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From the Desk of Managing Editor

Dear IJAR&D Readers,

Greetings for 2025,

We are glad to present twenty first issue of IJAR&D which consists of 11 papers on various aspects namely Capital Expenditure and Sectoral Dynamics, GST Analysis, Entrepreneurship Education on Students' Aspiration, Closing Women's Health Gap, Environment Social & Governance Imperative, Driving Sustainable Development, Evaluation of Minimum Support Price, Sustainable Hospitality and Tourism Education and Deen Dayal Upadhyaya Grameen Kaushalya Yojana.

Pallavi Das' paper delves into Unequal Engines of Growth in Odish in context of capital expenditure and sectoral dynamics in Odisha's economic journey.

Rakesh Bharatiya's paper gives comparative analyses of Pre-GST and Post-GST trends in tax revenues, workforce management and administrative efficiency in Himachal Pradesh.

Dr. B Madhura's paper elaborates on influence of entrepreneurship education on students' aspiration towards becoming entrepreneurs.

Pradeep Kumar Panda's paper presents insights on closing women's health gap as an opportunity to improve lives and economies in the world.

Dr. Shalu Mahajans paper presents the environment social & governance imperative for reshaping growth in business.

Joint paper of Navya Suri and Anita Singh focuses on driving sustainable development with respect to The Tata Group's approach to CSR in India.

Joint paper of Kamal Dev and Dr. Vinod Naik presents a comprehensive study on evaluation of Minimum Support Price on Paddy cultivation in Punjab.

Joint paper of Aarti Saini, Madhu Kumari, Vivek Kumar and Navneet Kaushal provides insight on educating the change-makers for sustainable hospitality and tourism education for emerging economies.

Joint paper of Sandra Surendran and Pradeep Kumar Panda provides an extensive review on implementation of Deen Dayal Upadhyaya Grameen Kaushalya Yojana in India.

We thank all the authors for their insightful papers which will certainly enrich our readers. We take this opportunity to thank all our reviewers for their structured efforts. We express our heartfelt thanks to all our journal subscribers and readers for their relentless support which provide our team motivation to bring out journal issue in desirable shape. We commit ourself to bring out high quality issues in future.

Best Wishes from IJAR&D !!!
Thanking You

Pradeep Kumar Panda
Managing Editor

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Unequal Engines of Growth: Capital Expenditure and Sectoral Dynamics in Odisha's Economic Journey

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Abstract

The paper delves into the complex growth dynamics of the Odisha economy, highlighting the need for a deeper understanding of sectoral and state-level growth performance. Over the past three decades, from 1990-91 to 2021-22, it observes that the industrial and service sectors in Odisha have shown significant improvements in their growth rates, recording 5.68% and 7.74% respectively. However, the agriculture sector has lagged behind with a growth rate of 2.26%, indicating a concerning disparity among sectors. One notable finding of the paper is the emphasis on capital expenditure as a pivotal factor influencing Odisha's growth trajectory during this period. This underscores the importance of strategic planning and effective program implementation, which are suggested as crucial steps for Odisha to harness its abundant natural and human resources more efficiently. The research serves as a call to action for the state to focus on rigorous monitoring and structured planning to maximize its economic potential. In summary, the paper highlights the disparities in growth among sectors in Odisha over the past three decades, with industrial and service sectors outperforming agriculture. It identifies capital expenditure as a key determinant of growth and emphasizes the urgent need for strategic planning and meticulous program implementation to unlock the full economic potential of Odisha.

Keywords: *Odisha Economy, Sectoral Growth, Capital Expenditure, Economic Disparity, Industrial Sector, Service Sector, Agriculture Growth, Strategic Planning, Public Investment, Economic Transformation.*

Introduction

The year 2020-21 unfolded as a global and local calamity, with its inception marked by a health crisis that soon permeated every sector of society. Among these, the economy bore the most profound impact. Interestingly, the economic toll of the COVID-19 pandemic, severe as it was, was overshadowed by the grave health hazards it posed. Consequently, efforts to resuscitate and fortify the foundations of the economy encountered formidable challenges. A comprehensive evaluation of the government's response to mitigate the devastating repercussions of this catastrophe, both on a macro and micro scale, is currently underway.

In the fiscal year 2020–21, India's GDP embarked on a disheartening descent. The figures paint a bleak picture, with a staggering -10.3% production growth reported by the IMF's October 2020 World Economic Outlook. The nadir was reached in Q1, a disheartening 23.9% plunge (April through June 2020–21), though Q2 witnessed a partial respite at 7.5% (Economic Survey, 2020-21). Strikingly, aside from agriculture, all eight components contributing to India's GDP experienced unprecedented contractions during the April–June quarter (Reserve Bank of India, 2021). However, a glimmer of hope emerged as the economic downturn began to ease in Q2, signalling the dawn of a recovery.

Subsequent to the surges in COVID-19 cases, the Indian economy nosedived into a technical recession during the initial months of April to September in 2020-21. An abrupt cessation of economic activities, coupled with widespread supply chain disruptions caused by lockdowns and associated restrictions, created a domino effect. This encompassed significant declines in demand, extensive job and income erosion, a sharp decrease in confidence among consumers and businesses, increased levels of uncertainty, contractions in worldwide trade and tourism, and changes in behaviour, such as voluntary adoption of social distancing measures. These forces collectively contributed to India's and its states' economic woes (Kumar, 2020).

Meanwhile, Odisha, characterized by its lush landscapes, abundant natural resources, and moderate development, embarked on an impressive economic trajectory. Despite grappling with recurring natural disasters, including the recent pandemic, the state acted with remarkable agility. It initiated investment plans to stave off significant economic challenges under the steadfast leadership of Chief Minister Naveen Patnaik. Odisha's determination to play a pivotal role in national growth as a manufacturing hub post-COVID-19 was evident.

Examining economic statistics, GSVA at constant (2011-12) base prices illustrated an impressive 64.36% expansion in the size of Odisha's economy from 2011–12 to 2019–20. During the same period, the Gross State Domestic Product (GSDP) surged by 71.65% at constant base prices, accounting for both GSVA and adjustments for product taxes and subsidies (Odisha Economic Survey, 2020-21). The state displayed promising growth trends, with the real GSDP growth rate registering 5.21% in 2019–20 over the previous year. Notably, the services sector exhibited resilience, mitigating unfavourable effects, while the industry sector maintained a steady trajectory, collectively contributing to over 80% of the state's GSDP.

As the state focused on maintaining momentum in its economic growth trajectory, it also prioritized reducing regional disparities, expediting poverty alleviation, optimizing public service delivery, and fostering sustainable and inclusive growth.

Currently valued at Rs 5,40,812 crore ($79 billion), Odisha's economy set its sights on a grand aspiration—to transform into a $1 trillion economy by 2050. This growth is imperative for economic advancement and inclusivity. Historical examples from industrialized nations underscore the transition from traditional agricultural economies to contemporary industrial and service sectors (Sahoo and Joshi, 2018). The significance of bolstering the primary sector, particularly agriculture, is underscored in the pursuit of inclusive growth, particularly in underdeveloped or developing economies.

Odisha's wealth of natural resources and untapped economic potential makes it a compelling candidate for growth. Recent studies have further substantiated its improved economic standing. Metrics such as income, literacy rates, IMRs, and MMRs have portrayed an encouraging upward trajectory. Households in the state have witnessed substantial asset accumulation and improved occupational mobility, contributing significantly to poverty reduction.

In the realm of economic development assessment, "Gross State Domestic Product (GSDP) and Net State Domestic Product (NSDP)" serve as primary benchmarks. Notably, NSDP, which accounts for capital maintenance costs, offers a more precise indicator. Critics have argued that Gross Domestic Product (GDP) fails to distinguish between maintenance expenses and genuine economic enhancement, as it incorporates all maintenance costs, be they for the renewal of aging equipment or the replacement of obsolete technology.

Economists such as Spant advocate for the use of Net National Product (NNP) as the preferred measure of economic growth, with Net Domestic Product (NDP) as a secondary choice. NSDP, alongside per capita NSDP, offers insights into the economic progress and well-being of a state's populace.

This research endeavours to scrutinize Odisha's economic growth rate, composition, and sectoral performance over three decades spanning from 1990-91 to 2021-22. It aims to pinpoint areas of strength and areas needing improvement concerning essential growth and development metrics.

The structure of this paper is organized as follows: Section I provides an introduction to the subject, Section II delineates the data and methodology used, Section III offers a concise review of existing literature in the field of economic growth, Section IV lays the foundation for analysis with an analytical framework, and Section V concludes with policy recommendations drawing upon the insights derived from this comprehensive study.

Data and Methodology

This paper's analysis is based on secondary data sources. The NSDP statistics and PCNSDP data, total receipt and total expenditure data for Odisha at 2011-12 constant prices from 1990-91 to 2021-22 were compiled using EPW research foundation SDP data, which was initially released by National Accounts Statistics (NAS), CSO. A percentage is utilized to assess the state's sectoral contribution to the NSDP. CAGR is used to show the growth rate of Odisha in various areas. Regression analysis has been done to show the growth performance and NSDP deflator is used to convert current capital expenditure into constant expenditure

Explanation of the Used Data:

Agriculture and Allied sector: The agricultural and associated sector is made up of the contributions made by farming, logging, fishing, mining, and quarrying. We used the EPWRF data at constant prices for 2011–12 for the study, which is shown in Table 5.

Industry Sector: The manufacturing, building, power, gas, and water supply sectors all contribute to the industrial sector. For the purposes of the analysis, we used EPWRF data at 2011-12 constant prices, as shown in Table 5.

Service Sector: The service sector comprises diverse industries such as transportation, logistics, communication, trade, hospitality, financial services, real estate, property ownership, commercial services, public administration, and a multitude of other service-oriented activities. For the purposes of this research, we used EPWRF data at 2011-12 constant prices, as shown in Table 5.

State Domestic Product (SDP): SDP is the total value added to the economy by "agriculture, industry, and services".

Net state domestic product (NSDP): It can be defined as a financial gauge of the quantity of goods and services generated within the State's boundaries during a particular timeframe, factoring in deductions for depreciation and redundancies. Another term used to refer to this is "State income," which is synonymous with NSDP. We used the EPWRF data at constant prices for 2011–12 for the study, which is shown in Table 1.

Review of Literature

According to Thind and Singh (2018), structural transformation is essential for economic progress. When an economy transitions from primary to secondary to tertiary, it undergoes structural transformation, which alters the sectoral mix. Labor is transferred from low to high productivity sectors when change occurs. In this research, they looked at the link between structural change and economic development during a 30-year period, from 1983–1984 to 2014–2015, in 15 important Indian states. The study's goal is to determine whether or not structural change has helped these states' economies grow. In all states except Gujarat and M.P., where the share of the tertiary sector was less than 50%, as well as in Rajasthan and Odisha, the share of the tertiary sector was just close to 50%, the contribution of the service sector to the gross state product (GSDP) increased as a result of the structural change. Odisha had the biggest fall in agriculture's percentage of the GSDP out of all the states as a result of change. For numerous states, including Punjab, Madhya Pradesh, Gujarat, Odisha, Rajasthan, etc., the secondary sector's proportion of the GSDP was rising. The CSO and NSSO provided the data that was utilized in the study. The study's findings demonstrated that structural change has boosted growth in each of the 15 states.

Spant (2003) examined GDP and NDP, two metrics of economic growth, and questioned the consistent use of GDP as a gauge of economic development. In his opinion, NDP should be given greater weight as it serves as the primary barometer of economic growth rather than GDP. This criticism's underlying premise was that GDP includes all investment costs, regardless of whether they are made to increase the capital stock or simply to replace outdated or "obsolete equipment and software" or worn-out assets. The expense of updating outdated and worn-out machinery simply serves to keep output at the current level; it does not expand the economy's potential. The author and many other economists choose NNP, with NDP coming in second, to gauge a nation's economic growth. According to the author, neither NNP nor NDP were mentioned once in the OECD Economic outlook. NDP has been a more useful metric in recent years for tracking characteristics like potential production and chances for non-inflationary growth that are often associated with the new economy. GDP minus capital depreciation equals NDP. The proper method for calculating the potential rise in real wages and real profit is to use NNP or NDP rather than GDP. In several of his investigations, Edward Denison— "the pioneer of growth accounting"—used NNP. GDP can be used to measure economic growth as long as capital depreciation remains relatively constant over time, but in the current situation, where investment is shifting toward shorter-lived assets and increasing capital depreciation, NDP should be used to measure economic growth instead of GDP because GDP will overstate the real growth rate.

Numerous studies on structural change and economic expansion in India have been done. By creating structural change indicators and doing a time series analysis on the data, Orcan and Singh (2011) looked at how structural change and growth relate in India. According to Panagariya's analysis, which identifies four stages, the first three of which span 1951–65, 1965–81, and 1981–88, they found that 1988 marks a break in the time series of development and structural change. The third phase has been characterized as a time of fast expansion by writers including DeLong (2003), Rodrik and Subramanian (2005), and Kohli (2006). A state-level investigation of productivity and convergence in India was conducted by Kumar and Managi in 2012. Regional expansion has also been examined in several researches.

Munjal (2007) used input-out analysis, which provides the tools needed to examine industries and their connections to the rest of the economy, to look at the structural changes in the Indian economy during a ten-year period. The fluctuating links between industries are seen in the volatility of the Multiplier Product Matrix analysis's visual representation of economic landscapes.

According to Mohapatra (2017), socioeconomic indicators are particularly helpful for planning and development purposes because they enable planners and policymakers to identify issues that require extra care and attention. Indicators that have been examined include the economy, education, health, mineral resources, agriculture, sex ratio, slum population, life expectancy, HDI, marked surplus ratio, etc. The author also compared other socioeconomic indicators of Odisha with those of India. In order to determine where the state is falling behind and where it is leading the nation in terms of growth and development, comparisons have been done. The outcome of this comparison analysis demonstrates that the state is performing significantly worse than the country in terms of socioeconomic ground. The state needs to double its efforts and make fuller utilization of its resources. It is a rich state with poor people.

Odisha is blessed with a wealth of natural resources, including rich green coastal plains, flora and fauna, and mineral resources like coal, bauxite, limestone, etc., yet it is still an impoverished state, claim Rath and Jena (2006). The state's primary and industrial sectors have not had substantial development; instead, both have had skewed growth trajectories. In the 1990s, the contribution of the forest sector to the primary sector rapidly decreased, with the exception of the mining and fishing sectors. Only the service sector has had a steady rise during the 1990s, with the industrial sector contributing negatively as well. Even while agriculture's contribution to the NSDP was declining, its percentage of employment remained strong. Rath and Jena investigated Odisha's sectoral growth trends, sectoral contribution to employment, and per capita income. According to the study's findings, Odisha's industrial expansion has been hampered by a lack of suitable infrastructure amenities. Private investment and entrepreneurship, both of which are required for growth, are likewise insignificant in the state. The state's irrigation infrastructure urgently needs upgrading, and crop diversity should be prioritized to accelerate agricultural growth. The struggling agriculture industry needs revitalization and rejuvenation.

Senapati and Goyari (2019) examined the expansion and insecurity in Odisha's agriculture industry from 1967-68 to 2014-15. Odisha agriculture is still heavily reliant on rainfall. During the 1960s and early 1980s, the districts performed well. The state falls behind other states in agricultural development. Odisha has yet to completely commercialize its agriculture and allied activities; the bulk of farmers continue to grow low-value basic crops primarily for family food security. Odisha faces the risk of natural catastrophes like flooding and droughts, making agriculture extremely volatile. Additionally, the authors have investigated the performance of various areas before and after the green revolution as well as the impact that irrigation and fertilizer play in boosting agricultural output and variability. Different districts of the state saw unsatisfactory crop growth rates. Additionally, the state had a low rate of fertilizer and pesticide use. The state's low performance was mostly caused by its failure to adopt new technologies, poor investment, deteriorating soil, and insufficient usage of HYVs seed. Stable growth is essential for the long-term development of agriculture. Increasing public investment and upgrading infrastructure will hasten Odisha's agricultural growth. Agriculture research can stimulate growth in that industry.

Analysis of Growth Performance of Odisha

The resources of the state government are critical to the advancement of the state's economy. A range of services are given for the welfare of the people, "the development of public assets, and the delivery of public services utilizing resources mobilized via the state's own taxes, a share in central taxes, center grants, state non-tax income, and borrowing from other sources" (Economic Survey of Odisha, 2021).

Table 1: CAGR (%) of Variables in Odisha during 1990-2021 (NSDP) at 2011-12 Constant Price

Time Period	Net State Domestic Product (NSDP)	Rate of Inflation (NSDP Deflator)	Population	Revenue Expenditure	Capital Expenditure	Total Expenditure	Revenue Receipt	Capital Receipt	Total Receipt
1990-2000	3.82	9.00	1.53	5.35	0.30	4.19	1.90	7.38	3.78
2000-2010	7.93	7.03	1.31	5.38	3.04	4.85	10.52	41.64	29.31
2010-2021	6.20	4.06	0.86	9.43	14.64	10.58	8.78	11.44	10.79
1990-2010	5.45	6.84	1.39	5.64	4.36	5.36	6.99	24.34	16.45
2000-2021	6.59	6.08	1.11	7.69	9.18	8.00	9.23	16.24	13.39
1990-2021	5.88	6.37	1.24	6.82	7.30	6.92	8.09	18.36	13.71

Source- Authors own calculation from EPWRF Data

Odisha's economy is picking up steam at a little faster pace. The State's expenditures have seen double-digit growth in recent years on the spending side. The development sector has gotten both capital and revenue expenditures, while committed expenditure being lower than in other states. The bulk of revenue is invested in education and rural development, whereas the majority of capital expenditure is spent on irrigation and transportation (Odisha Survey, 2021). The State's developmental requirements are aligned with the focus on these areas.

Table 1 presents CAGR of NSDP, Population, Revenue Expenditure, Capital Expenditure, Total Expenditure, Revenue Receipt, Capital Receipt and Total Receipt in Odisha from 1990-2021 at 2011-12 constant prices. The CAGR of NSDP during 1990-2000 was 3.82%. Revenue and Capital expenditure were growing at rate of 5.35% and 0.30% and the overall growth was 4.19%. During the corresponding period, growth rate of revenue, capital and total receipt was 1.90%, 7.38% and 3.78%. Total expenditure was more than total receipt during 1990-2000 and the rate of inflation was 9%. During 2000-2010, the growth rate of NSDP was 7.93% and the rate of inflation during the period was 7%. During this period the total receipt (29.31%) was much higher than total expenditure (4.85%). From 2010-2021 the total receipt and total expenditure (10.58%) was more or less same (10.79%) and the rate of inflation was also lower than the previous period by about 3%. The period witnessed a NSDP growth rate of about 6%. During the entire time period (1990-2021) the growth rate of NSDP was 5.88%, and the total expenditure and receipt was 6.92% and 13.71%. The rate of inflation was around 6%. The period 2000-2021 witnessed the highest growth of NSDP (6.59%) and Total expenditure (8%) while the rate of inflation during the corresponding period was the lowest (6%). Total receipt (16.45%) witnessed the highest growth during 1990-2010.

Table 2: CAGR (%) of PC Variables in Odisha during 1990-2021 at 2011-12 Constant Price

Time Period	Per – Capita Net State Domestic Product (PCNSDP)	PC Revenue Expenditure	PC Capital Expenditure	PC Total Expenditure	PC Revenue Receipt	PC Capital Receipt	PC Total Receipt
1990-2000	2.25	3.76	-1.21	2.62	0.36	5.76	2.21
2000-2010	6.53	4.02	1.71	3.50	9.08	39.80	27.63
2010-2021	5.29	8.50	13.66	9.64	7.86	10.49	9.84
1990-2010	4.01	4.19	2.93	3.92	5.53	22.64	14.85
2000-2021	5.43	6.51	7.99	6.82	8.03	14.97	12.15
1990-2021	4.59	5.51	5.99	5.61	6.77	16.91	12.32

Source – Authors estimation from EPWRF data.

Table 2 presents the CAGR of PC variables in Odisha from 1990-91 onwards till 2021-22 at 2011-12 constant prices. The growth rate of PCNSDP during 1990-2000 was 2.25%. The pc revenue expenditure during this period was about 4% while the pc capital expenditure (public investment) was -1.21%. The pc total expenditure during the corresponding phase was about 3%. The revenue receipt and capital receipt was 0.36% and 5.76% and the aggregate receipt was 2.21%. During the period of 2000-2010 the PCNSDP increased by about 4.5%. The revenue expenditure maintained the same growth rate as in the previous decade whereas the capital expenditure increased, it was about 2%. The PC revenue and capital receipt was about 9% and 40% and the aggregate was around 28%. In the phase of 2010-2021, PCNSDP growth recorded a slight slowdown to 5.29%. However, the PC revenue and capital expenditure witnessed an upward growth by about 5% and 12% and the total expenditure witnessed growth of about 10%. In case of PC revenue and capital receipt, both the variables recorded fall in their growth rate but the reduction was drastic in case of capital receipt. The total receipt during the respective period was 10%. During the entire period taken under consideration for the study (1990-91 – 2021-22), the growth rate of PCNSDP, PC aggregate expenditure and PC aggregate receipt was approximately 5%, 6% and 12% respectively. During all the phases the PC total expenditure is less than PC total receipt.

