*, *2*, 100041. https://doi.org/10.1016/j.caeai.2021.100041

NITI Aayog. (2022). *National strategy for artificial intelligence* [NITI Aayog Report]. www.niti.gov.in

Observer Research Foundation. (2024).

Pop, M., Ene, I., & Pelau, C. (2021). The impact of artificial intelligence on consumer's identity and human skills. *Amfiteatru Economic*, *23*(56), 33–45.

Prabhu, A. (2023). *Artificial intelligence in the context of the Indian legal profession and judicial system*. Bar and Bench. https://www.barandbench.com/columns/artificial-intelligence-in-context-of-legal-profession-and-indian-judicial-system

Rehman, A. (2024). *Can artificial intelligence revolutionize India's judiciary system?* India AI. https://indiaai.gov.in/article/can-artificial-intelligence-ai-revolutionize-india-s-judiciary-system

Sharma, P., Shah, J., & Patel, R. (2022). Artificial intelligence framework for MSME sectors with focus on design and manufacturing industries. *Materials Today: Proceedings*, *62*(33), 6962–6966. http://dx.doi.org/10.1016/j.matpr.2021.12.360

Simone, D. V., Pasquale, D. V., & Miranda, S. (2023). An overview on the use of AI/ML in manufacturing MSMEs: Solved issues, limits, and challenges. *Procedia Computer Science*, *213*, 1820–1829.

Singh, G. (2021). A move towards intelligent economy: Indian evidence. *Management and Labour Studies*, *46*(2), 192–203. http://dx.doi.org/10.1177/0258042X21989941

The Hindu. (2024).

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