Table 3: Growth Performance of Odisha in terms of NSDP during 1990-2021

Time Period	Dependent Variable	Independent Variable	Coefficient	Stand Error	t- value	p- value	R-square
1990-2000	NSDP	Capital Expenditure	0.84	5.23	0.16	0.88	0.00
2000-2010	NSDP	Capital Expenditure	9.56	7.97	1.20	0.26	0.14
2010-2021	NSDP	Capital Expenditure	7.14	0.88	8.08	0.00	0.87
1990-2010	NSDP	Capital Expenditure	17.12	3.73	4.59	0.00	0.53
2000-2021	NSDP	Capital Expenditure	7.14	0.88	8.08	0.00	0.87
1990-2021	NSDP	Capital Expenditure	0.85	0.85	13.42	0.00	0.86

Source – Authors estimation from EPWRF data.

There are many factors such as saving rate, investment rate, population growth rate, human capital, technological progress, rule of law, openness to trade, war and assassinations etc., that affect economic growth. Investment is most important factor among all these variables, which positively and significantly affect economic growth across countries and regions. Investment may be divided into two categories: public and private investment. Capital expenditure as a proxy for public investment is taken into account in this study to find its impact on economic growth performance of Odisha from 1990-2021 using regression analysis.

The total time period is divided into six sub-periods such as 1990-2000, 2000-2010, 2000-2021, 1990-2010, 2000-2021 and 1990-2021 and separate regression is carried out for each period by regressing NSDP on capital expenditure and estimation results are given in Table 3.

The estimated coefficients of capital expenditure for all these periods are positive. But, it is statistically significant for the period 2010-2021, 1990-2010, 2000-2021, and 1990-2021. The R-squared values for these regressions are also high. (Although NSDP and capital expenditure are time series variables and expected to have non-stationery and autocorrelation over time. To make it stationary, adjustment for these will be done). This means that public investment is significantly affecting economic growth of Odisha during these periods. If public investment is increased by Rs. 1 lakh, it will lead to 7.14 lakhs increase in income of Odisha during 2010-2021. Higher public investment has led to higher economic growth of Odisha during 2010-2021. This high growth in NSDP and Public investment has also impacted the other periods and can be interpreted accordingly.

Table 4: Growth Performance of Odisha in terms of PCNSDP during 1990-2021

Time Period	Dependent Variable	Independent Variable	Coefficient	Stand Error	t- value	p- value	R-square
1990-2000	PCNSDP	PC Capital Expenditure	-2.27	3.13	-0.72	0.49	0.06
2000-2010	PCNSDP	PC Capital Expenditure	4.17	7.26	0.58	0.58	0.04
2010-2021	PCNSDP	PC Capital Expenditure	6.52	0.88	7.43	0.00	0.85
1990-2010	PCNSDP	PC Capital Expenditure	12.26	3.99	3.07	0.01	0.33
2000-2021	PCNSDP	PC Capital Expenditure	9.04	1.02	8.90	0.00	0.80
1990-2021	PCNSDP	PC Capital Expenditure	10.51	0.88	11.91	0.00	0.83

Source – Authors estimation from EPWRF data.

By taking per capita income and per capital expenditure, similar kinds of regression analysis is done for same periods as given in the Table 4. Except the period, 1990-2000, all periods have positive coefficients for per capital expenditure. However, as earlier these coefficients are statistically significant for these periods 2010-2021, 1990-2010, 2000-2021, and 1990-2021. This means that per capita public investment plays very important role in influencing economic growth performance of Odisha during these periods. Therefore, it is necessary for Government of Odisha to spend more capital expenditure on various kinds of infrastructure (Roads, railways, ports, social and financial institutions) to increase economic growth and hence increases the standard of livings of masses.

Table 5: CAGR (%) of NSDP of three major sectors of Odisha at 2011-12 constant prices during 1990-91 – 2021-2022

Time period	Agriculture and allied sectors	Industry	Service
1990-2000	0.84	4.27	6.52
2000-2010	3.94	8.46	10.08
2010-2021	2.98	6.53	5.05
1990-2010	1.67	6.30	7.90
2000-2021	3.30	5.62	7.79
1990-2021	2.36	5.68	7.74

Source – Authors estimation from EPWRF data.

The state economy is undergoing a structural change, with a gradual transition from agriculture to industry and services, with more pronounced growth in the services sector. Table 5 shows data on Odisha's sector growth rate from 1990–1991 to 2021–2022.The first phase i.e. 1990-2000 recorded a NSDP growth rate of 3.82%. Though agriculture is the primary source of income in Odisha, employing over 60% of the total state population, it grew by only 0.84% in 1990-2000. The industry sector grew at a rate of 4.27% during 1990-2000. The service sector, as a whole, experienced the swiftest growth rate among all sectors during this phase, registering a robust 6.52% increase. During the decade of 2000-2010, the NSDP growth rate of Odisha was 7.93%. All sectors contributed to the rapid growth that was experienced during this phase. The service sector grew at a rate of about 10%, the industry sector grew at a rate of about 8% and the agriculture sector recorded 3.94% growth. The period saw the agriculture sector rebound, in large part as a result of significant "public investment in irrigation and private investment in commercial crops in some regions of the state" (Sahoo and Joshi, 2018). Higher growth in the industrial and service sectors dominated this period's growth. During the period of 2010-2021 the NSDP growth rate of Odisha slightly slow downed to 6.20%. All the sectors witnessed fall in their growth rate during this phase. The rate of growth of agriculture was about 3%, industry was around 7% and service sector was 5% during 2010-2021. The main reason behind the slow growth or fall in growth rate may be the natural calamities and epidemic that hit the state between 2010-2021, like phailin in 2013, fani in 2019 and the most recent of which being the COVID which effected the entire country. The overall growth rate of Odisha during 1990-2010 was 5.45%. The growth rate of agriculture, industry and service sector during this period was 1.67%, 6.30% and 7.90% respectively. The growth experienced during this period was fuelled by industry and service sector performance. The growth rate of agriculture was around 3%, industry was around 6% and service was around 8% during 2000-2021. The overall growth rate of all the corresponding sectors from 1990-2021 is 2.36%, 5.68% and 7.74%. The NSDP growth rate during the entire period is 5.88%. As it can be seen in the table that the growth rate of service sector has been highest during the entire time period taken into consideration for the study. Service sector is the growth engine of Odisha economy.

Table 6: CAGR (%) of Per Capita NSDP of three major sectors of Odisha at 2011-12 constant prices during 1990-91 – 2021-2022

Time period	Agriculture and allied sectors	Industry	Service
1990-2000	-0.68	2.70	4.92
2000-2010	2.60	7.06	8.66
2010-2021	2.10	5.62	4.15
1990-2010	0.28	4.84	6.42
2000-2021	2.17	4.47	6.61
1990-2021	1.11	4.39	6.42

Source – Authors estimation from EPWRF data.

Table 6 shows the PCI growth rate (%) of three major sectors of Odisha at 2011-12 constant prices from 1990-91 to 2021-22. During the period of 1990-2000 the PCI growth rate of agriculture and allied sector was - 0.68%, while the growth rate of industry and service sector was 2.70% and 4.92%. In the phase of 2000-2010, the performance of agriculture sector improved, it witnessed a growth rate of around 3%. During this period industry and service sector witnessed an outstanding growth rate of about 7% & 9%. However, the PC growth rate fell for all sectors between 2010 and 2021, with the service sector experiencing the greatest drop. The rate of growth in agriculture and industry falls by about 1%, while the rate of growth in the service sector falls by about 5%. From 1990-2010 the growth rate of agriculture and allied sector, industry and service sector were 0.28%, 4.84% and 6.42% respectively. During the next phase i.e., 2000-2021 the growth rate was 2.17%, 4.47% and 6.61%. During the entire period the growth rate of agriculture and allied sector was 1.11%, industry sector was 4.39% and service sector was 6.42%. The PCI growth rate of all the sectors was highest between 2000 and 2010 under the time frame taken into account for the research. Over the time, the service sector has continued to contribute the most to growth, followed by the industry sector. Even though agriculture is Odisha's primary source of income and the sector supports the bulk of the state's people, its growth rate have always been modest.

Conclusion & Policy Suggestion

Odisha, with its pristine beauty and wonderful culture, has emerged as the country's top state, with a promising growth trajectory over the previous two decades. Except for a few outliers, Odisha's growth has been quite rapid in the last decade. Odisha has been the eastern portal to a booming economy in the previous two decades due to political success and economic leadership (Economic survey of Odisha, 2017-18).

In recent years, Odisha has emerged as a major industrial power in the country. "Rational use of rich mineral resources, rising share of manufacturing sector in NSDP due to metallic production, effective single window system, liberal policy issues on competitive power tariff, infrastructural, market and input support, export promotion, forest & environmental clearance, skill development on entrepreneurship", and so on are all contributing to the State's faster industrialization (Odisha Profile, 2018).

The state can further accelerate its growth if it emphasis on different policies.

- Agriculture and associated sectors are the mainstay of the economy, employing more than 60% of the workforce. To make it a thriving industry, the emphasis should be on improving irrigation systems, crop diversity, integrated farming, and the growth of animal husbandry and fisheries.
- Natural disaster mitigation strategies and mechanisms must be strengthened further to reduce the negative effects of repeated natural disasters.
- There is an urgent need to build institutional capacity for evidence-based policymaking and to put in place procedures for real-time analysis and assessment of the state's growth and governance apparatus in order to better translate good intentions into improved human well-being.

Over recent years, Odisha has demonstrated commendable advancements across various development indicators, attributable to its sustained political stability, a comprehensive approach to social and economic development, and a commitment to good governance. Despite these notable achievements, the state acknowledges that it has yet to reach the ranks of the top-performing regions in the country, as indicated in the Economic Survey of Odisha for the year 2017-18.

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APPENDIX TABLES

Table 7: Sectoral share (%) in the NSDP of Odisha during 1990-91 to 2021-22 at 2011-12 constant prices

Time Period	Agriculture and allied sectors	Industry Sector	Service Sector
1990-1991	34.89	42.82	22.28
1991-1992	35.74	40.23	22.55
1992-1993	33.09	42.53	23.58
1993-1994	35.93	38.65	22.94
1994-1995	33.82	41.73	23.56
1995-1996	32.80	42.04	24.27
1996-1997	30.96	38.69	26.90
1997-1998	32.63	36.76	26.22
1998-1999	31.06	41.09	25.99
1999-2000	26.93	46.39	27.48
2000-2001	25.35	44.43	29.16
2001-2002	27.91	38.29	29.05
2002-2003	22.84	44.02	31.09
2003-2004	24.80	43.40	29.85
2004-2005	22.70	50.16	29.47
2005-2006	22.46	46.86	30.97
2006-2007	20.31	50.76	30.99
2007-2008	19.53	52.17	31.00
2008-2009	18.42	50.41	32.53
2009-2010	19.69	41.37	35.24
2010-2011	18.74	39.74	36.60
2011-2012	17.90	39.53	37.30
2012-2013	19.69	37.22	37.80
2013-2014	17.38	39.70	37.21
2014-2015	18.52	35.47	39.72
2015-2016	14.81	37.64	40.60
2016-2017	15.48	39.37	36.15
2017-2018	12.57	40.36	36.39
2018-2019	12.81	42.65	34.57
2019-2020	14.39	37.92	36.11
2020-2021	16.34	39.07	33.72
2021-2022	14.10	40.07	33.05

Source – Author own estimation

Table 8: Year on Year Growth rate (%) of NSDP and PCNSDP

Time Period	Year-on-Year Growth Rate of NSDP	Year-on-Year Growth Rate of Per Capita NSDP
1990-1991		
1991-1992	12.71	10.61
1992-1993	-1.70	-3.51
1993-1994	6.44	5.00
1994-1995	4.87	3.22
1995-1996	4.57	2.97
1996-1997	-6.90	-8.28
1997-1998	14.39	12.76
1998-1999	3.07	1.66
1999-2000	6.34	4.74
2000-2001	-2.64	-3.89
2001-2002	6.09	4.79
2002-2003	-0.72	-1.84
2003-2004	14.60	13.34
2004-2005	13.06	11.31
2005-2006	4.44	3.08
2006-2007	12.45	10.99
2007-2008	8.58	7.16
2008-2009	7.51	6.12
2009-2010	0.81	-0.51
2010-2011	6.30	4.92
2011-2012	3.75	2.44
2012-2013	5.91	4.92
2013-2014	7.78	6.78
2014-2015	1.20	0.28
2015-2016	7.32	6.34
2016-2017	15.86	14.90
2017-2018	7.79	6.95
2018-2019	7.00	6.18
2019-2020	2.30	1.52
2020-2021	-5.74	-6.45
2021-2022	11.91	11.15

Source – Authors own estimation

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Comparative analyses of Pre-GST and Post-GST trends in Tax Revenues, Workforce Management and Administrative Efficiency in Himachal Pradesh

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Abstract

This research aims to analyze the impact of GST on tax revenue, administrative costs, and workforce efficiency, addressing existing gaps in understanding expenditure fluctuations and staffing challenges to provide insights for optimizing tax administration, enhancing efficiency, and improving policy effectiveness. This research employs a quantitative approach, analysing tax revenue, administrative expenses, and staffing data from 2017-18 to 2023-24. Data is collected from official reports and statistical records. Trend analysis and percentage calculations are used to examine pre- and post-GST impacts, workforce efficiency, and expenditure patterns, providing insights into tax administration effectiveness and policy implications. The research reveals significant fluctuations in tax collection expenses, staffing levels, and vacancy rates from 2010-11 to 2023-24. While administrative costs varied, vacancy rates consistently increased, peaking at 44.61% in 2023-24, highlighting recruitment inefficiencies. The post-GST period showed rising collection expenses, suggesting increased enforcement efforts. Despite technological advancements, staffing shortages hinder operational efficiency. The findings emphasize the need for strategic workforce planning, streamlined recruitment, and cost optimization to enhance tax administration effectiveness and revenue collection sustainability in the evolving fiscal landscape. This research provides valuable insights into the dynamics of tax collection expenses, staffing challenges, and efficiency post-GST, highlighting critical gaps in workforce management and offering strategies for optimizing tax administration and operational performance.

Keywords: *State Taxation Statutes, GST Impact, Tax Revenue, Expenses on collection, Workforce Efficiency.*

1. Introduction

One of the most important components of any system of management by any kind of government is taxation because it brings money for the state. Thus, a tax policy is deemed sound if it serves the purpose of stabilization to the state. India had adopted a formal tax system since Maurya's period to Mughal's and from British period to independent India. The states also adopted taxation laws as per the needs, requirements and the resources contained in the states list of articles, {Article – 246 (ii)} enshrinedin the 7th schedule of constitution. Himachal Pradesh too adopted and enacted various taxation laws accordingly before the introduction of GST. However, whole India adopted and enacted GST on 1st July 2017 as one of the biggest reform in indirect taxation.

It subsumed many State & Central Taxation laws into one unified system of One Nation One Tax. It is a comprehensive tax levied by the Centre and the State government on manufacture, sales and consumption on Goods and Services both. It is featured with minimal physical interface resulting in compliance cost reduction and tax evasion reduction as well. States have lost autonomy in the new GST tax enactment and have focused recently on administrative efficiency of the tax collection agency.

2. Review of Literature

The implementation of the Goods and Services Tax (GST) in India brought a fundamental transformation to the country's taxation system by replacing multiple indirect taxes with a unified structure[1]. Himachal Pradesh, a developing state with a diverse economic base, relies on tax revenue to sustain public infrastructure, welfare programs, and developmental initiatives[2]. By examining tax revenue trends before and after GST, this study aims to assess the effectiveness of the new tax regime in enhancing revenue collection efficiency. The findings will offer valuable insights for both state and central government authorities, aiding in the refinement of taxation policies, addressing potential gaps, and optimizing revenue generation. Furthermore, a stable and predictable tax revenue structure is crucial for economic and fiscal planning, enabling policymakers to make informed budgetary decisions. While numerous studies have explored GST's impact at the national level, there is limited research focusing on its state-level implications, particularly in Himachal Pradesh. This study will fill that knowledge gap by providing empirical evidence on GST's influence on state tax revenues. Additionally, businesses and investors stand to benefit from this analysis, as understanding tax revenue trends can help assess economic growth, compliance improvements, and the overall business climate in the state[3]. Ultimately, this research will serve as a crucial resource for policymakers, economists, and industry stakeholders in evaluating GST's impact on Himachal Pradesh's financial landscape and shaping future taxation policies.

The analysis and comparison of pre-GST and post-GST tax revenue growth in this study are based on the research conducted by Shukla et al., who examined the impact of GST on tax revenue growth due to digitalization from 2013 to 2022[4]. Their study, which is analytical in nature and relies solely on secondary data, highlights the significant role of digital transformation in shaping the Indian tax system. The research assessed the impact of digitalization through three key mechanisms: electronic filing of GST forms and returns, e-way bills for goods movement, and e-invoicing. Using a paired T-test, the study concluded that GST represents a more transparent and efficient tax regime, contributing to a broader tax base and enhanced revenue generation. Over time, improvements in digital infrastructure and the adoption of advanced IT systems have led to increased efficiency and transparency[5]. Additionally, the continuous rise in tax collection has been largely attributed to stringent oversight of fraudulent billing, deep data analytics integrating information from multiple sources, and improved tax administration[6], [7]. These developments suggest that GST, supported by digital advancements, has strengthened revenue collection mechanisms and positioned itself as a sustainable and effective taxation system in India[8].

Taxation plays a crucial role in the fiscal structure of India, with Goods and Services Tax (GST) being one of the most significant reforms in indirect taxation. Studies have shown that GST aimed to replace a complex tax system with a unified one, improving efficiency and revenue collection. In the context of Himachal Pradesh, a small hill state with limited industrialization, tax revenue growth pre- and post-GST presents an interesting case for analysis[9].Before the implementation of GST, Himachal Pradesh relied on a Value Added Tax (VAT) system, excise duties, and entry taxes for revenue generation. Studies by Garg et al. highlight that VAT in Himachal Pradesh was a primary source of indirect tax revenue, yet it suffered from inefficiencies, cascading effects, and tax evasion[10].With the implementation of GST in 2017, the tax structure in Himachal Pradesh changed significantly. As per the analysis by Joseph et al., GST streamlined taxation by eliminating multiple levies and improving compliance through digital invoicing and e-way bills. The impact on state revenue has been mixed, with some initial revenue losses but a gradual increase due to a broadened tax base[11].Several studies, including those by Aman, suggest that the GST era has led to increased revenue collection at the state level due to reduced tax evasion and a more structured tax framework. However, in the initial years, many states, including Himachal Pradesh, faced revenue shortfalls due to the abolition of entry taxes and VAT[12].To counter initial revenue losses, the GST Compensation Act assured states a 14% annual growth in tax revenue. However, as the compensation period ended, questions arose about Himachal Pradesh's long-term financial stability and dependency on central grants[13].Challenges such as technological adoption, compliance burden on small businesses, and reliance on tourism and agriculture-based economies have affected the efficiency of GST implementation in Himachal Pradesh. These structural limitations have impacted revenue growth compared to industrial states[14]. Empirical studies by Singh and Kaur (2022) indicate that while GST has led to better compliance and improved tax buoyancy, the rate of revenue growth in Himachal Pradesh remains volatile compared to the pre-GST period. The analysis suggests that factors like reduced fiscal autonomy and centralization of tax administration play a role[15].

This research introduces an innovative approach by addressing the existing gap in understanding the impact of GST on tax administration, particularly focusing on expenditure fluctuations and staffing challenges. While existing studies have explored the overall effects of GST on tax revenue, few have thoroughly examined its implications on administrative costs and workforce efficiency over an extended period. The novelty of this study lies in its detailed analysis of pre- and post-GST trends in tax collection expenses, staffing levels, and vacancy rates from 2010-11 to 2023-24. By employing quantitative methods and analysing official data, the research provides fresh insights into the dynamics of tax administration, highlighting the growing challenges of recruitment inefficiencies and rising collection expenses, while suggesting actionable strategies for optimizing workforce management and cost efficiency in the post-GST era.

3. Objective of the Study

The study evaluates the human resource management, its expenses on collection of tax revenues and their impact on administrative efficiency comparatively in pre-GST and post-GST period.

4. Research process

4.1 Research Methodology

This study employs a quantitative research approach to analyze trends in two stages i) Tax collection and expenses incurred with percentages and ii)Vacancy rates against sanctioned strength from 2010-11 to 2016-17 (pre-GST) and 2017-18 to 2023-24 (post-GST) period. The research follows a longitudinal descriptive analysis, examining fluctuations in both cost of revenues collection accruals and staffing levels, recruitment efficiency, and workforce management practices over time. By identifying patterns in vacancy rates, this study aims to provide insights into the underlying causes of staffing shortages and their implications for institutional effectiveness[16]. The study relies on secondary data obtained from annual administrative reports of ST&E department and staffing records. The dataset includes information on revenue accruals, expenses incurred on collection and sanctioned strength, posted positions, and vacancy percentages, allowing for a comprehensive assessment of trends and variations over the years. The data was systematically extracted, verified for accuracy, and organized into a structured format to facilitate statistical analysis[17] Descriptive statistical methods were applied to analyze vacancy rates and their fluctuations over the study period. The percentage of vacancies against sanctioned strength was calculated for each year to identify trends in workforce shortages. Comparative analysis was conducted to assess variations in staffing gaps, highlighting potential factors influencing recruitment and retention. Furthermore, graphical representations, such as line graphs, were utilized to illustrate changes in vacancy rates, making trends more interpretable[19]. To ensure the reliability of the findings, data sources were cross-verified against multiple records from organizational reports. The use of official staffing data enhances the validity of the study, as it reflects actual workforce allocations and vacancies. Moreover, the research employs standardized methods for calculating vacancy rates, ensuring consistency in analysis and interpretation[20].

4.2 Research Limitation

While the study provides valuable insights into staffing trends, it is limited by its reliance on secondary data, which may not capture qualitative aspects such as reasons for attrition, employee satisfaction, or policy changes affecting recruitment. Additionally, external factors such as budget constraints, policy reforms, or economic conditions influencing hiring decisions were not directly examined. Future research could incorporate qualitative methods, such as interviews or surveys, to gain deeper insights into workforce challenges. By employing a structured quantitative approach, this study aims to provide a clear and objective assessment of vacancy trends, contributing to informed decision-making in workforce planning and policy formulation.

5. Components of Revenue Receipts

The State Taxes & Excise department of Himachal Pradesh is the principal tax collection agency which has been assigned the role of ensuring tax collections from various tax enactments administered by it. Tax laws viz. Value Added Tax implemented since 2005, Passenger and Goods Tax Act administered since 1955, Certain Goods Carried by Road Tax Act 1999 and HP Excise Act 2011 and their accruals in consolidated form constitute the total tax collections of this department as state tax revenues. GST implemented since 1st July 2017 has subsumed the Value Added Tax and Post-GST implementation the component of Value Added Tax collection is replaced by pan-India Goods and Services Tax 2017.

Revenue receipts represent the actual financial accruals received by the state during a given fiscal year, encompassing a broad spectrum of income sources that contribute to the state's fiscal stability[19].

5.1 Pre-GST State Taxes & Excise Revenues (Pre-GST Period 2010-11 to 2016-17)

Table-1

Pre-GST Trends of Tax Revenues, Expenses and Human resource of (ST&E) for the year 2010-11 to 2016-17.								
Sr. No.	Financial Years	ST&E Accruals (in INR) (Cr.)	Expenses on Collection (in INR) (Cr.)	Percentage of Expenses against Collections	Sanctioned Strength (in No.)	Posted Position (in No.)	Vacancy (in No.)	Vacancy % against Sanctioned Strength
1	2010-11	3040.29	31.68	1.04	1071	814	257	24.00
2	2011-12	3573.47	31.62	0.87	1071	819	252	23.53
3	2012-13	3971.33	48.75	1.00	1071	826	245	22.88
4	2013-14	4524.23	61.60	2.00	1084	834	250	23.06
5	2014-15	5179.76	43.01	1.00	1119	851	268	23.95
6	2015-16	5617.68	40.58	0.89	1120	859	261	23.30
7	2016-17	6171.00	52.60	1.12	1228	933	295	24.02
Grand Total		**32077.76**	**309.84**	**-**	**-**	**-**	**-**	**-**
Average		**4582.54**	**44.26**	**1.13**	**1109.14**	**848.00**	**261.14**	**23.53**

Source:- Annual administrative reports of ST&E for the year 2010-11 to 2016-17.

5.1 (a) Results and Discussion

State tax (ST) and excise tax accruals form a vital component of government revenue, offering insights into economic trends, policy shifts, and tax compliance levels. Between 2010-11 and 2016-17, accruals demonstrated a consistent upward trend, rising from ₹3,040.29 crore to ₹6,171.00 crore, reflecting an overall increase of 103%. This steady growth suggests the influence of multiple factors, including economic expansion, inflationary trends, adjustments in tax structures, and improvements in compliance enforcement. However, while the long-term trajectory remains positive, year-on-year variations indicate fluctuations in the growth rate. Notably, the most substantial increase occurred between 2013-14 and 2014-15, with an increment of ₹655.53 crore, potentially signaling policy-driven enhancements or stricter enforcement measures. A similar pattern was observed in the subsequent fiscal year, reinforcing the resilience of tax collection mechanisms. The expansion of the taxable base, driven by industrial growth and rising consumer demand, likely contributed to this sustained revenue increase. Nevertheless, while these figures highlight fiscal strength, it is crucial to examine whether the rise in tax collections corresponds to genuine economic progress or merely reflects adjustments in tax policies. A deeper analysis is required to distinguish between growth fuelled by economic expansion and that resulting from increased taxation on existing economic activities.

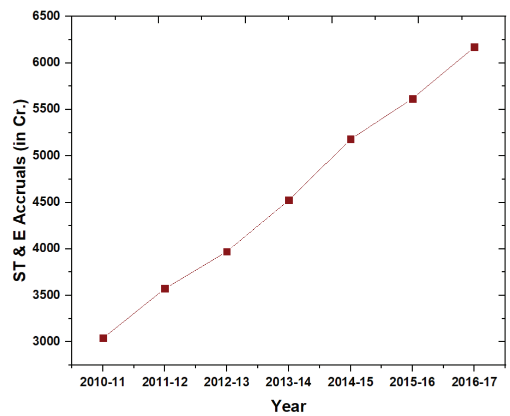

Figure 1. State tax (ST) & Excise tax Accruals from 2010-2017.

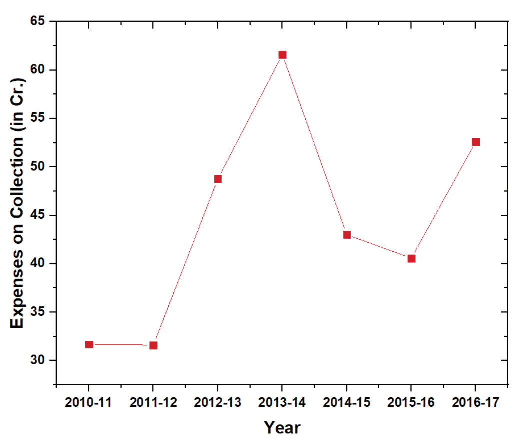

Figure 2. Expenses on collection from 2010-2017.

The cost of tax collection serves as a key indicator of the efficiency of revenue administration, reflecting the effectiveness of enforcement measures and compliance strategies. Between 2010-11 and 2016-17, the expenses on collection exhibited noticeable fluctuations, highlighting the evolving nature of tax administration costs. The expenditure remained relatively stable in the initial years, with a slight decline from ₹31.68 crore in 2010-11 to ₹31.62 crore in 2011-12. However, a sharp increase followed, reaching ₹48.75 crore in 2012-13 and peaking at ₹61.60 crore in 2013-14. This significant rise may have resulted from policy changes, increased enforcement activities, or technological investments aimed at strengthening compliance. Subsequently, the expenses declined to ₹43.01 crore in 2014-15 and further to ₹40.58 crore in 2015-16, suggesting enhanced efficiency through automation and process optimization. The upward shift to ₹52.60 crore in 2016-17 indicates a renewed focus on enforcement, potentially driven by administrative reforms or increased operational demands. These variations underscore the complex balance between ensuring effective tax collection and maintaining cost efficiency. While strategic investments in tax administration are essential for improving compliance, managing collection expenses prudently is crucial to sustaining fiscal responsibility and optimizing resource allocation.

The ratio of expenses incurred in tax collection relative to total revenue serves as a key indicator of the efficiency and sustainability of revenue administration. From 2010-11 to 2016-17, this percentage exhibited noticeable fluctuations, reflecting shifts in enforcement strategies, policy adjustments, and operational efficiencies. The ratio initially stood at 1.04% in 2010-11, declining to 0.87% in 2011-12, signaling improved cost efficiency, likely due to streamlined administrative measures. However, a subsequent rise to 1.00% in 2012-13 suggested increased enforcement efforts or administrative investments. The most significant spike occurred in 2013-14, where the ratio surged to 2.00%, indicating heightened tax collection costs, possibly driven by extensive compliance initiatives or policy-driven enforcement measures. This peak was followed by a substantial decline to 1.00% in 2014-15 and further to 0.89% in 2015-16, reflecting improvements in collection efficiency, potentially due to automation and process optimization. However, the ratio climbed again to 1.12% in 2016-17, implying renewed administrative expenditures, likely aimed at reinforcing tax enforcement frameworks. These fluctuations underscore the evolving nature of tax administration costs and the need for a balanced approach that ensures both effective revenue collection and fiscal prudence. While periodic investments in enforcement and administrative enhancements are necessary, maintaining an optimal expense-to-collection ratio is crucial to maximizing revenue efficiency and sustaining long-term economic stability.

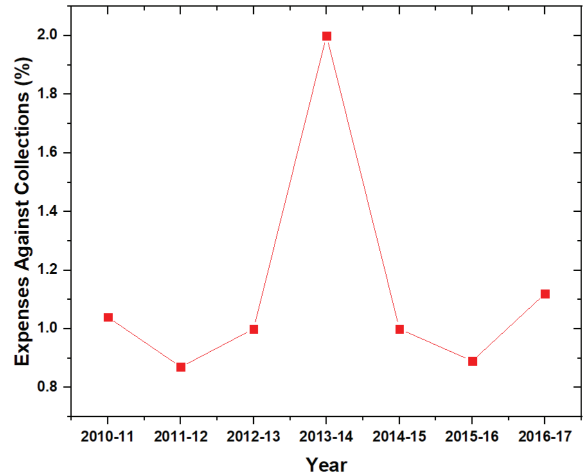

Figure 3. Percentage of expenses against collections from 2010-2017.

5.1(b) Workforce to Support Revenue Collection

Efficient tax administration relies heavily on maintaining an adequate workforce to support revenue collection and enforcement activities. Analysing the sanctioned strength, posted positions, and vacancies from 2010-11 to 2016-17 reveals a steady increase in approved positions, yet a persistent gap in actual staffing. Over this period, sanctioned posts grew from 1,071 to 1,228, while the number of employees in active positions increased from 814 to 933. However, the rise in posted positions did not fully bridge the gap, leading to sustained vacancies that pose administrative challenges. Although there were fluctuations in vacancy levels, the overall trend suggests ongoing difficulties in recruitment and retention. The number of unfilled positions, which stood at 257 in 2010-11, initially declined to 245 by 2012-13, reflecting minor improvements in hiring efforts. However, vacancies increased again, reaching 268 in 2014-15, following an expansion in sanctioned strength. By 2016-17, the shortfall peaked at 295, highlighting the inefficiencies in workforce management despite the approved increase in personnel. The persistence of vacancies suggests potential obstacles such as lengthy recruitment processes, high attrition rates, or structural inefficiencies in hiring mechanisms. While expanding the sanctioned workforce indicates recognition of administrative needs, failing to fill these positions can hamper operational efficiency, delay tax enforcement efforts, and reduce overall revenue collection effectiveness. To address these challenges, targeted recruitment drives, streamlined hiring procedures, and retention-focused policies must be implemented to ensure a well-equipped workforce capable of sustaining a robust tax administration system.

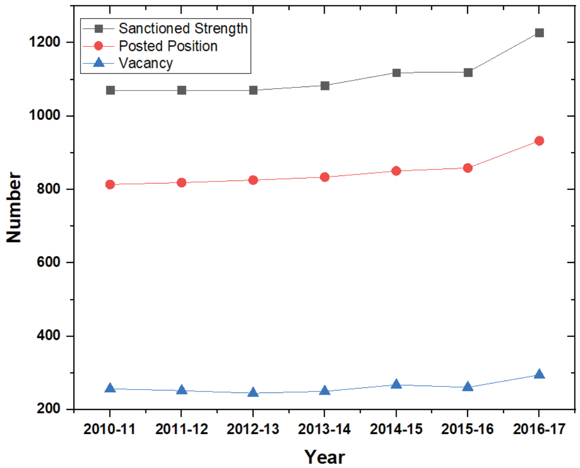

Figure 4. Number of Sanctioned Strengths, Posted Position, and Vacancy from 2010-2017.

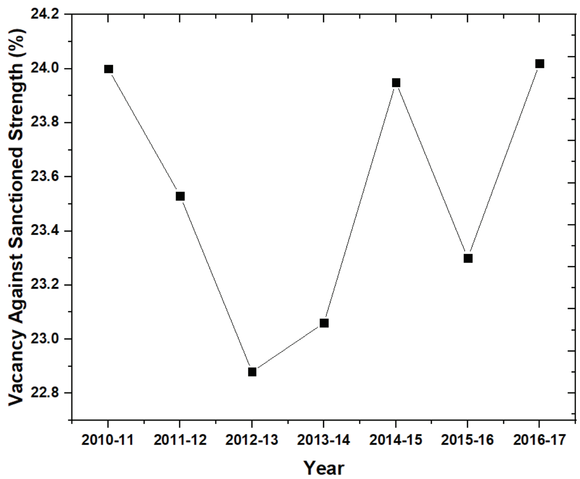

Figure 5. Vacancy Sgainst Sanctioned Strength from 2010-2017.

The vacancy percentage against the sanctioned strength is a crucial metric for evaluating workforce adequacy in tax administration, offering insights into recruitment efficiency and staffing challenges. From 2010-11 to 2016-17, fluctuations in this percentage reflect the varying pace of recruitment and the gap between sanctioned positions and actual staffing. In 2010-11, the vacancy percentage was 24.00%, indicating a significant shortfall in staffing levels. This figure saw a gradual improvement, reaching 22.88% in 2012-13, suggesting some progress in recruitment or reduced attrition. However, from 2013-14 onwards, the percentage began to rise again, peaking at 24.02% in 2016-17, highlighting that despite new positions being sanctioned, the recruitment process was unable to keep up with the increasing administrative demands. This recurring fluctuation points to underlying challenges in workforce planning, such as delays in recruitment, budgetary constraints, or inefficiencies in the hiring process. Maintaining a vacancy percentage consistently above 20% emphasizes the need for a more responsive and efficient recruitment strategy to ensure that the tax administration is adequately staffed to handle the growing complexity of revenue collection and enforcement. Streamlining hiring procedures and implementing retention strategies would be vital to closing this gap and improving operational effectiveness.

6. Post-GST RevenuesState Taxes & Excise (Post-GST Period 2017-18 to 2023-24)

Table-2

Post-GST Trends of Tax Revenues, Expenses and Human resource of (ST&E) for the year 2017-18 to 2023-24.								
Sr. No.	Financial Years	ST&E Accruals (in INR) (Cr.)	Expenses on Collection (in INR) (Cr.)	Percentage of Expenses against Collections	Sanctioned Strength (in No.)	Posted Position (in No.)	Vacancy (in No.)	Vacancy % against Sanctioned Strength
1	2017-18	6133.96	84.46	1.37	1335	976	359	26.89
2	2018-19	6421.55	67.47	1.00	1335	932	403	30.19
3	2019-20	6796.02	96.94	1.40	1335	946	389	29.14
4	2020-21	7044.24	83.43	1.10	1335	951	384	28.76
5	2021-22	8494.77	103.06	1.20	1335	924	411	30.79

6	2022-23	9273.94	131.62	1.40	1334	873	461	34.56
7	2023-24	10187.5	114.49	1.10	1437	796	641	44.61
Grand Total		**54351.98**	**681.47**	**-**	**-**	**-**	**-**	**-**
Average		**7764.57**	**97.35**	**1.22**	**1349.43**	**914.00**	**435.43**	**32.13**

Source:- Annual administrative reports of ST&E for the year 2017-18 to 2023-24.

6.1 (a) Results and Discussions

The steady rise in state tax (ST) and excise tax accruals from 2017-18 to 2023-24 reflects a robust fiscal performance, underpinned by evolving economic conditions, policy initiatives, and enforcement strategies. Over this period, revenue collections exhibited a consistent upward trend, growing from ₹6,133.96 crore in 2017-18 to ₹10,187.5 crore in 2023-24, marking an approximate 66% increase. This sustained expansion in the revenue base suggests improvements in tax compliance, broadening of economic activities, and potential adjustments in tax policies. The initial years of the analysis, from 2017-18 to 2020-21, experienced moderate growth, with revenues increasing gradually to ₹7,044.24 crore. However, a sharp acceleration occurred from 2021-22 onwards, with a significant jump to ₹8,494.77 crore, followed by continued gains in subsequent years, indicating a possible post-pandemic economic rebound, heightened enforcement mechanisms, or structural tax reforms. The persistent rise in accruals underscores the increasing contribution of excise and state taxes to overall fiscal revenue, yet it necessitates further examination to determine whether the growth is primarily a result of economic expansion or policy-driven measures. Ensuring the long-term sustainability of this revenue growth requires a balanced approach that fosters economic development while maintaining an efficient and equitable tax system.

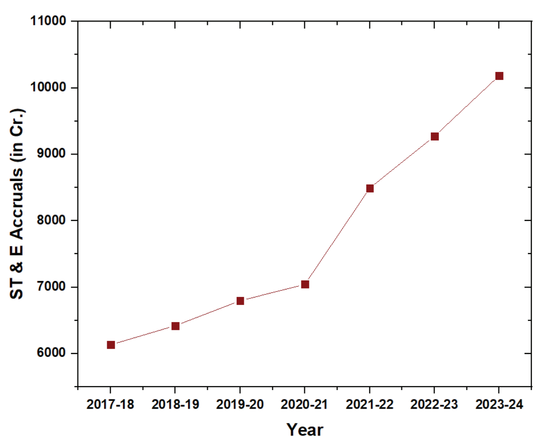

Figure 6. State tax (ST) & Excise tax Accruals from 2017-2024.

The analysis of tax collection expenses from 2017-18 to 2023-24 reveals notable fluctuations, reflecting the evolving priorities in enforcement strategies, administrative efficiency, and policy-driven financial allocations. The expenditure on tax collection commenced at ₹84.46 crore in 2017-18, followed by a significant reduction to ₹67.47 crore in 2018-19, suggesting improved cost management or enhanced operational efficiency. However, this downward trend was short-lived, as expenses surged to ₹96.94 crore in 2019-20, indicating increased investments in enforcement mechanisms, structural reforms, or technological enhancements aimed at strengthening tax compliance. Subsequent years witnessed a dynamic pattern, with collection expenses dropping to ₹83.43 crore in 2020-21 before escalating to ₹103.06 crore in 2021-22. This upward movement persisted, peaking at ₹131.62 crore in 2022-23, potentially driven by intensified enforcement efforts, digitalization initiatives, or administrative restructuring. The marginal decline to ₹114.49 crore in 2023-24 suggests a recalibration of spending, possibly reflecting gains in efficiency or strategic cost control while maintaining robust enforcement measures. These variations underscore the intricate balance between maintaining effective tax enforcement and ensuring cost efficiency in revenue administration. While higher expenditures may contribute to improved compliance and a broader tax base, sustained fiscal prudence necessitates an approach that maximizes efficiency without imposing undue financial strain. Strategic investments in automation, data analytics, and streamlined administrative processes can help optimize tax collection costs, ensuring sustainable and effective revenue management over time.

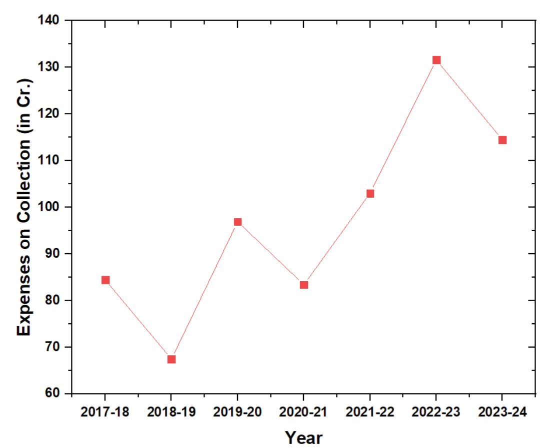

Figure 7. Expenses on collection from 2017-2024.

The percentage of expenses against tax collections from 2017-18 to 2023-24 reflects the evolving efficiency of tax administration and the effectiveness of fiscal resource allocation. Over this period, the ratio fluctuated, highlighting shifts in operational strategies, enforcement mechanisms, and cost-control measures. In 2017-18, the expense-to-collection ratio was 1.37%, suggesting a moderate administrative cost relative to revenue generation. A significant improvement was observed in 2018-19, with the ratio declining to 1.00%, indicating enhanced efficiency and possibly better cost management. However, this trend was short-lived, as the ratio surged to 1.40% in 2019-20, likely due to increased enforcement activities or structural reforms requiring higher investment. Subsequent years exhibited continued variations, with the ratio dropping to 1.10% in 2020-21, rising to 1.20% in 2021-22, and peaking again at 1.40% in 2022-23, reflecting periods of intensified revenue collection efforts, regulatory changes, or technological advancements in tax administration. By 2023-24, the percentage declined again to 1.10%, suggesting improved cost control despite sustained enforcement measures. These fluctuations emphasize the importance of maintaining a balance between revenue mobilization and cost efficiency in tax collection. While strategic investments in enforcement and digital infrastructure can enhance compliance, a consistent focus on streamlining administrative costs and leveraging automation remains essential for sustainable and cost-effective tax administration.

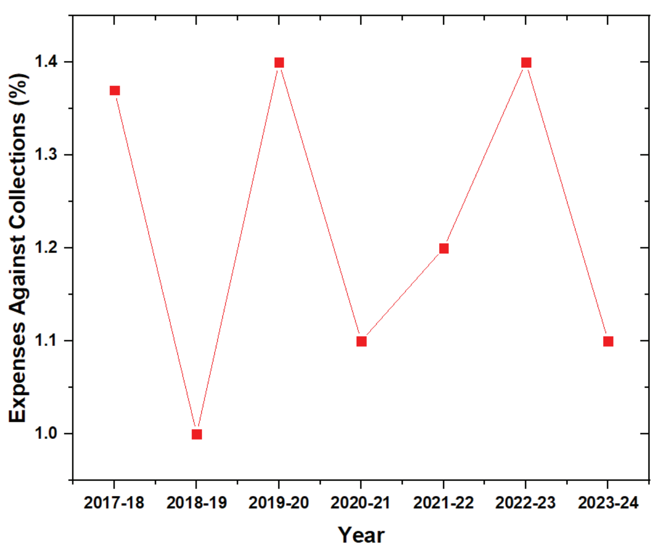

Figure 8. Percentage of Expenses against Collections from 2017-2024.

6.1(b) Workforce to Support Revenue Collection

The examination of sanctioned strength, posted positions, and vacancies from 2017-18 to 2023-24 underscores a growing staffing crisis that could significantly affect institutional efficiency and service delivery. While the sanctioned strength remained constant at 1,335 for most of the period, the number of posted personnel showed a fluctuating yet declining trend, leading to a widening gap between approved and actual workforce levels. In 2017-18, 976 personnel were in position, leaving 359 vacancies, but by 2021-22, this shortfall had risen to 411, indicating persistent challenges in recruitment and retention. The situation further deteriorated in 2022-23 when posted positions dropped to 873, resulting in 461 vacancies. A more concerning development occurred in 2023-24, as the sanctioned strength increased to 1,437, yet only 796 employees were in place, pushing vacancies to a record high of 641.

This escalating vacancy trend suggests systemic issues, potentially linked to inefficient recruitment processes, budgetary constraints, or difficulties in workforce retention. The growing disparity between sanctioned and filled positions may lead to an excessive workload for existing employees, reduced organizational effectiveness, and compromised service quality. To mitigate these concerns, a well-structured workforce management strategy is essential, incorporating expedited recruitment drives, improved employee retention policies, and data-driven workforce planning. Strengthening human resource capacity through timely hiring and effective talent management will be critical to ensuring a stable and competent workforce capable of meeting institutional objectives.

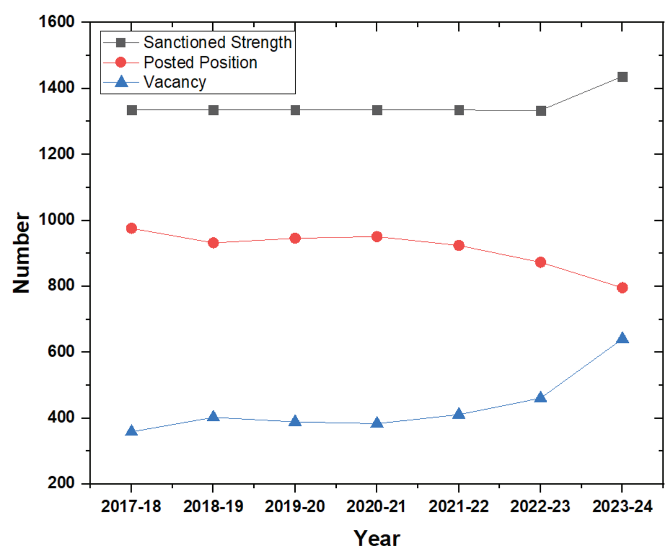

Figure 9. Number of sanctioned strengths, posted position, and vacancy from 2017-2024.

The analysis of vacancy rates against sanctioned strength from 2017-18 to 2023-24 reveals a troubling and consistent increase in unfilled positions, which underscores ongoing challenges in recruitment and workforce management. Starting at 26.89% in 2017-18, the vacancy rate already highlighted a significant gap between the authorized and occupied positions. This figure rose further to 30.19% in 2018-19, signaling deepening issues in both recruitment and retention efforts. Although there was a slight improvement in 2019-20 and 2020-21, with vacancy rates dipping to 29.14% and 28.76%, these changes were minimal and did not reflect a long-term solution to the staffing shortfall. In subsequent years, the situation worsened, with the vacancy rate climbing to 30.79% in 2021-22 and then to 34.56% in 2022-23, indicating an alarming trend of insufficient workforce replenishment. The most notable increase occurred in 2023-24, when the vacancy rate peaked at 44.61%, the highest recorded in the period under review. This surge, alongside a rise in the sanctioned strength, suggests that staffing expansion has not been matched by a commensurate effort in hiring, potentially exacerbating existing operational inefficiencies. These rising vacancy rates present serious concerns for the organization's ability to meet operational demands, potentially resulting in overburdened staff, reduced productivity, and operational disruptions. To mitigate these risks, a strategic approach focusing on accelerating recruitment processes, enhancing employee retention, and aligning workforce planning with organizational objectives is crucial. Without such interventions, the growing gap between sanctioned and actual staffing will continue to undermine institutional effectiveness and may threaten long-term operational stability.

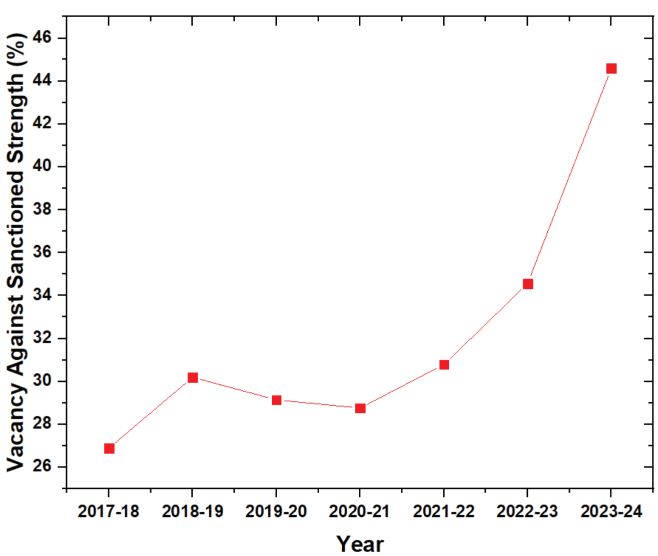

Figure 10. Vacancy against sanctioned strength from 2017-2024.

7. Findings and Discussions

The analysis of pre- and post-GST revenue trends highlights significant shifts in tax collection efficiency and administrative costs. Before the implementation of the Goods and Services Tax (GST), tax collection processes were fragmented across multiple indirect tax regimes, leading to inefficiencies in enforcement and revenue mobilization. The study observed fluctuations in expenses on tax collection, indicating varying degrees of operational efficiency in different years. In the initial years following GST implementation, collection expenses exhibited an increasing trend, suggesting investments in digital infrastructure, compliance mechanisms, and enforcement strategies to stabilize the new tax regime. However, in recent years, the data indicates a gradual decline in collection expenses as operational efficiencies improved. The percentage of expenses against tax collections showed a similar trend, with an initial rise post-GST, followed by gradual stabilization. This suggests that while administrative costs increased initially, they were eventually offset by enhanced compliance, streamlined tax filing mechanisms, and improved revenue mobilization. Furthermore, staffing levels exhibited significant vacancies throughout the period, with vacancy rates against sanctioned strength showing a rising trend. The increasing workforce shortage may have impacted tax administration efficiency, posing challenges in enforcement and service delivery.

The transition to GST was expected to enhance tax compliance, broaden the tax base, and improve revenue generation. The initial rise in tax collection expenses and vacancy rates indicates the structural adjustments required to implement the new tax system effectively. Increased administrative spending during the initial phase suggests investments in technological infrastructure, such as GSTN (Goods and Services Tax Network), digital invoicing, and compliance monitoring tools. However, the gradual decline in collection expenses in recent years suggests that these investments have yielded operational efficiencies, reducing the cost of tax administration over time. The increasing vacancy rates in tax administration raise concerns about workforce capacity in managing tax enforcement and compliance. Despite advancements in automation and digital taxation systems, a well-equipped workforce remains essential for monitoring compliance, addressing tax evasion, and ensuring smooth tax administration. The significant rise in vacancy rates in 2023-24, reaching 44.61%, suggests that while the tax system may be technologically robust, human resource shortages could hinder effective implementation. Addressing these gaps through streamlined recruitment processes, enhanced retention strategies, and workforce planning will be critical for sustaining long-term efficiency in tax collection. Overall, the findings highlight the complex relationship between tax administration costs, revenue generation, and workforce efficiency in the post-GST era. While technological advancements have improved operational efficiency, persistent staffing shortages may pose challenges for enforcement and service delivery. Policymakers should focus on balancing technological investments with adequate human resource allocation to ensure a robust and cost-effective tax administration system.

8. Conclusions

The analysis of tax revenue trends before and after the implementation of GST reveals significant shifts in tax collection efficiency, administrative expenses, and workforce management. The transition to GST aimed to streamline the taxation system, enhance compliance, and optimize revenue generation. However, the findings indicate that while GST implementation initially led to higher administrative costs, these expenses gradually stabilized as technological advancements improved operational efficiency. The percentage of expenses against tax collections fluctuated over the years, reflecting the ongoing adjustments in enforcement measures and policy refinements. Despite the improvements in tax administration, persistent staffing shortages remain a critical challenge, with vacancy rates increasing significantly, particularly in the post-GST period.

The findings underscore the importance of balancing technological investments with adequate human resource allocation to ensure the long-term effectiveness of the tax administration system. While automation and digital tax infrastructure have played a crucial role in enhancing compliance and reducing operational costs, the growing gap between sanctioned and posted positions highlights the need for strategic workforce planning. Failure to address staffing shortages could hinder enforcement efforts, impact taxpayer services, and reduce the overall efficiency of the tax administration framework.

Moving forward, policymakers should focus on strengthening recruitment mechanisms, improving employee retention strategies, and leveraging data-driven decision-making to enhance revenue collection efficiency. Additionally, optimizing administrative costs without compromising enforcement effectiveness will be crucial for sustaining fiscal discipline and ensuring long-term revenue growth. A well-structured approach that integrates automation, streamlined processes, and a skilled workforce will be essential in maintaining a cost-effective and resilient tax administration system in the post-GST era.

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Influence of Entrepreneurship Education on Students' Aspiration Towards Becoming Entrepreneurs

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Abstract

One of the most creative and significant factors influencing the state of a nation's competitive economy is the quality of its entrepreneurial education. Entrepreneurial development programs aim for developing a person's entrepreneurial drive and obtaining skills besides abilities essential toward carry out their entrepreneurial position successfully to develop individuals with certain skills who are able to start their own businesses. The Indian government encourages youth entrepreneurship through a number of programs. India's youth are supported and inspired by Made in India, Start-up India, and Stand-up India initiatives. This article will examine the type of citizen that is cultivated when entrepreneurship is studied in colleges. The examination's base is empirical research, explorative in nature, where primary data has been collected on two dimensions, entrepreneurial education and entrepreneurial intention construct, from the third-year engineering students who exclusively studied the subjects: descriptive analysis, scale reliability, ANOVA, and simple regression methods applied to test the relational hypothesis. The findings indicate the scope of entrepreneurial opportunities is fewer among females, although creation of value and self-esteem are higher. Comparatively with males, the entrepreneurial intention among females was found to be lower. Overall, approximately 13% of the variance explained in becoming entrepreneurs, whether male or female, is positively impacted by entrepreneurship education.

Keywords: *Entrepreneurship Education, Intention, Regression Analysis, Students.*

Introduction

Entrepreneurship is the final phase of the entrepreneurial process, during which one searches for expansion and diversification following the establishment of a venture. An individual who launches a business is an entrepreneur. He looks for and reacts to change. Together with land, labor, and capital, he is considered by economists to be the fourth component of production. Others still believe that innovators who develop novel concepts for goods, markets, or methods are entrepreneurs.

The word "entrependre" in French, which means "one who undertakes" or "a go-between," is where the name originates. Three main career paths exist for entrepreneurs. The first one is small business ownership, which focuses on owning and running small businesses locally. The second category pertains to growth-oriented initiatives, which are dedicated to expanding new firms. The third category is intercorporate behavior, which refers to entrepreneurs who have relations to established business enterprises as employees.

The procedure a person uses to further his commercial interests is known as entrepreneurship. It is an activity that will help him or her launch their business and involves creativity and ingenuity. Establishment of novel businesses or the revitalization of prevailing are examples of entrepreneurship. especially new companies that typically respond to openings that have been discovered. An innovative human activity, entrepreneurship involves moving resources from one productive level to another.

Entrepreneurship contributes immensely for developing an economy, such as increasing capital formation, generating large-scale jobs right away, and facilitating balanced regional development. In order to start and manage a business, an entrepreneur must fulfill thirteen tasks, according to Peter Kilby (1971).1. Perception of market prospects 2. Acquiring control over limited resources 3. Investing in resources 4. Promotion of the goods.5. Communicating with officials 6. Overseeing the organization's human resources 7. Handling relationships with suppliers and customers 8. Management of finances 9. Production administration 10. Purchasing and managing factory assembly 11. The field of industrial engineering 12. Enhancing the product and process 13. Innovating unique products, methods, and services.

The definition of the entrepreneurial essence in advanced countries, education fosters creativity, invention, and outside-the-box thinking; in developing nations, nonetheless, it serves as a means of fostering an optimistic outlook toward self-employment and entrepreneurship. As defined, a person has an entrepreneurial intention when intend to launch a novel business then deliberately anticipates to do at a later date. Another definition of entrepreneurship education is a course that imparts knowledge of both the study of entrepreneurship and its application and is provided by universities (Ginanjar, 2016).

Table 1 Four Different Kinds of Entrepreneurship Education program

S.No	Entrepreneurship Education Program	Aim
1	Entrepreneurial Awareness Education	Influence impact of Entrepreneurship
2	Education for start-up	Develop Entrepreneurial Idea
3	Education for Entrepreneurial Dynamism	Start-up phase
4	Continuing Education for Entrepreneurs	Lifelong learning program

Source: Linan (2004)

Irrespective of line of work or workplace, there are benefits to going above and beyond what is required. It increases self-assurance; individuals begin to regard you as a leader; others begin to trust you; and higher authorities begin to respect you for being tagged as an entrepreneur. Entrepreneurial culture cultivates allegiance from superiors as well as underneath. With the coordinated effort of men, material, and money, business creates riches, fosters cooperation, and makes one feel proud and satisfied. As an entrepreneur, be able to convince consumers, investors, and key personalities that solving a relevant problem and that peculiar solution has sounded value proposition and business model.

Adetayo, J. O. (2014) well-defined that entrepreneurs are not born but rather are formed by their experiences and surroundings as they grow and learn, influenced by their guardians, mentors, tutors, teachers, and role models. There has been an augmented emphasis among scholars with regard to entrepreneurship teaching. However, the students' aspirations to become entrepreneurs were not supported by entrepreneurship education. (Kusumojanto et al., 2020). The qualities and abilities necessary to succeed as an entrepreneur can be learned, such as how to be goal-oriented, self-assured, persistent, etc. Entrepreneurship and wage employment are the two main career categories from which one might select.

Table 2 Wage Employment v/s Entrepreneurship

Wage Employment	Entrepreneurship
1. Work for others	1. Own Boss
2. Follow Instructions	2. Make own Plans
3. Routine Job	3. Creative Activity
4. Earning is Fixed	4. Generally Surplus
5. Can be Negative	5. Never Negative Sometimes
6. Does not create wealth	6. Creates Wealth, Contributes to GDP

Kumar, A. (2012). Entrepreneurship: Creating and leading an entrepreneurial organization. Pearson Education India.

Students who receive an education in entrepreneurship can improve their future professional achievement and cultivate a positive attitude toward entrepreneurship. Psychological motivation may increase students' chances of starting their own business. An improved understanding of how individual traits impact the desire to begin a new company. By starting innovative, sustainable companies, entrepreneurs resolve issues in the market. Identifying chances, grabbing them, and assisting entrepreneurs in creating new business opportunities are all part of entrepreneurship. However, in order to succeed as entrepreneurs, students must possess professional proficiency in soft skills. As a result, it is imperative to raise the caliber of education by enhancing faculty, which will ultimately aid in achieving sustainable development objectives. There is a considerable correlation between the university's entrepreneurial environment and students' views toward entrepreneurship Jaleel et al., (2017)

Integrating entrepreneurship education allows educational institutions the chance to inspire their students to start new businesses that may benefit the individual entrepreneurs. Because entrepreneurship education helps new graduates start their own businesses rather than depending on outside sources for work, it helps lower unemployment rates among recent graduates. The nation's socioeconomic imbalance results from the current labor market's inadequacy to cope with all recent university graduates.

Objectives of the study: The most important question to be answered for the success of such efforts stays whether or not students are demonstrating their approach towards entrepreneurship education, particularly in advanced learning. Regardless of whether they decide to launch their own company or not, entrepreneurship education gives graduates a fresh perspective on the world to grab opportunities. Ascertain the graduates' perspective regarding institution-level entrepreneurial education programs.

i. Inspect the impact of control variables, gender, and entrepreneurial intention.
ii. Infer the challenges that affect student interest in the Entrepreneurship program.
iii. Address whether the existing entrepreneurship curriculum at technical institutions satisfies the needs of potential entrepreneurs.

Research questions

The major question needs to address to what extent the graduates perceive the benefit of entrepreneur education in building their abilities and profession to launch a company of their own, helping the society and, in turn, the economy of the country overcome the challenges of the unemployment scenario. In addition, to address the need for new curriculum courses, technical training, and incubation hubs, mentorship to access the facilities and services provided by the government.

Need of the study

Research on the results of entrepreneurial education is lacking, observes (Fayolle et al., 2006) Students' attitudes of entrepreneurship can be improved by entrepreneurship education, leading them to believe that generating and implementing company ideas is exciting and that it is not difficult to do. The "entrepreneurial education" doesn't always result in entrepreneurs, but it might strengthen the potential to become one with updated educational objectives and resources (Ferreira, 2011). Majority of articles that have been articulated are closely related to training and creativity Shabbir et al., (2022). According to Rideout and Gray (2013), experiments have not yet proven the value of entrepreneurship education. Research has indicated a there exists linkage between entrepreneurship and the need for achievement motive (Martinez et al., 2010).

Identification of Research Gap

However, the fundamental distinctions between entrepreneurship are not being addressed in the courses. Many of these programs consequently fall short in showcasing the entrepreneurial success stories. The study of entrepreneurial education requires the application of various teaching and training methodologies. Considering the lack of regional or national surveys on people's willingness to become entrepreneurs, research surveys on entrepreneurial education have a lot of potential. Identifying the relationships between various factors influencing entrepreneurial education and those factors effects relationships have on the results of entrepreneurship is crucial.

Literature

Entrepreneurship is one of the job alternatives available to educated graduates, both the job loss rate and societal issues brought on by joblessness are lessened as a result. Male and female students may have distinct ideas about entrepreneurial prospects and obstacles due to the blending of psychological prejudices and societal gender roles that are constructed. Male and female participation in entrepreneurship is driven by distinct factors. Male students believed that working for themselves would give them additional time to complete their business-related tasks. Female students stated that their primary reasons for wanting to work for themselves were the need for greater flexibility and autonomy. Due to the lack of jobs, young individuals are motivated and have desire to transform. Instead of merely looking for work, the country's young people are increasingly starting their own businesses.

Entrepreneurship education

Entrepreneurship education focuses on the mindset and abilities required for a person to adapt to his surroundings when establishing, developing, and successfully operating a business. Sontsele (2020) suggests that informal forms of entrepreneurship education could be equally as successful as more formal. Early exposure to this type of education may also boost the possibility that entrepreneurs will investigate and launch new companies effectively. Consequently, implementing an entrepreneurial education program is basically a means for students to determine whether they are qualified for a future in entrepreneurship. Research indicates that entrepreneurship education prior to college may be very useful in raising interest in this discipline. Students who receive education besides training in entrepreneurship have the opportunity to find employment and overcome their anxiety of being unemployed. Students' career preferences were impacted by the entrepreneurship course; they were drawn to it and thought it was a good option that wouldn't affect their ability to get employment in the future.

Elahi (2012) notes that traditional business courses constituted the majority of entrepreneurship education in India throughout the new millennium's transition, with specialist programs lacking to enhance students' entrepreneurial knowledge and experience. Authorities encourage tools like entrepreneurship education to boost entrepreneurial activity because they understand how important entrepreneurship is in fostering economic development (Fayolle et al., 2006).

Students' knowledge, skills, attitudes, and character qualities can all be enhanced by teaching them about entrepreneurship. (Liñán et al., 2008). Collegiate students' knowledge and abilities in business have significantly improved, contending that education in entrepreneurship could assist females in acquiring competencies and skills that they can use to solve difficulties in their future professions as entrepreneurs. Students inspired by the teachings in entrepreneurship education impacts much more to grab opportunities and start enterprises by implementing their business ideas. On the flip side, even though students' potential for entrepreneurship is enormous, the entrepreneurship curriculum is below par.

Amos (2013) emphasized the need for entrepreneurship education and found that people believe it to be significantly important. Courses among Nigerian college of education students, since the courses give them the chance to become creative, independent, and future leaders. Six main barriers to teaching entrepreneurship in India are categorized as follows: 1. Insufficient institutionalization 2. Lack of knowledge about native culture 3. Lack of competent instructors 4. A results-oriented short-term focus 5. Pedagogical limitations 6. Not regarded as core subject area. Hope (2016) New ideas regarding entrepreneurship outside of the corporate setting are generated by classroom instruction, and pedagogical specialists are starting to exhibit interest among students. Chen et al., (1998) discovered that students who received an entrepreneurial education had greater intents to launch new companies and higher levels of confidence in themselves.

Entrepreneurship Intention

It is hard to pinpoint the exact proportion of students who happen to be entrepreneurs or who desire to become one, therefore, intents must be looked at. The goals of students to begin their own start-ups have recently drawn attention of more academics. Te and Mat (2019) the decision to track an entrepreneurial career by students remains inclined by their outlook about entrepreneurship. Educational initiatives that promote private enterprise as a viable business option have the potential to enhance students' abilities to be entrepreneurs. Seng Te et al., (2019) mentioned that students are further expected to pursue careers now in entrepreneurship if they have a favorable opinion of the values, positive aspects, and benefits of it.

Numerous studies have demonstrated that students' inclination to become entrepreneurs can be strongly predicted by entrepreneurial education. Education professionals working in entrepreneurship must give students a variety of education opportunities to support their aspiration should get into business for themselves. Growth of students' business-oriented aptitude and their participation in entrepreneurship education have been shown to be strongly correlated by a quantity of academic trainings.

Students had a strong desire to become entrepreneurs and would lead to a greater sense of fulfilment. (Ranga et al., 2019). Analysis of perspectives of college students toward private enterprise by masculinity revealed female students are fewer likely than male students to launch their own companies. Education in entrepreneurship affected students' increased self-efficacy in entrepreneurship (ESE) besides intents (EI). Only male students showed a statistically significant rise in ESE, despite the fact that both genders of students had an increased intent (EI) as per the analysis of research studies. Information based on gender discovered that while females are less probable than men to begin their own enterprises, men are more superior at identifying, grabbing, and turning new opportunities into successful ventures.

The ability to identify circumstances that could lead to intriguing business innovations constitutes the way for students Henry (2005). One way to gauge the quality of entrepreneurship is through entrepreneurial aspiration. Bosma and Levie (2010)

Sunanda (2017) demonstrates the favorable correlation between the entrepreneurial climate and attitude in a college or university. Therefore, it may be inferred that engineering students' entrepreneurial attitudes are being enhanced by their college atmosphere and access to entrepreneurial possibilities. Wan and Ahmad (2024) The likelihood of entrepreneurship is higher among graduates pursuing entrepreneurship education programs.

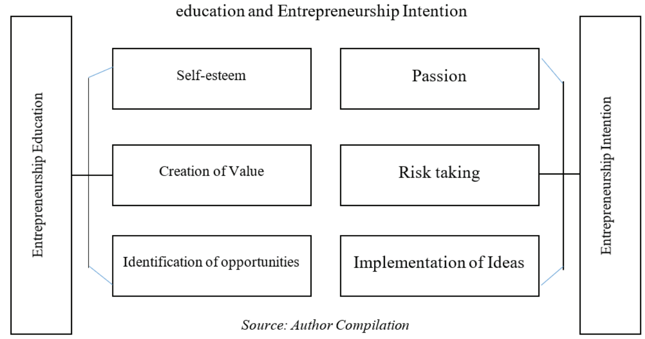
Gender might affect entrepreneurial intentions indirectly by altering the intents' antecedents. Within the university, educators are also crucial in encouraging students to pursue entrepreneurial goals. Both male and female students felt that they should have equal opportunities to pursue entrepreneurship; nevertheless, effective business concepts differ depending on the characteristics that are considered feminine or masculine. Perhaps the zeal to succeed remains same among males and females, yet the challenges encountered by females might affect (Cohoon et al., 2010) Results from other scholar's support notion that men have significantly stronger entrepreneurial impulses than do females. (Mei et al., 2016).

Conceptual framework

Dimensions that of business-oriented programs purpose differ significantly depending on elements include gender, competitive experience, previous business familiarity, and personal background of self-employed. Gender, involvement in the cutting-edge business rivalry that is currently taking place, and family background. One of the aspects of entrepreneurship education that shows notable variations is self-employment. The students' intents to start their own business have been affected by a multiplicity of elements, such as work experience and the balance between optimism and anxiety of failure. The effects of individual characteristics, household and peer support, besides entrepreneurship learning effect on students' propensity towards entrepreneurial inclination have been researched by Maitilee (2015).

In general, there are five psychological and financial elements that drive women to become entrepreneurs. They are listed in the following order: A desire to gain wealth, a drive to profit from their business ideals, the startup environment's charm, a steadfast desire to operate their own company - they found nothing appealing about working for somebody else. The proposed dimensions and its variables studied in the research work were clearly depicted.

Figure 1*:* Study Variables of Entrepreneurship education and Entrepreneurship Intention



Source: Author Compilation

Research Design and Methodology

The research method is primarily exploratory in nature, the data from respondents was collected through filled-in questionnaires using the primary method by a well-designed questionnaire using a summated scale for entrepreneurial education and entrepreneurial intention, which consists of nine questions for each construct.

Table 3 Questionnaire construct and Item inventory

Entrepreneurial Education			Entrepreneurial Intention.		
Variable	No of items	Cronbach's Alpha	Variable	No of items	Cronbach's Alpha
Self-esteem	3	0.839	Passion	**3**	0.935
Creation of value	3		Risk taking	**3**	
Identification of opportunities	3		Implementation of ideas	**3**	

Source: Author Compilation for Results outcome

Further relational hypothesis is formulated about the correlation between entrepreneurial intention and education among third year undergraduates belonging to computer science and IT engineering branches who exclusively studied entrepreneurship electives during their course time. Disproportionate stratified sampling, in which elements are selected form strata in different proportions from those that appear in the population.

Table 4 Sampling Distribution of Respondents

Engineering Branch	Total population	Sample Size	Proportion
CSE	6 sections x 70 = 420	218	52%
IT	4 sections x 70 = 320	44	14 %
Total	740	262	

Source: Author compilation - Sample size determination

Analysis of Data

Data analysis covers the responses from age, gender, and branch levels, among other demographic information. For the persistence of the study, entrepreneurship education has been taken as dependent variable besides entrepreneurial intention as an independent variable. The data suggests that approximately 57% of the participants are under the age of twenty, that male participation is higher (60%) than female participation (40%), and that the majority of respondents are in their third year of B. Tech engineering, with 83 percent and 17 percent of them specializing in computer science and IT, respectively.

Table 5 Descriptive Statistics

		Frequency	Percent
Gender	Male	158	60.3
	Female	104	39.7
Age	19 years	5	2.3
	20 years	150	57.3
	21 years	91	34.7
	22 years	15	5.7
Branch	CSE	218	83.2
	IT	44	16.8

Source: Author compilation – Data Output

Making use of Cronbach's alpha test the evaluation has been conducted on the internal item consistency of the entrepreneurial education and entrepreneurial intention constructs. Computed coefficients for the total sample of 262 respondents are (α =.839) and (α =.935), which show excellent internal consistency between the variables. The table provides a clear illustration of each variable's reliability.

Table 6 Reliability, Mean and Standard Deviation

Dimension / Factors	Cronbach's Alpha	Mean	Std Dev
Entrepreneurship Education	0.839	75.84	9.11
a. Self Esteem	.698	13.32	1.59
b. Creation of Value	.713	12.41	2.05
c. Identification of opportunities	.714	12.03	2.15
Entrepreneurship Intention	0.935	64.13	14.60
a. Passion	.886	10.78	2.96
b. Risk Taking	.918	10.87	2.87
c. Implementation of ideas	.703	10.60	2.64

Source: Author Compilation - Data analysis

Students' intentions to become entrepreneurs, whether male or female, are positively impacted by entrepreneurship education.

Table 7 Simple Linear regression Results

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	df1	df2	Sig. F Change	Durbin Watson	F	Sig
1	.367[a]	0.135	0.132	4.43996	1	260	0	1.783	40.568	.000[b]

Source: Author Compilation - Data analysis

An examination of simple linear regression was performed to assess the degree to which students want to start their own businesses, whether male or female, are positively impacted by and could predict entrepreneurship education. Significant regression was discovered. (F ([1], [260]) = [40.568], p = [<.001]). The values of Durbin-Watson 1.783 satisfy the assumption of independence of data. The R^2 was [.13], indicating that students 'intentions explained approximately 13% of the variance in becoming entrepreneurs, whether male or female, are positively impacted by entrepreneurship education.

The regression equation was: [entrepreneurship education] = [30.639] + [0.222] (Entrepreneurship intention).

In comparison to female students, male students score highly on the following aspects of entrepreneurship education: a) self-esteem; b) creation of value; and c) Identification of Opportunities.

Table 8 Hypothesis – 2 Outcomes

	Gender	N	Mean	Std. Deviation	Std. Error	F	Sig
Self esteem	Male	158	13.1646	1.78765	0.14222	4.233	0.041
	Female	104	13.5769	1.22032	0.11966		
Creation of value	Male	158	12.3544	2.17125	0.17274	0.314	0.576
	Female	104	12.5000	1.87472	0.18383		
Opportunities	Male	158	11.6962	2.25933	0.17974	10.405	0.001
	Female	104	12.5577	1.87382	0.18374		

Source: Author Compilation - Data analysis

To determine the substantial disparities in respondents' perceptions of several aspects of entrepreneurship education, an ANOVA is carried out for comparison among male and female scores. After careful observation, results indicate self-esteem: F (1, 260) = 4.233, p = 0.041, Creation of Value: F (1, 260) = 0.314, p = 0.576 besides Identification of Opportunities: F (1, 260) = 10.405, p = 0.001, It shows that although self-esteem and creation of value are higher among females, in addition, females lack identification of opportunities comparatively with males. Perhaps the government of India launched several schemes to promote women's empowerment.

: In terms of entrepreneurial intention, female students score lower than male students in the following areas: a) passion, b) risk taking, and c) implementation of ideas.

Table 9 Hypothesis – 3 Outcomes

	Gender	N	Mean	Std. Deviation	Std. Error	F	Sig
Passion	Male	158	11.0000	3.32908	0.26485	2.072	0.151
	Female	104	10.4615	2.29361	0.22491		
Risk taking	Male	158	11.1646	3.16602	0.25188	3.998	0.047
	Female	104	10.4423	2.31847	0.22734		
Implementation of ideas	Male	158	10.8734	3.03847	0.24173	4.218	0.041
	Female	104	10.1923	1.82792	0.17924		

Source: Spss Outcomes from data analysis

ANOVA results indicate entrepreneurial intention variables a) passion, F (1, 260) = 2.072, p = 0.151, risk taking; and F (1, 260) = 3.998, p = 0.047 besides implementation of ideas. F (1, 260) = 4.218, p = 0.041, It indicates that while educating about entrepreneurship has greater exert an influence on women, perhaps the goal to become entrepreneurs between females with regard to passion, risk taking and implantation of ideas is less as compared to males. self-esteem and creation of value is higher. The null hypothesis has been proved as the F values of all variables are greater than 0.005 significance level.

Discussion: Technology-driven competitiveness, the rise of techno-entrepreneurs, and the quick introduction of innovative goods and services across practically every economic sector are becoming hallmarks of India's business environment. Entrepreneurship education courses that assist aspiring budding entrepreneurs in establishing themselves will become more and more in demand. Making sure that education and entrepreneurship go hand in hand. The need to improve students' entrepreneurial attitudes is something that academicians, lawmakers, and government officials should all be aware of. Developing understanding of the funding programs, tax policies, registration processes, and regulatory frameworks provided by the national and state governments may strengthen technical graduates' capabilities to innovate and launch new businesses. Through education, students can enhance their talents and obtain abilities that will provide them a competitive advantage in commercial prospects. Students are more likely to launch a company if they take part in entrepreneurship education courses.

By providing creative alternatives for self-employment, the Support to Training and Employment Program for Women seeks to empower women. It encompasses industries such as agriculture, horticulture, handlooms, stitching, food processing, handicrafts, technology, tailoring, sari, and embroidery.

The social, cultural, besides economic advancement of society is impacted by young entrepreneurship. New tools have been developed by young entrepreneurs that assist businesses innovate and grow and help the government create new laws to encourage and guide economic progress. It would be essential to understand the graduates' goals and objectives in order to inspire them to succeed in their endeavors. Educational institutions and other organizations in charge of entrepreneurship development rework the curriculum to detect students' inclination toward entrepreneurship. The governments of several nations are also very interested in assisting entrepreneurs in launching their businesses in an effort to boost national economies and employment rates.

Programs for Entrepreneurship Awareness (EAPs): They concentrate on teaching the different aspects of industrial activity that are necessary for starting micro and small businesses (MSEs). A variety of skills are covered in the EAP curriculum, such as creating project profiles, marketing strategies, pricing products and services, export prospects.

Entrepreneurship skill development program are comprehensive training courses intended to improve the technical proficiency of current employees, new MSE technicians, and prospective business owners. Various managerial activities are covered in short-term Management Development Programs (MDPs), which are customized to meet participant and industry demands.

Under the Ministry of Trade, Industry, and Marketing, small industries development organization was established in 1973. Developing strategies to support and grow small-scale industries is the responsibility of this top organization. Institute for the Development of Entrepreneurship through top-notch training, research, and instruction, it seeks to become a catalyst in the development of the next generation of entrepreneurs.

Conclusion: Creating an environment on campus that encourages entrepreneurship is one of the major roles of institutions. Millennials who are graduating should be personally interested in expanding their understanding of the scope and procedures of launching their own business. They should also actively participate in seminars and competitions to foster creativity and innovation. A student who completes four years of study can become a founder of their own firm in addition to receiving a degree First-year engineering students can schedule a time to come and study with us in the second year. Professionals who are currently employed may also choose to embark on an entrepreneurial journey. Entrepreneurship programs combined with the development of a product and company is a concept that many with master's degree can envision. Assist educators and administrators in advancing entrepreneurship education by assessing the potential and interests of assisting students in starting their own enterprises. The Indian government's groundbreaking "Made in India" initiative was introduced by Prime Minister Narendra Modi in 2014. Its objective is to strengthen the nation's indigenous manufacturing capabilities. As of March 2024, the startup ecosystem in India has 114 unicorns, a record number with a total valuation of $350 billion. Fifty-five unicorns were born in 2021 and twenty-two in 2022. Out of these 114 unicorns, 19 companies are either privately held or have been acquired by a publicly traded company.

In addition, this will help to create or strengthen the environment that fosters students to succeed in their entrepreneurial goals. The entrepreneur is shaped by a diversity of aspects, together with the individual, the personal, the educational system, besides society at large. Families may have a big impact on students' desire towards becoming entrepreneurs by ensuring they have regular contact with both aspiring and successful entrepreneurs. Gender-bias must be eliminated, and families and society as a whole must support and urge the graduates to start their own business. Therefore, a suitable entrepreneurial ecosystem encourages knowledge institutions, businesses, and linking institutions to pursue research and development as well as research and innovation, through business simulations, internships, or incubator programs, students can put their newly gained knowledge and abilities to use in actual business settings. By instructing students in creative and flexible thinking as well as change management, universities may train prosperous and significant entrepreneurs.

Future Implications: Assist educational institutions to evaluate and enhance their current entrepreneurship development programs or create new ones that are specifically designed to light upon the requirements of the student community. For institutions and policy makers, evaluating entrepreneurship programs and determining the results of entrepreneurship training is essential.

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Closing Women's Health Gap: An Opportunity to Improve Lives and Economies in the World

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Abstract

Investments addressing the women's health gap could add years to life and life to years – and potentially boost the global economy by $1 trillion annually by 2040. When discussing the challenges in women's health, a common rejoinder is that women, on average, live longer than men. But this neglects the fact that women spend 25% more of their lives in debilitating health. Addressing the gaps and shortcomings in women's health could reduce the time women spend in poor health by almost two-thirds. This has the potential to help 3.9 billion women live healthier, higher-quality lives by adding an average of seven days of healthy living for each woman annually, adding up to potentially more than 500 days over a woman's lifetime. Beyond the societal impacts of healthier women, including more progression in education and intergenerational benefits,3 improving women's health could also enable women to participate in the workforce more actively. This would potentially boost the economy by at least $1 trillion annually by 2040. These estimates – while significant – are likely an underestimation given data limitations. There are four primary areas that need to be addressed to close the health gap: Science, Data, Care Delivery and Investment. These factors play out in many different ways and to varying extents across regions and income levels. However, the evidence suggests that no geographic region or age group is unaffected. Moving forward requires understanding the broader effects of the women's health gap, and driving action on five fronts: Invest in women-centric research across the research and development (R&D) continuum to fill the gaps in under-researched, often undiagnosed women-specific conditions (for example, endometriosis, and pregnancy and maternal health complications), as well as diseases affecting women differently and/or disproportionately (for example, cardiovascular disease), strengthen the systematic collection, analysis and reporting of sex- and gender-specific data to establish a more accurate representation of women's health burden and evaluate the impact of different interventions, increase access to women-specific care in all areas, from prevention to treatment, create incentives for investment in areas of women's health innovation and develop new financing models, implement policies supporting women's health, such as academic institutions adapting medical school curricula and employers creating pregnancy- and menopause-friendly workspaces. An ecosystem approach, involving multi-sectoral stakeholders, is needed to accomplish these goals. It is possible to create better health for women, allowing greater workforce participation and, most importantly, the ability to live healthier lives.

Keywords: *SDG 5, Health Gap, Gender Gap, Science, Data, Care Delivery, Investment, World*

Introduction

Over the past two centuries, the rise in life expectancy – for both men and women – has been a tremendous success story. Global life expectancy increased from 30 years to 73 years between 1800 and 2018.4 But this is not the full picture. Women spend more of their lives in poor health and with degrees of disability (the "health span" rather than the "lifespan"). A woman will spend an average of nine years in poor health, affecting her ability to be present and/or productive at home, in the workforce and in the community, and reducing her earning potential.

The McKinsey Health Institute and the McKinsey Global Institute, analysts quantified this health gap in terms of disability-adjusted life years (DALYs), and the extent to which this difference is due to the structural/systematic barriers women face. Addressing the 25% more time spent in "poor health" by women versus men would not only improve the health and lives of millions of women, but it could also boost the global economy by at least $1 trillion annually by 2040. This estimate is probably conservative, given the historical under-reporting and data gaps on women's health conditions, which both undercount the prevalence and undervalue the health burden of many conditions for women.

Critically, better health is correlated with economic prosperity. The women's health gap equates to 75 million years of life lost due to poor health or early death per year, the equivalent of seven days per woman per year. Addressing the gap could generate the equivalent impact of 137 million women accessing full-time positions by 2040. This has the potential to lift women out of poverty and allow more women to provide for themselves and their families. Addressing the drivers of this gap, namely lower effectiveness of treatments for women, worse care delivery and lack of data, would require substantial investment, but also reflect new market opportunities. While improving women's health has positive economic outcomes, it is foremost an issue of health equity and inclusivity. Addressing the women's health gap could improve the quality of life for women, as well as creating positive ripples in society, such as improving future generations' health and boosting healthy ageing.

Table 1: The women's health gap 2040

Sl No	Type of Gap	Number/ Percentage
1	Gender health gap	75 Million
2	Effectiveness gap	58%
3	Care delivery gap	34%
4	Data gap	8%

Source: University of Washington's Institute for Health Metrics and Evaluation, "Global Burden of Disease Study 2019", women's health mode

The challenges women face when seeking healthcare play out in multiple different ways and in different diseases and sectors of society. When looking at the potential economic impact of addressing these challenges, all age groups and geographies could benefit, with most of the potential coming from women in the working age group.

Table 2: Women's health gap and GDP impact by age groups

Age group	Additional healthy life years1 lived in 2040 (in DALY millions)	Women's GDP impact by age group (GDP impact in $ billions)
0	8.6	0
10	3.1	46
20	7.2	165
30	9.0	183
40	9.3	206
50	9.7	142
60	10.2	105
70	9.1	61
80	6.7	72
90+	2.1	45
Total	74.9	1025

Source: University of Washington's Institute for Health Metrics and Evaluation, used with permission; Oxford Economics; International Labour Organization ILOSTAT database; Organisation for Economic Co-operation and Development (OECD); Eurostat; National Transfer Accounts project; McKinsey Global Institute analysis

Women's health is often simplified to include only sexual and reproductive health (SRH), which meaningfully under-represents women's health burden. This report defines women's health8 as covering both sex-specific conditions (for example, endometriosis and menopause) and general health conditions that may affect women differently (higher disease burden) or disproportionately (higher prevalence). Research shows that SRH and maternal, newborn and child health (MNCH) account for approximately 5% of women's health burden, although this is probably an underestimate. An additional estimated 56% of the burden is due to health conditions that are more prevalent and/or manifest differently in women. The remaining 43% are from conditions that do not affect women disproportionately or differently. Women are most likely to be affected by a sex-specific condition between the ages of 15 and 50. Other conditions occur throughout women's lives, but nearly half of the health burden affects women in their working years, which often has an impact on their ability to earn money and support themselves and their families.

Pregnancy complications can increase risk for chronic illnesses (for example, gestational hypertension can portend chronic hypertension,10 and women who have had gestational diabetes have a 50% risk of developing type 2 diabetes 7–10 years after the birth of the child). Good maternal health helps the mother and baby, with benefits extending beyond pregnancy and birth. Health equity encompasses access to the interventions and options that are right for each individual, regardless of their gender, sex, sexual identity, sexual orientation, age, race, ethnicity, religion, disability, education, income level or any other distinguishing characteristic. For women, this can start with a better understanding of and access to interventions that lead to the best outcomes.

The role of science in addressing health disparities

Biomedical innovation builds on the basic understanding of science around body function and the cellular and molecular pathways involved in disease development and progression. Historically, men have both led and been the subject of the study of medicine and biology.17 The majority of animal models have been based on male specimens. Questions about sex-based differences were rarely investigated or recorded, with the assumption – now known to be false – that there are few important differences in the functioning of organs and systems in men and women beyond reproduction. To understand basic female biology better, fundamentally new research tools should be developed (for example, animal models, computational models, patient avatars and humanized models) that better classify women's symptoms and manifestations of disease (as opposed to calling those "atypical"). There is a tremendous opportunity for the healthcare and life sciences community to improve the lives of women around the world.

Effectiveness of and access to medical therapies may vary. There are well-known cases where women and men experience important differences in the uptake or effectiveness of a medicine designed and approved for use for both. This is true, for example, for some therapies to treat asthma and cardiovascular disease. Analysts looked at 183 of the most widely used interventions across 64 health conditions, representing roughly 90% of the health burden for women, reviewing more than 650 academic papers to assess the extent of this phenomenon. Of the interventions studied, only 50% reported sex-disaggregated data. In cases where sex-disaggregated data was available, 64% of the interventions studied were found to put women at a disadvantage, either due to lower efficacy or access, or both, while for men this was the case for only 10% of interventions.

Asthma is a common respiratory condition affecting men and women at similar prevalence rates, where acute asthma exacerbations present as symptoms such as shortness of breath, wheezing, cough or chest tightness. Inhaler therapy with bronchodilators and corticosteroids is a mainstay of treatment. But studies indicate that this treatment is around 20 percentage points less effective in reducing exacerbations in women compared to men. Cardiovascular and cerebrovascular disease – particularly ischaemic heart disease and stroke – is the biggest single contributor to disease burden globally for both men and women, accounting for 16% of DALYs globally for men and 14% for women. One German study found that despite identical technical success of a percutaneous cardiac intervention for men and women, there was a 20% higher age-adjusted risk of death or of cardiac events in women compared to men.

Research in women's health primarily focuses on diseases with high mortality, overlooking diseases leading to disability. One way to assess research priorities is through pipeline assets. There is up to a 10-fold higher volume of new therapies in development for some of the most common women's cancers compared to debilitating gynaecological conditions. One possible reason for this is the higher mortality rate of oncologic conditions. The solution is not to trim cancer funding, but to recognize the possibilities for advances in research related to other women's health conditions, in particular menopause, premenstrual syndrome, endometriosis and polycystic ovary syndrome. Additionally, maternal conditions should receive more attention: while they contribute a similar share to overall suffering among women compared to women-specific cancers, there is a large discrepancy in the pipeline of therapies in development. For example, even though postpartum haemorrhage (PPH) is the leading direct preventable cause of maternal mortality in low-income countries (LICs) and low- or middle-income countries (LMICs), only two new medicines shown to be effective in PPH management have been developed over the past 30 years. In all, when tackling women's health, the solution is not to divide more slices of one pie: it's to make more pie.

How the lack of sex- and gender-specific data and research affects safety? Since 2000, women in the United States have reported total adverse events from approved medicines 52% more frequently than men, and serious or fatal events 36% more frequently. Healthcare professionals in the United States reported 4.4 million serious or fatal events for women versus 3.8 million for men in 2022. An analysis of all medicines withdrawn for safety reasons – a process that requires objective scientific review – shows that, since 1980, products are 3.5 times more likely to be removed because of safety risks in women patients as compared to men.

The research conducted indicates that systematic lack of disease understanding created a women's health gap of 40–45 million DALYs per year, or four days per woman per year. This is equivalent to around 60% of the total gap due to sex-related biology differences. This estimate includes the known gap for conditions that affect both sexes and an estimate of the gap represented by the average lower effectiveness for women-specific conditions relative to men. It also includes the "unknown" gap: this is where there is no sex-disaggregated evidence available for specific conditions that could, if it existed, potentially demonstrate levels of effectiveness difference comparable to conditions where sex-based analysis is available. The longevity of women cannot explain the disparity: the effectiveness gap has a disproportionate impact on women and girls between 10 and 40 years old and in certain regions such as Latin America and Central Asia. Shining a light on the interventions for which this information was not reported would benefit both men and women, by enabling innovators to develop interventions that are better suited for specific subpopulations.

Data gaps underestimate women's health burden, limiting innovation and investment

Data can quantify problems and measure the impact of potential solutions. It is the critical ingredient of robust, evidence-based analysis and decision-making. Yet many of the datasets (epidemiological and clinical) widely used today fail to provide a complete picture of women's health, both undercounting and undervaluing the health burden. When women's health is invisible, there are missed opportunities to improve lives, especially among women and girls in vulnerable populations. A lack of data also leads to potential underestimation of disease severity and health burden, influencing both the care that women receive and the level of innovation and investment in women's health. For example, there is an emerging body of evidence indicating potential gender bias in the measurement of pain, where women's pain is routinely under-investigated and undertreated, with implications for clinical and psychological outcomes. Collectively, these incomplete datasets can influence decision-making and have the potential to exacerbate the women's health gap.

Women can face barriers to timely and accurate diagnosis

There is evidence of significant and systematic differences in diagnostic assessments between men and women, which has an impact on the calculation of the accurate prevalence and burden for several diseases affecting women. A study conducted in Denmark across 21 years showed that women were diagnosed later than men for more than 700 diseases. For cancer, it took women two and a half more years to be diagnosed. For diabetes, the delay was four and a half years. Analyses of US health records and studies indicate that fewer than half of women living with endometriosis have a documented diagnosis.

Comparisons of endometriosis estimates also indicate unexplained variations. The WHO estimates that around 10% of women of reproductive age are living with endometriosis. In contrast, the Global Burden of Disease estimates this figure to be 1–2%. This discrepancy – an eightfold difference – means there could be anywhere from 24 million to 190 million women affected worldwide.

For women, the difficulty in getting a recorded diagnosis not only creates a barrier to care, but the resultant lack of recorded diagnoses filters into how investors or researchers prioritize needs and assess market potential. In endometriosis, the data gap is primarily due to delays in diagnosis, which is approximately 10 years on average. This leads to lower research investments: for instance, adenomyosis, the sister and highly co-morbid condition to endometriosis, has received two grants from the National Institutes of Health (NIH), yet it affects hundreds of millions of women across the world. In menopause, the challenge is more fundamental. While it is understood that most individuals who are biologically female experience symptoms38 at some point during the menopause transition, this is rarely counted or considered within classifications of health and disease. For example, the IHME Global Burden of Disease dataset currently captures the health burden associated with menopause within a catch-all category of "other gynecological diseases". As a result, it is not possible to identify clearly the underlying prevalence, or the symptom severity (or disability weight) associated with menopause in that dataset. Furthermore, some of the symptoms experienced during menopause, such as mood swings or depression, are often associated with other conditions, leading to misdiagnosis. Additionally, there is a lack of data on maternal health overall, especially in LMICs, which can lead to inadequate healthcare services for pregnant women and new mothers. The lack of data obscures the full picture of maternal health needs, making pregnancy and birth more dangerous for women and creating challenges regarding which interventions or policies to prioritize. The WHO reports that every day in 020 approximately 800 women died from preventable causes related to pregnancy and childbirth – translating to a death every two minutes – and most of these deaths occur in LMICs.

Ensuring sex-differentiated results

Today, only about 5% of trials report the number of participants by sex. The typical perception is that average results across large and undifferentiated groups may dilute the scale of impact for some but create a more unified picture of the value proposition. Representative clinical studies capable of producing stratified results may involve larger and longer clinical trials, increasing costs and extending time to market. However, the results would likely lead to more effective interventions with higher uptake among patients. The risk/reward equation for investors becomes more balanced if payers (governments, insurers and patients) and regulators insist on evidence for cohort-specific impact. There are conditions today that are believed to affect men and women equally, such as leukaemia or meningitis, but the research to identify potential differences is lacking. Stakeholders may explore how a systematic and proactive approach to designing and reporting clinical outcomes could take sex and gender into account. One route to start working with sex- and gender-specific data analysis in general is through meta-analytical techniques (i.e. combining study results to draw conclusions about therapeutic effectiveness) that can be used to analyse sex-specific efficacy without increasing sample size.50 Other analysis has found that investing in women as investigators could lead to more women being enrolled in trials. Addressing data gaps in women's health would require concerted effort across multiple fronts, potentially including requiring sex- and gender-disaggregated data to further understanding.

Creating sex-and gender-responsive care delivery systems

Several studies have indicated that women are more frequent users of health services than men. These differences, however, may be reduced substantially when adjusted for different levels of need, such as reproduction or differences in disease prevalence. The McKinsey analysis finds that some of this unbalanced usage may be due to inadequate service. Compared to men, women who present the same condition may not receive the same evidence-based care. These delays can add unnecessary costs to health systems, not to mention costs and stress to the patient and their family.

Inequalities exist throughout the full pathway of care

The care pathway runs from awareness of a health issue to access to services and preventive care, timely and accurate diagnosis and effective treatment and follow-up.

Awareness and prevention: Health education, including menstrual education, is one of the most effective ways to help women learn about their bodies. While every country may vary in the types and amount of health education, women around the world who experience conditions such as painful periods, endometriosis, polycystic ovarian syndrome or uterine fibroids may have limited awareness of what is normal and when to seek medical advice. Education can also improve school attendance, teach effective management strategies that reduce symptom severity and reduce potential fertility problems in the future, which are often excluded from health insurance policies. Prevention and promotion are also needed for better health. The human papillomavirus (HPV) vaccine, for example, is proven to reduce the incidence of cervical cancer by nearly 90%, particularly if women are vaccinated when they are younger. In 2020, the WHO launched the 90-70-90 targets, aiming to have 90% of girls vaccinated against HPV, 70% of women screened for HPV by age 35 and again at 45 and 90% of women with pre-cancer treated or with invasive cancer managed. However, according to the WHO, there are great disparities among countries: today, less than 25% of LICs and less than 30% of LMICs have introduced the vaccine, compared with 85% of high-income countries (HICs).60 Some 36% of women worldwide have been screened for cervical cancer in their lifetime, 84% in high-income countries and less than 20% in LMICs or LICs.61 The importance of increasing awareness goes beyond patients – many doctors are not aware of how diseases can affect or manifest differently in women, preventing them from providing proper care to many patients.

Accessibility and affordability of care: Women may encounter barriers related to access and affordability. Healthcare spending and insurance premiums have historically been higher for women. For instance, in Switzerland, healthcare insurance premiums are more expensive for women because they are considered to have higher healthcare costs. On average, Swiss women pay more than 12% extra for supplementary hospital insurance, with greater disparities in specific age groups. A 31-year-old woman pays, on average, 37% more than a man of the same age. Similarly, Indian private insurers employ gender-based premiums, leading to higher expenses for women. Further McKinsey analysis of US co-pay rates finds American women have an average of $135 more out-of-pocket expenses per year compared to men. Of that, $55 is due to higher co-pay rates for conditions predominantly affecting women. Affordability means more than paying for direct healthcare services – it also means being able to afford hygiene products. For instance, around 500 million people worldwide lack access to menstrual products and hygiene facilities. In Bangladesh, a study conducted by the HER project showed that 73% of women missed work for an average six days a month in a textile factory. This absenteeism negatively affects not only business but also the lives and livelihoods of women who are not paid for days they do not work. However, when the HER project provided pads and other work-based interventions (sharing information regarding menstruation, reducing stigma, etc.), absenteeism dropped to 3%. Family planning is also highly relevant. Women of childbearing age who are sexually active must also evaluate the cost of contraceptives, many of which are not covered by insurance. An estimated 257 million women in developing regions who want to avoid pregnancy are not using safe and effective family planning methods, due to factors such as a lack of access and support, according to the 2023 Global Contraception Policy Atlas. For any woman, a lack of contraception – which can lead to sexually transmitted diseases (STDs) or unintended pregnancy – can, in the long run, result in job loss, career setbacks, diminished ability to support oneself or one's family and higher levels of "family dysfunction". These disparities can be tackled. There are alternative models and systems helping to increase accessibility and affordability of care for women while also reducing costs for healthcare systems and individuals – this includes the US Affordable Care Act and women's health hubs in the United Kingdom.

Timely diagnosis: The male-centric models of disease described earlier can contribute to delays in care and lower-quality treatment decisions once a woman is within the care system. Women are seven times more likely than men to have a heart condition misdiagnosed or be discharged during a heart attack. More sensitive biomarkers to detect heart attacks in women have been identified, and studies are ongoing to validate the impact on health outcomes, but medical school curricula and residency and fellowship trainings need to be updated to reflect these differences. For maternal care, untreated tuberculosis may have a mortality rate of up to 40% in high-risk areas, where women often have lower uptake of treatment probably due to societal norms. One possible solution is the integration of tuberculosis screening in antenatal care for pregnant women. This strategy was tested in Pakistan and proved to be feasible and effective.

Choice of treatment: Accurate diagnosis should prompt delivery of evidence-based treatment. But sex and gender can affect care, even for common conditions. For example, upon discharge, women cardiac patients are less likely to be prescribed secondary prevention to reduce the risk of further events. This (along with other risk factors) contributes to women being twice as likely to die from a serious heart attack. Outcomes after an acute cardiac event could potentially improve via sex- and gender-adapted protocols for guideline-directed management. This begins at admission and continues through the procedure and until discharge. One health system reduced outcome disparities with a standardized system-wide protocol including emergency department catheterization lab activation, a STEMI (ST elevation myocardial infarction) safe handoff checklist; transfer to an immediately available catheterization lab; and a radial first approach to percutaneous coronary intervention. A discharge checklist for guideline-directed medical therapy has been shown to reduce mortality in heart failure patients by 65% for both sexes. While some efforts to achieve gender parity require heavy investment, there are budget-conscious solutions with potentially huge impact. UNICEF produced a low-cost version of a uterine balloon tamponade device to treat maternal haemorrhage. The product, which uses a catheter and a condom, has a 95% success rate and has been scaled nationally.

Creating solutions to tackle care disparities

Overall, the gap in care delivery contributes 34% to the women's health gap. Consider how sex- and gender-appropriate care delivery could reduce the women's health burden by 25 million DALYs per year globally, corresponding to 2.5 days per woman per year. Global public health programmes are increasingly being designed and improved from a sex- and gender-informed perspective. This involves an investigation of the role sex and gender play in health outcomes, including health-related stigma, barriers to accessing health services and vulnerabilities to different health risks. For example, the Stop TB Partnership developed a gender-responsive tuberculosis delivery programme and associated investment package. One pillar of this approach is the routine collection, analysis and use of sex-disaggregated data and inclusion of sex and gender in monitoring and evaluation. Improvements in the diagnostic tools available would represent a major step forward for patients. Yet even without innovative tools, it would be possible to improve care and bridge the gaps in diagnosis with more consistent and standardized screening and data collection. Earlier diagnosis and a more holistic, patient-centric treatment approach could help improve disease and symptom management, prevent uncontrolled progression and resulting complications and reduce unnecessary treatments.

When it comes to affordability and access, counteracting the rise in healthcare costs while benefitting patients and insurance providers could be achieved through approaches such as valuebased care (VBC). VBC aims to link healthcare payments to the quality of outcomes, shifting incentives for healthcare providers from performing more treatments to delivering better treatments. These models seek to enhance care quality and reduce healthcare expenses by emphasizing prevention and high-quality results. VBC models in the United States include accountable care organizations (ACOs), voluntary networks of healthcare providers operating under Medicare. This includes the Medicare Shared Savings Program (MSSP), which returned $1.9 billion in net savings to Medicare in 2020. Outside of the United States, the European Hospital Alliance's nine hospitals have also offered a blueprint that includes measuring costs and outcomes for every patient and bundled payments for care cycles. Value-based models are designed to reduce costs while improving quality outcomes for patients. For example, given the amount of time, multiple tests and providers a woman may see before an endometriosis diagnosis, a revised model of care could offer a holistic and patient-centric approach that provides a faster diagnosis, reduces costs for a healthcare system or payer and ultimately improves outcomes. At a global level, AI, unbiased datasets and interoperable electronic records are potential options for enhancing care delivery. Ultimately, a combination of innovation, investment and ability to scale could unlock better care delivery solutions for women.

Directing investments towards women's health

More investments are needed to understand biology and improve care delivery for women. There has been a historical underinvestment in women's health research, from the public, social and private sectors. When there is funding, it overlooks the fact that many conditions manifest differently in each sex, creating variances in outcome. Closing the health gap will require increased investment not only for understanding sex-based differences but also for addressing unmet needs in women's health. Further, additional funding and new business models could support sex- and gender-appropriate care.

Research funding neglects women's health: Re-examining policies that are based on actual population needs is one approach. Public funding continues to be one of the primary sources for scientific research. In the US, up to 45% of basic and applied research in life sciences is funded through federal and non-federal sources. The importance of public funding is even higher if we consider that for life sciences companies to reach later-stage development they rely on results from basic and applied research. While women's health funding data by country can be scarce, the NIH allocates 11% of its budget to women's health-specific research in the US; despite women having a 50% higher mortality rate the year following a heart attack, only 4.5% of the NIH's budget for coronary artery disease supports women-focused research. In Canada and the UK, 5.9% of grants between 2009 and 2020 looked at female-specific outcomes or women's health. In another example, as of 2015 there were five times more scientific studies on erectile dysfunction than premenstrual syndrome. In a trial where the medication sildenafil citrate was shown to relieve menstrual pain, research stopped due to a lack of funding. These examples reflect how underfunding certain research leads to and augments the women's health gap. One goal could be for existing budgets to be more fairly distributed to reflect the disease burden and unmet need. When governments and non-profits evaluate resources and policies across populations, they create an opportunity to advance health equity and benefit society. They could consider which investments reap the highest socioeconomic return, including in medical research. One example of targeted investment is the 3not30 campaign by the Women's Health Access Matters to increase women's health research and accelerate investment in sex-based research over the next three years. There remain many attractive, untapped opportunities in women's health. Currently, global life sciences R&D efforts primarily focus on conditions with a high contribution of years of life lost (YLL) to the overall DALY. This has often disadvantaged women because they have a higher probability of being affected by conditions that affect quality of life (years lived with a disability, YLDs) rather than length of life (YLL), such as rheumatoid arthritis, endometriosis, uterine fibroids or diabetes. For example, the disability weight for someone with moderate abdominal pain and primary infertility due to endometriosis is 0.121; for moderate rheumatoid arthritis (RA), it is 0.3017. This translates to a person being willing to trade a year of their life to avoid 8.3 years of living with endometriosis, or trade a year of life to avoid 3.2 years with RA. Additionally, gynaecological conditions, such as endometriosis and uterine fibroids, which affect up to 68%94 of women, have 26 assets in the pipeline. Comparatively, other conditions may affect a lower percentage but have more assets. Addressing sex-specific conditions can pay off: for example, the debut of Viagra for erectile dysfunction, which affected an estimated 152 million men in 1995, generated $400 million in sales revenue within its first three months in the US market in 1998. By 2012, worldwide sales hit a record $2.1 billion. Given the similar prevalence and high unmet need for conditions such as endometriosis and menopause, there is enormous potential for innovative treatments. There is enormous potential around treatments for sex- or gender-specific conditions. For example, there is high interest in breast cancer R&D (646 assets in the pipeline), and sales revenues from breast cancer treatments were at $18 billion in 2022 (comparatively, sales for prostate cancer treatments were $11 billion in 2022). There remains an opportunity to improve outcomes of breast cancer in LMICs, where the fatality rate – 72% – was higher than the incidence rate (62%). Globally, endometriosis, uterine fibroids and menopause are among the conditions with high unmet need and economic potential.

Private equity and venture capital investments in women's health are starting to grow quickly as opportunities in women's health become clearer and more female technology (FemTech) start-ups set out to disrupt the healthcare market. Within the FemTech space, there is a concentration of activity concerning maternal health patient support, consumer menstrual products, gynaecological devices and fertility solutions. The start-ups making the top deals in the past four years mainly focus on men's sexual and overall health. A McKinsey analysis found that 11 start-ups addressing erectile dysfunction, among other men's health concerns, secured $1.24 billion in 2019–2023, while eight start-ups addressing endometriosis received $44 million. Funding for companies focusing on erectile dysfunction was six times higher compared to endometriosis. However, investors may be starting to see the potential. In the past four years, women's health newcomers received $2.2 billion in funding. Some 60% of the top deals exclusively addressed women's health, specifically endometriosis, fertility among women and maternal and neonatal health. Digital health is another potential avenue for innovation, with the potential to make health more equitable. In the digital healthcare space, FemTech companies received 3% of the total digital health funding. Given the large unmet need and resulting opportunity, those who continue to forgo investing in women's health may find themselves left behind by the players that tap into this high-potential market.

Closing the women's health gap could boost the global economy

The disparities in women's health affect not only women's quality of life but also their economic participation and ability to earn a living for themselves and their families. Health is intricately linked to economic productivity, prospects for prosperity and contribution to economic output. Economic growth over the past 70 years has been closely tied to women's increased labour force participation. Therefore, it is not surprising that the gap in women's health results in lost economic potential. Addressing the additional health burden women face could boost the global economy by adding at least $1 trillion to the global economy by 2040. This means a 1.7% increase in the average per capita GDP generated by women.

Extended participation by women boosts economies and GDP growth.107 The rise in the number of women in formal economic activities since the 1950s has been a major driver of economic growth and wage increases. In a 2023 poll, when women around the world were asked if they preferred to work in paid jobs, care for their families or do both, 70% said they preferred to work in paid jobs. Addressing the gap could generate the equivalent impact of 137 million women accessing full-time positions by 2040. This would enable women to secure an income to support themselves and their families and has the potential to lift more women out of poverty. Beyond limiting individual women, the women's health gap directly affects the global economy by impairing women's economic participation and productivity. Chronic diseases are often linked to extended absences from work, and poor health also causes "presenteeism", where individuals cannot perform at their full capacity, reducing productivity. Finally, informal caregiving obligations and disabilities can limit affected individuals from full workforce participation.

The health disparities outlined in this report affect individuals of all age groups, with about 50% of the burden impacting women of working age. Women with fewer health conditions could add 1.7% in GDP. Comparatively, if the status quo remained, the World Bank estimates an annual GDP growth of 2.7%, 2.9% and 3.4% for 2023, 2024 and 2025, respectively. Looking at the different channels affecting GDP, the largest impact would also be created through fewer health conditions, amounting to around $400 billion, or avoiding 24 million years lived with disability. Expanded participation and increased productivity contribute more than 20% of total impact.

On a global level, there are 10 conditions, such as premenstrual syndrome (PMS), depressive symptoms and migraines, that, if addressed, could make up more than 50% of the economic impact. This indicates which conditions could be prioritized globally. For example, addressing PMS has the potential to contribute $115 billion to the global economy. Rather than defaulting to PMS being a "part of life", there are ways to manage symptoms. A 2020 analysis found that women who took calcium supplements experienced fewer PMS symptoms, such as anxiety or water retention, than women who took a placebo. A study in Iran found that the severity and frequency of PMS symptoms was significantly lower in an intervention group that offered education and coping strategies. By addressing PMS with effective interventions, women could experience less pain, experience better quality of life and feel more able to work. Regional disease burden and healthcare status will lead to conditions having the greatest economic impact in different countries. When examining economic impact, rather than DALY impact, more weight is given to conditions that affect people during years of working age, as that is when economic contribution is highest. Conditions such as ischaemic heart disease may affect more people, but if the burden of morbidity and premature mortality happens after the usual age of retirement, the economic impact is more limited. Additionally, other conditions not listed could be the underlying cause for the top 10 conditions. For example, infertility can lead to significant anxiety, depression symptoms and other psychological distress.

Investing in women's health shows positive return on investment (ROI): Investing in improving women's health not only improves women's quality of life but also enables them to participate more actively in the workforce and make a living. The potential value created through women's higher economic participation and productivity exceeds the costs of implementation by a ratio of $3 to $1 globally. This estimate is based on the net annual costs associated with the additional uptake of interventions required to address the women's health gap, including all relevant interventions considered cost-effective in each setting. The analysis compared this to the additional economic potential that could be unlocked by the health improvements associated with these interventions. The expected economic return is greatest in higher-income settings, where the ratio is around $3.5 returned to $1 invested. More investment is probably needed in some LICs to establish the basic health infrastructure required to support low-cost delivery of high-quality health services, as well as to create better and more rewarding economic opportunities for women. Still, the analysis indicates that the overall benefit would exceed the costs even in these settings, at a rate of around $2 returned to $1 invested. The analysis examines only the direct costs of addressing the gaps in care delivery identified. In the longer term, a range of greater positive returns is possible, given that improvement in the lives of women influences the heath and resilience of their families and communities.

The analyses and findings provide indications on where to start tackling the women's health gap, reaping the highest benefit for all Globally, the top 10 conditions by economic impact account for more than 50% of the total GDP impact. This highlights areas with high unmet needs and potential, aiding decision-makers in prioritizing efforts to address health disparities. Specific conditions and their socioeconomic contexts vary among regions, influencing their contribution to the economy. This information could guide tailored strategies towards health equity. The content and sequence of each action will need to be tailored to the regional conditions. Building on the knowledge developed throughout this report, a fact-based strategic assessment can lead to better health equity for each country.

Call to action: How to close the women's health gap

Women's health has been under-researched and women face different challenges from men in affordability and access to treatment. This health gap creates unnecessary suffering and preventable economic losses. It does not have to be this way. Through collaborative efforts on five fronts, a more equitable and healthy future is possible. There is an opportunity to close the women's health gap by (1) investing in women-centric R&D, (2) strengthening the collection and analysis of sex- and gender-disaggregated data, (3) enhancing access to gender-specific care, (4) encouraging investments in women's health innovation and (5) examining business policies to support women.

The women's health gap could be narrowed by increasing funding to achieve equality with investments in funding for men's health and from protocols that set standards of equity and diversity. Scientists, life science companies (pharma, biotech, MedTech), healthcare providers and others in the healthcare ecosystem may consider how the traditional understanding of disease is focused primarily on the male body. A more in-depth understanding of these differences would enable more effective care interventions and improved health outcomes. One example of venture capital-backed funding addressing this disparity is Repro Grants, which allots up to $100,000 for research projects aimed at deepening understanding of female reproductive biology. For conditions that affect women differently or disproportionately, more effective interventions start with clinical trials designed with inclusivity at their core, informed by preclinical research using female animal models. Specifically, there should be stronger diversity, equity and inclusion guidelines for clinical trial design. Guidance could incorporate male versus female disease prevalence mix and use sex-specific thresholds for biomarkers, to yield an adequate patient representation in clinical trials. Equitable representation by prevalence also implies more diverse research organizations. Life science companies, academic institutions and educational bodies should ensure that women and people of colour not only find representation but are actively involved in research, leadership and decision-making roles. For example, women form almost 70% of the global health and social workforce but it is estimated they hold only 25% of senior roles. The benefits of increasing women's representation are manifold: for example, teams boasting diverse gender representation have been associated with higher levels of accountability and effectiveness. In one study that analysed more than 440,000 medical patents filed from 1976 through to 2010, patented biomedical inventions created by women were up to 35% more likely to benefit women's health than biomedical inventions created by men. The patents from women were more likely to address women-specific conditions such as breast cancer and postpartum preeclampsia, as well as conditions that disproportionately affect women, such as lupus.

The prevalence of conditions such as endometriosis and menopause is underestimated, leading investors and life science companies to underestimate the market potential of these conditions and underinvest. By accurately assessing and reporting on the prevalence of such conditions, national health institutes and other authorities may direct additional funding to the research and treatment of these underserved conditions. Beyond epidemiological data, today's technology makes the systematic collection and analysis of sex-, race- and gender-disaggregated data simpler at all stages of the

R&D process. Life science companies could harness this capability to strengthen the collection, analysis and reporting of disaggregated data at each stage of the process. This approach to data has the potential to enable life sciences companies to evaluate the safety and efficacy of their pipeline products more accurately, including by adjusting formulations and dosages. This could yield better health outcomes and a higher probability of success. To further encourage the shift towards disaggregated data, the Women's Health Innovation Opportunity Map 2023 proposes establishing sex as a biological variable. This would enable national health departments and international health organizations to develop and enforce guidelines regarding disaggregation of data by sex and gender in research studies and health surveys. Biotech, MedTech and FemTech enterprises also have exciting opportunities related to AI and ML, which ensures that these models do not exacerbate existing biases or violate patient privacy rules. Developing robust, secure and holistic datasets could enable companies to differentiate in an overcrowded marketplace.

Enhance access to gender-specific care, from prevention to diagnosis and treatment

Women deserve the same high-quality level of care from their healthcare providers as men, which doesn't mean the same care per se. There is a pressing need to redesign medical curricula as well as residency and fellowships to reflect sex and gender differences. In addition to medical schools, continuing medical education organizations and credentialling entities could assess whether healthcare providers are receiving the latest information and training on the women's health gap and sex- and gender-based differences. Current and future healthcare professionals of all specialties must be equipped with accurate and updated knowledge of biological differences, including sex-specific manifestations of symptoms. Future certification or tests could include questions meant to address whether providers have internalized this knowledge. Next, the path to excellence in clinical care lies in acknowledging and rectifying inherent equity disparities. Gender- and sex-responsive services benefit patients, healthcare providers and society at large. Health systems could implement new guidelines and protocols (for example, sex-specific cut-offs for biomarkers, discharge checklists) to guide decision-making and minimize biases. Similarly, life science companies could include sex-specific evidence and outcomes on product package inserts/labels to inform healthcare professionals on the best regimen for different subpopulations.

To reduce maternal mortality globally, investing in the training and upskilling of midwives could save an estimated 4.3 million lives per year and prevent roughly two-thirds of maternal deaths, 64% of newborn deaths and 65% of stillbirths while contributing to the economic development and empowerment of women. Governments, educational bodies, philanthropic institutions and many other stakeholders can use this moment to raise awareness of the sex-specific manifestations of disease – for example, ensuring that newly diagnosed endometriosis patients have access to up-to-date resources, including which trials they could potentially participate in. Healthcare entities, philanthropic organizations or community health workers could start or reinvigorate in-person support groups for conditions such as endometriosis or menopause, or for mental health support. Collectively, better education and resources, plus new diagnostics, are among the ways to potentially elevate the quality of healthcare women receive.

Historically, given lower levers of investments overall for women's health under the traditional financing model schemes, new financing models have a critical role to play. These models can accelerate innovation: one example is the Advance Market Commitment (AMC) geared at COVID-19 vaccine development and deployment. Research and reliable data on the women's health landscape can help spur investment. For investors, the gender-based healthcare landscape presents a mosaic of unexplored opportunities. By pivoting towards these opportunities, they can channel funds into high-impact areas, bridge the data gap and enable more investment and innovation. Governments could explore policies that encourage sex- and gender-responsive health research and services; for example, by earmarking funding, providing tax incentives, lowering application fees, expediting the drug approval process and more. Philanthropic organizations, donors and international bodies could offer grants and prizes at a national or local level to spur innovation, while supporting capacity-building in regions where gender-based health disparities are highest. Examples might be launching a grant or award programme geared towards reducing rates of respiratory illnesses in areas where there is a high percentage of women smokers, or towards a technology-based solution for women in vulnerable populations to access transportation to healthcare services. Private-sector stakeholders could help develop new financial products and investment vehicles, such as gender-lens investing, to attract capital towards projects that directly address the women's health gap. Governments could further promote private-sector investments by creating tax incentive programmes for angel investors and venture capitalists that invest in women's health. With collaboration, stakeholders have the potential to encourage investments and inspire the development of innovative financing models in women's health.

Establish business policies that support women's health

Healthcare disparities also lead to economic losses due to absenteeism, presenteeism and reduced productivity overall. Employers could consider how their workplace policies and benefits support women's health, examine ways to better involve women in decision-making processes, provide health and wellness benefits that support women's health and create safe working environments in which women can speak openly about their health needs. By better understanding employee demographics, employers could invest in the areas with higher impact and potential (for example, if a workforce includes women between 45 and 55 years old, flexible work policies that recognize menopause could help many employees). Given the fact that women are more than twice as likely as men to have depressive symptoms in their lifetime,128 employers may explore how mental-health programmes can help employees find evidence-based mental health resources that meet their needs. Often, leaders create change in the workplace based on their own experiences, knowledge or vision. If the decision-makers are predominantly men, the workplace tends to benefit men. McKinsey research has found a "broken rung" in women's advancement throughout industries: for every 100 men promoted from entry-level to manager roles, 87 women are promoted and only 73 women of colour are promoted. Overall, due to gender disparities in early promotions, men end up with 60% of manager-level positions in a typical company. More women in senior leadership positions may be able to advocate for policies that support women's health, and companies may ultimately benefit from a healthier and more productive workforce. Data-driven, scalable actions to improve women's health may vary widely, but the critical component is to determine how each stakeholder can contribute to narrowing the gap.

Conclusion

There is a moral imperative to address the women's health gap and improve the lives and livelihoods of billions of women worldwide. If health equity efforts sit within a tree of principles, they can be watered by research, flourish in the sun of business investments and grow far-reaching branches that stretch into the economy. Achieving health equity is a collaborative and ongoing endeavour that relies on the active participation of governments, healthcare institutions, non-governmental organizations, individuals and all stakeholders vested in this cause. Tackling the women's health gap depends on addressing the interconnected factors outlined in this report: the deficit in women-specific knowledge in science, the glaring data gaps, the disparities in healthcare delivery and the insufficient investment in women's health. Recognizing the vast potential to improve the lives and livelihoods of half the global population while boosting the economy serves as the catalyst for closing the women's health gap. Every facet of this gap, from limited education to suboptimal treatments, offers an opportunity for transformation with the active involvement of governments, life science innovators, educational institutions, philanthropists, activists and more. In this endeavour, there lies an opportunity of $1 trillion in economic potential driven by improved women's health and economic participation. The question is not whether this wealth of opportunities exists but rather who will take the initiative to seize it and drive change. Women's health is not a standalone issue – it is a cornerstone of societal well-being and progress. Better health and well-being for women creates a ripple effect that extends to families, communities and nations. This holistic approach, supported by collective action and sustained investment, will not only narrow the health gap but also contribute to the betterment of a shared global future.

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The Environment Social & Governance Imperative: Reshaping Growth in Business

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Abstract

Digitalization, the process of integrating digital technologies into business models, has become a crucial driver of innovation and growth. It contributes to the optimization of business operations, fosters enhanced productivity, and unlocks new avenues for revenue generation and value creation. The research underscores the transformative potential of digitalization, FinTech, green finance, and ethical business practices for promoting sustainable business growth in developing countries. By leveraging digital technologies and aligning business practices with sustainability principles, businesses can unlock new opportunities for growth, resilience, and long-term success. The research utilized the Web of Knowledge database to analyze 325 research articles to investigate the interrelationship of sustainability, digital finance and business practices. This research study employed a rigorous multi-stage filtering process to select relevant publications. The process involved Discipline Specificity, Language Restriction. Only English-language articles were included. Further, a thorough review of Title, Abstract, and Keyword Screening was conducted for relevance. For the purpose of quality assurance, only articles published in journals ranked by the Australian Business Deans Council (ABDC) or included in the Australian Business Schools Research (ABSR) rankings were selected. The present study undertook a review to understand how digital finance contributes to sustainable business practices. The analysis revealed four themes in the literature including financial technology and innovation, financial stability; Sustainability and Governance; Social, Blockchain; and Consumption, transition. The study suggest that Fintech innovations offer substantial advantages for environmental, social, and governance goals. Sustainable business practices can foster customer loyalty and create a competitive advantage. Financial stability, transition, and sustainability are identified as crucial indicators of sustainable business growth. The insights from this study will furnish guidance for policymakers, governments, and marketers in developing strategies to promote broader participation in the financial system. This will enable in creating an ecosystem that encourages digital inclusion, sustainability, and ethical practices, ultimately fostering a global economy that is more sustainable and inclusive.

Keywords: *Sustainable Business Practices, Governance, Financial Technologies, Digital Finance, Sustainable Development*

Introduction

There has been a surge in interest from academics and policymakers recently to examine sustainable company growth (Adu et al., 2022). "Sustainable business growth is an important part of a business's success because it is linked to the way the business creates value and its goal of staying in business for the long term" (Evans et al., 2017).

Six key areas of research have received the most attention in investigating the relationship between digitalization and business growth: (a) the effects of financial technology (Fintech) and innovation; (b) the significance of a holistic financial stability; (c) enhancing sustainability; (d) impact of transition; (e) the contribution of social, and governance; (f) financial stability as a critical enabler of sustainable business growth.

This research underscores the significance of a methodical and reproducible review process to enhance our understanding of sustainable business growth. By systematically analyzing the factors influencing business sustainability, this approach enables a clearer identification of how financial technology (FinTech), environmental, social, and governance (ESG) aspects contribute for businesses to thrive in the long run. The methodical approach used in the study provides insights that policymakers, governments, and marketers can use to create environments that foster financial inclusion, sustainable business practices, and overall economic performance.

The analysis clearly shows that subjective and objective measures significantly affect the effectiveness of responsible marketing practices. After the literature review, different factors of responsible marketing practices and their interconnection with other factors is discussed. The technology transition, which includes electronic payments and receipts, blockchain, and other innovations, has a significant impact on financial technology and innovation (G. Laczniak & Shultz, 2022). It is suggested that digital finance directly impacts financial stability, lets firms to operate in the long term, and is a part of the economic development of nations (Santos, 2022). Furthermore, governance and social factors have a moderating effect on ethical consumption. At last, ethical consumption directly impacts sustainable business performance by understanding the mediating factor called sustainability. The policymakers and marketers are advised to focus on a paper highlighting sustainable profit and enhanced reputation through innovation. It is a crucial step towards a more sustainable and ethical business landscape.

The main contribution of paper is to study the development of sustainable business practices. It also sought to identify the elements contributing to digital finance and sustainable business practice adoption. With these two contributions, the study establishes the framework for future studies and policies on sustainable enterprises.

The structure of the paper is organised as: the main objective of the present study is outlined in the first section. It provides an outline of why the study is conducted. In the second section, the methodical and reproducible process followed by authors in conducting the review is elaborated. While the third section covers the descriptive and thematic analysis. The fourth section engages in a discussion of the findings from the literature review and the analysis. It also highlights the potential areas for future research. The fifth section draws practical policy implications from the study's findings. Finally, the research paper summarizes key findings and their relevance for the business world. The limitations of the study are also acknowledged in this section.

Research Methodology and Sample Selection

About the data

This study used an integrated method, and the author conducted a review to learn more (Fan et al., 2022). The review elucidates about the search and selection criteria were employed for the selection procedure. On the basis of analysis of present research, review articles help to elaborate on objectives, conclusions, outcomes, and policy suggestions. The recognized protocols are used for literature reviews to obtain the required data (Van et al., 2021).

The Web of science database is primarily used in the study for selecting a source based on the methodological guidelines. It was chosen for its high credibility and reliability of the sources, vast collection of scholarly literature across various disciplines, user-friendly tools for searching, filtering, and exporting data along with access to high-quality and impactful research (Aparicio et al., 2019).

Inclusion and exclusion criteria of the articles

A breakdown of the filtering process which has been used to select relevant publications for a research study is elaborated. First, the search results were narrowed down to articles within specific disciplines (management, business, social science, economics, finance and sustainability) which ensures that the selected publications are directly relevant to the research topic. Second, articles published in English language only were included. This simplifies the analysis and ensures consistency in the data. Third, A thorough screening of titles, abstracts, and keywords was conducted to further refine the selection. As a final step, articles and reviews published in journals not ranked by the Australian Business Deans Council (ABDC) or the Australian Business Schools Research (ABSR) were excluded from the selection. This ensures that only high-quality research from reputable sources is included in the study. Finally, 325 publications were included in the study(Fig. 1) (Page et al., 2021).

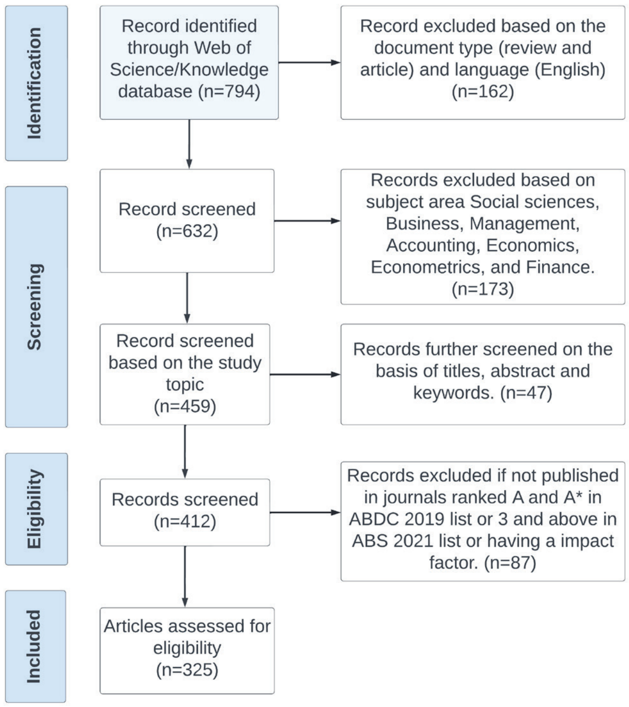

Fig. 1 Inclusion-Exclusion Criteria

Review Results and Discussion

Country Collaboration

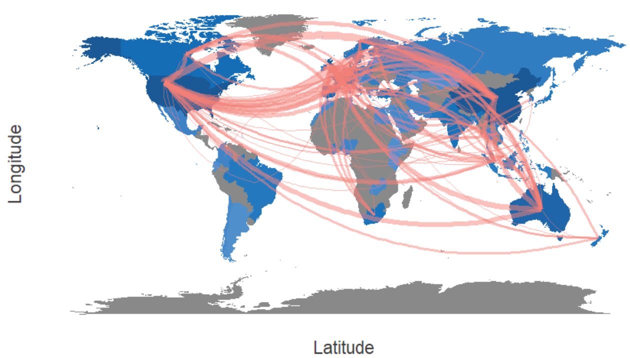

Fig. 2 Country Collaboration

A visualization using world map provides a visual representation of the global research landscape in financial inclusion, highlighting key players, collaborative patterns, and areas where international research cooperation may be less prominent. The colors viz. dark blue, medium blue, light blue, and grey are used to depict the collaboration amongst countries in world map. The more is the number of publications a country has, it is shown using the darker blue shade. Lines connecting countries symbolize collaborative research efforts. The thicker the line, the greater the volume of joint publications between the connected countries. (Popescu et al., 2021). The countries with the largest networks, indicated by the dark blue zones, are the United Kingdom, United States of America, China, and Australia, followed by India. These observations are made by authors from these nations. Canada, France, Italy, Singapore and, Denmark. They are identified as the leading contributors, forming the largest research networks. Countries such as New Zealand, South Africa, Spain, and Switzerland have made have made substantial contributions, falling into the medium-blue category. Furthermore, countries included in light blue zones are Vietnam, Belgium, Ireland, Finland, Portugal, and Sweden. They exhibit relatively limited international collaboration in the arena of financial inclusion. It appears that authors from other countries who work on financial inclusion have a marginal level of collaboration

Objectives of the sustainable business growth literature

(a) To understand the importance of environment, social, and governance;

(b) To analyze the interconnectedness of sustainable business growth and other related variables;

(c) To assess the relationship between environment, social, and governance and sustainable business growth

Key Themes identified in the literature

The analysis revealed four themes in the literature: (1) Financial technology and innovation, financial stability; (2) Sustainability and Governance; (3) Social, Blockchain; and (4) Consumption, transition.

Financial stability, financial technology and innovation are the first emerging theme in literature (Table 1) together with financial inclusion, banking, digital finance, digital entrepreneurship, developing economies, competition and others. The existing literature gives significant importance to the above dimension. It further indicates the need for more research in future to fully understand these sub-themes. The connection between this theme and other related concepts is strong and well-understood**.** While the terms transition, and consumption (together with their sub-themes of innovation, business models, commercial banks, and broad gender diversity) underscores the significance of investigating the impact of other themes on sustainable development (Tuyon et al., 2022).

Table 1: Key Themes Identified in Existing Research

Themes	Main Contribution	Sample references
Financial technology and innovation, financial stability	Financial inclusion, banking, digital finance, digital entrepreneurship, microfinance, financial services, developing economies, competition and performance	(Bertoni et al., 2022; Nawaz, 2018; Ofosu-Mensah Ababio et al., 2021; Pal & Singh, 2021)
Sustainability and Governance	climate change, Sustainable development goals, sustainable finance and green economy, corporate social responsibility, stakeholder engagement, corporate governance, integrated reporting, board of director, stakeholder theory	(Ahi et al., 2022; Ghadge et al., 2019; Khan et al., 2022; Ouma et al., 2017; Venugopal & Chakrabarti, 2022)
Social, Blockchain	Business ethics, communication, welfare and assurance, digital currency, cryptocurrency, financial intermediation and e-commerce	(Buera, 2009; Caisar Darma et al., 2020; Okello Candiya Bongomin et al., 2017; Tovstiga et al., 2010)
Consumption, transition	Innovation, business model, commercial banks, board, gender diversity	(Navickas et al., 2021; Park & Mercado, 2018; Senyo & Osabutey, 2020)

Furthermore, the term "social" covers many sub-themes like business ethics, communication, welfare. They are less explored area by scholarly, which may be investigated further. Blockchain technology, with its inherent features, holds significant potential to contribute to sustainable development. However, a comprehensive understanding requires examining both its internal and external linkages with knowledge of sustainable development. Moreover, the term sustainability, and governance along with sub-themes such as climate change, stakeholder engagement, sustainable development goals, corporate social responsibility, and others indicating that this theme can be further explored concerning other subtexts in sustainable development. (Stumpf et al., 2016).

This section talks about the themes along with their sub-themes and the relevance of the study objective, and on a prior basis, we are providing future-related agendas.

Financial technology and innovation, and financial stability

Financial technology and innovation can help in achieving sustainability in many ways. One way is by promoting financial inclusion and reach out to underprivileged communities, thus helping to reduce poverty and inequality. This may foster greater societal sustainability. Financial technology and innovation solutions, like mobile banking and microfinance, extends to individuals, businesses and communities regardless of their income level or location. So, Financial technology and innovation can play a considerable role in encouraging financial inclusion by providing low-cost financial services and enabling access to financial services through digital platforms. In particular, financial inclusion is vital for economic growth and development. It highlights the importance of bringing the population living in remote areas into the recognized financial system by offering them a variety of financial services, assets, and investment opportunities. To achieve this, financial institutions must innovate and expand their product offerings to attract and serve a wider range of customers (Meng, 2015).

"Financial innovation and technology" are a regular phenomenon that has provided an opportunity to simultaneously research about "financial stability" that may happen in the future or may have already occurred in the past, to establish measures accordingly. There is a need for further research in future to study the sub-themes like digital finance, digital entrepreneurship, developing economies, competition and performance. Developing economies often have high levels of financial exclusion, which can be addressed through financial innovation and financial technology and innovation. Once this is achieved, institutions that invest heavily in innovation and technology, gain a competitive advantage over the others which fail to recognize the need. As a result, businesses invest heavily in technology to improve their operations and maintain a competitive edge so that they are profitable. Another way financial technology and innovation can contribute to sustainability is by promoting environmental sustainability. Financial technology and innovation solutions can help companies to track and reduce their carbon footprint, or to invest in green energy and sustainability projects. Financial technology and innovation solutions can also help consumers to make more sustainable choices, such as by offering sustainability information for products and services.

The linkages between developing economies, competition, and financial stability are complex and interconnected. There are many factors that contribute to these interlinkages Competition strongly drives economic growth and development in developing economies. To begin with, healthy competition among businesses not only encourages innovation, efficiency, and productivity but it also leads to higher economic output and improved living standards. Competition can drive financial innovation, prompting the introduction of new products and services that cater to the needs of consumers and businesses. A well-designed and effective regulatory framework is essential to maintain financial stability in developing economies. Indeed, competition can result in regulatory arbitrage, with firms strategically leveraging cross-jurisdictional regulatory variations for an edge. This may create risks to financial stability, requiring regulators to harmonize competition and financial system stability

Effective regulation and supervision, coupled with policies that promote healthy competition and financial inclusion, may support stability and sustainable economic growth. Policymakers should remain vigilant to identify and address potential risks and challenges that arise from the interactions between competition and financial stability in these economies.

Sustainability and Governance

As a globally endorsed agenda, the Sustainable Development Goals (SDGs) aim to promote sustainability across the economic, social, and environmental domains. They provide a roadmap for addressing pressing issues, including poverty, inequality, and environmental degradation, and emphasize the interconnectedness of these challenges. Climate change is a paramount sustainability issue, with far-reaching consequences for ecosystems, economies, and communities worldwide. The SDGs reinforce the importance of integrating climate mitigation and adaptation strategies into sustainable business practices.

The green economy concept underscores the importance of sustainable business practices in economic growth. By promoting resource efficiency, reducing waste, and investing in clean technologies, the green economy aligns with the SDGs' objective is to guarantee sustainable consumption and production patterns (Goal 12). It highlights the potential for economic prosperity while minimizing negative environmental impacts. The SDGs emphasize the need for a holistic and integrated approach to address global challenges, fostering a more equitable, resilient, and environmentally responsible future for business.

The implementation of Corporate Social Responsibility (CSR) initiatives has a notable impact on corporate governance practices. CSR initiatives demonstrate a commitment to ethical and sustainable behavior, which, in turn, can enhance an organization's reputation and trust among stakeholders. Effective CSR programs contribute to improved stakeholder relations and foster a sense of responsibility in corporate governance. Stakeholder management is a vital feature of governance that includes identifying, engaging, and addressing the requirements and welfare of various stakeholders viz investors, customers, employees, and the community. This decision-making approach which prioritizes the interests of all stakeholders, further promote transparency and accountability in corporate governance.

Stakeholder theory also proposes that organizations may consider the interests of all stakeholders, thus enabling better-informed decisions by investors, stakeholders, and management. This theory has influenced business practices by emphasizing the importance of balancing the diverse interests of stakeholders to achieve sustainable and responsible governance. While integrated reporting is gaining traction, it's still an evolving concept. However, it represents a significant step towards a more holistic and sustainable approach to business reporting. It gives a view of an organization's performance, including its social and environmental impact. It encourages transparency and accountability in governance by presenting how an organization builds value over time, considering the interests of various stakeholders beyond just financial returns. Furthermore, encourage ethical behavior, transparency, and accountability, fostering long-term success and stakeholder trust.

Social and blockchain

Communication plays a critical role in shaping social impact. Effective communication enables the dissemination of information, promotes transparency, and fosters engagement among individuals and communities. It can play a vital role in raising awareness, driving positive social change and creating a more fair and inclusive society. Welfare initiatives, both by governments and businesses, directly influence social well-being. These programs can address issues like poverty, healthcare, education, and social equality, ultimately raising the living standards of people and communities.

Assurance mechanisms, such as audits and certifications, provide credibility and accountability in achieving social objectives. They help ensure that organizations meet their commitments and adhere to ethical and welfare standards, thus bolstering public trust and confidence in their social impact efforts. Also, effective communication, ethical business practices, welfare initiatives, and assurance mechanisms collectively shape the social impact of organizations and society as a whole. When these factors are aligned with positive social goals, they can contribute significantly to a more equitable and prosperous society.

Digital currency and cryptocurrency have significantly shaped the development and utilization of blockchain technology. Initially created to power Bitcoin, blockchain technology has expanded to encompass various digital currencies, such as CBDCs and a broad array of cryptocurrencies such as Bitcoin, Ethereum, and others. Financial intermediation, historically dominated by traditional banks and payment processors, is being disrupted by blockchain technology. Through the use of smart contracts and decentralized ledgers, blockchain offers a more efficient and secure way to facilitate financial transactions, reducing the need for intermediaries. This has the potential to democratize financial services, lower transaction costs, and enhance financial inclusion.

E-commerce has embraced blockchain for enhancing trust and security in online transactions. It has found applications in supply chain management, where blockchain can track the provenance of products, verify their authenticity, and improve transparency. In payment systems, blockchain offers secure and transparent options, ensuring the integrity of transactions and safeguarding customer data. Digital currency, cryptocurrency, financial intermediation, and e-commerce have collectively propelled the adoption and evolution of blockchain technology. They have diversified its applications beyond cryptocurrencies, showcasing its versatility and transformative potential across various industries. As blockchain continues to integrate with these sectors, it has the capacity to significantly alter the way we conduct financial transactions, verify authenticity, and secure digital commerce.

Transition and consumption

Innovation has a crucial role in driving transition across various industries. It is significant in enhancing progress across various dimensions, including societal, environmental, and economic thus, promote sustainability, and enhance economic growth. Innovative solutions enhance resource efficiency, lessen environmental impact, and boost business competitiveness. Business models are integral in facilitating transition. Emerging models, such as the sharing economy and circular economy, encourage sustainable practices by optimizing resource allocation and reducing waste. These models also create opportunities for new entrants and disrupt traditional industries.

Commercial banks are crucial enablers of transition as they provide financing and investment options for innovative and sustainable ventures. By aligning their strategies with sustainability goals, banks can direct capital towards projects that promote a greener and more inclusive economy. Gender diversity is a key driver of transition as well. Hetrogeneous teams foster innovation through varied perspectives and ideas. Gender diversity fosters inclusivity and can help address gender-related disparities in the workforce, promoting social equity and economic stability.

In summary, innovation, business models, commercial banks, and gender diversity are all instrumental in driving the transition towards a more sustainable, equitable, and innovative future.

Policy Implication

Governments and regulatory bodies are critical to shaping the business landscape and encouraging responsible corporate behavior (Ruanguttamanun, 2023). Environmental policies, such as emissions regulations and incentives for renewable energy adoption, can directly influence a company's sustainability efforts. Stricter ecological standards promote cleaner technologies and sustainable practices, driving businesses to innovate and reduce their carbon footprint(Mullen et al., 2009).

Social policies focused on labour practices, diversity, and community engagement can foster a more inclusive and responsible corporate culture(Nakata & Antalis, 2015). Governments can incentivize businesses to promote fair wages, diversity, and social responsibility through tax incentives and regulatory frameworks. Governance policies that enhance transparency, accountability, and ethical conduct are crucial(Küster & Vila, 2023).

Stricter corporate governance regulations, such as increased board independence and disclosure requirements, can bolster investor confidence and ensure that companies value long-term sustainability more than short-term gains. (Huempfner & Kopf, 2017). Well-crafted environmental, social, and governance (ESG) policies drive sustainable business growth by encouraging responsible practices, fostering innovation, and protecting the interests of all stakeholders. It is imperative for governments and regulatory bodies to collaboratively design and implement policies that align business success with the well-being of society and the planet. To achieve sustainable consumption, individuals and corporations must make changes. Individuals can modify their consumption patterns, while businesses are able to create and market environment- friendly products and services. Through collaboration, we can forge a future that is ecologically responsible and enduring for both present and future generations.

Conclusion

Sustainable business growth which focuses on achieving growth while considering environment, social, and governance is nascent field of study. The field of sustainable business growth is still developing, with ongoing research across various academic disciplines. The current study has made several contributions in the field. The author acknowledges the evolving focus on sustainable business growth overtime. The potential impact of sustainable business growth on cognitive abilities can be explored in future studies. According to present research, financial stability, transition, and sustainability and other specified themes in the strategic diagram are all indicators of sustainable business growth.

Financial technology has influenced the environment social governance. The advantages of financial technology and innovation for the environment, social, and governance are considered to be of utmost importance. Also, a sustainable business can be used as a competitive advantage by fostering customer loyalty. The author analysis shows that environment social governance facilitates financial stability. Furthermore, the author observe that financial stability is essential for financial markets to manage the transition to a sustainable economy and to avoid climate-related risks (such as carbon emissions) and uncertainties, which leads to sustainable business practices.

There are some limitations of the current research paper and thus author suggest potential avenues for future research. First limitation is that the author conducted an integrative review, which provides a broad overview of the topic. However, more in-depth research is required to explore specific relationships between sustainable business practices and digital finance. Second, in the future, research could incorporate different scales or measurements as moderating or mediating variables. This would help to understand how these factors influence the adoption and effectiveness of sustainable business practices in emerging economies.

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Driving Sustainable Development: The Tata Group's Approach to CSR in India

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Abstract

Corporate Social Responsibility (CSR) has surfaced as an indispensable component of modern business strategy, evolving from a philanthropic practice into a comprehensive approach that addresses ethical, social, and environmental obligations. CSR now reflects a company's responsibility to positively impact stakeholders, including employees, customers, communities, and the environment. In borderless world, corporations are expected to go beyond profit-making and contribute meaningfully to societal development and sustainability. This paper explores the evolution, scope, and challenges of CSR, with a special emphasis on its implementation by the Tata Sustainability Group in India.

The growing integration of global markets has expanded corporate influence, resulting in a shift in roles between governments and businesses. While governments traditionally regulated social development, businesses are increasingly expected to contribute to these goals. This shift has made stakeholder engagement critical for long-term business success, leading to the incorporation of legal, ethical, and environmental considerations into core business practices.

In India, CSR has been institutionalized by the Companies Act, 2013, that commissioned certain companies to apportion a percentage of profits toward social causes. While this has accelerated CSR adoption, many businesses still approach it as a compliance requirement rather than a strategic priority. Tata Group stands out for its broad CSR initiatives but faces challenges such as internal alignment, impact measurement, and integrating CSR deeper into operational frameworks. This paper examines and interprets the legal principles, statutes, case law, and regulations related to Corporate Social Responsibility (CSR). This paper includes thorough analysis of relevant laws in India, which aim to address Corporate Social Responsibility as per Tata Group's in India. The methodology will also include the study of judicial decisions that interpret these laws and shape their application in corporate environments.

Keywords: *Corporate Social Responsibility, Tata Sustainability Group, Companies Act 2013, Stakeholder Engagement, Sustainable Development*

Introduction

Corporate Social Responsibility (CSR)[1] has transformed and has become a crucial aspect of modern business practices (Rio Conference ,1992). At its core, CSR refers to the ethical responsibility of businesses to make positive contributions to society while managing operations that benefit not only shareholders but also employees, customers, communities, and the environment. In this interconnected world, CSR has moved beyond mere philanthropy and has become a key element of corporate governance, strategy, and long-term sustainability. This concept has gained significance as businesses increasingly realize that their long-term success relies on balancing profit-making with ethical, social, and environmental considerations.

1 *Rio Conference on Environment and Sustainable Development 1992*

The relationship between business and society has dramatically transformed in recent decades, driven by several key factors. Globalization has reshaped how businesses operate, allowing them to transcend national borders and become part of complex international frameworks. With this growth in corporate size and influence, businesses have taken on broader responsibilities beyond profit generation. As governments shift certain regulatory duties to the private sector, companies have realized the strategic importance of engaging with stakeholders such as employees, consumers, communities, and regulators. This shift has led businesses to adopt CSR as a fundamental business strategy, moving away from a purely profit-centric approach to one that integrates legal, ethical, and environmental responsibilities.

Historically, corporate interactions with society were largely based on paternalistic philanthropy, where companies engaged in charitable activities primarily to maintain a positive public image. However, as societal expectations evolved, businesses began to see their roles in a broader context. This shift was spurred by increasing scrutiny from civil society organizations, academic institutions, and international policy forums, which led to a redefined understanding of corporate accountability. CSR thus transitioned from a voluntary gesture to a necessary practice within corporate governance, compelling businesses to align their operations with ethical principles and sustainability objectives.

Although CSR may seem like a recent development, its ideological roots trace back centuries. The idea that businesses have obligations beyond profit generation has long been recognized, though its structured implementation has evolved over time. In the developed world, CSR became more organized during the 20th century, influenced by economic changes, technological advancements, and global events. The 1992 Rio Conference on Environment and Sustainable Development played a major role in emphasizing CSR as a global priority. At this conference, multinational corporations were encouraged to commit to social and environmental well-being, leading to the integration of provisions into commercial agreements aimed at protecting human rights, workers' rights, and environmental sustainability.

"The modern CSR framework is closely aligned with sustainable development, which stresses the importance of balancing economic growth with environmental and social stability. This concept was officially articulated by the Brundtland Commission in 1987, that defined sustainable development as meeting the needs of the current generation without harming the environment and the ability of future generations. This principle now underpins corporate strategies worldwide, influencing policies and industry standards. As a result, businesses are increasingly expected to incorporate sustainable development goals into their business models, ensuring that their operations yield not just financial profit but also contribute to a more equitable and sustainable world.

"CSR can be broadly defined as the business commitment to foster sustainable economic development as well as enhancing the quality of life of their workforce, families, local communities, and society at large." It includes a diverse activity, such as charitable giving, environmental sustainability efforts, fair labour practices, and ethical sourcing. CSR is not a generic approach that fits to all type of industry and geographic location (Kalpana Sharma, 2016), as the specific actions a business takes depend on factors such as its size, industry, and location. The growing importance of CSR has been driven by various factors, including consumer demand for ethical business practices, governmental regulations, shareholder expectations, and increased awareness of international issues like climate change, inequality, and human rights issues.

Evolution of CSR

Corporate Social Responsibility (CSR) is a dynamic and evolving concept that continues to shape how businesses engage with society. While CSR is often seen as a modern phenomenon, its fundamental principle—that businesses are responsible not only to shareholders but to society at large—has long been part of commercial practice. In recent decades, CSR has gained momentum due to growing consumer awareness, regulatory changes, and the rise of ethical investment. However, despite its widespread adoption, CSR remains an ambiguous term, with varying interpretations across industries and regions. This lack of a universal definition has allowed CSR to manifest in diverse ways, including environmental sustainability initiatives, corporate philanthropy, and governance reforms, but its core idea remains consistent: businesses must operate with social responsibility beyond profit maximization.

The conceptual flexibility of CSR is compounded by its overlap with terms like corporate philanthropy, corporate citizenship, business ethics, and sustainability. Though related, these terms each represent a specific aspect of CSR and do not capture its full scope. At the heart of CSR is the understanding that businesses must be accountable to a broad range of stakeholders, including customers, employees, communities, governments, and NGOs. Engaging with these stakeholders transparently and ethically is essential for building trust and mutual benefit.

CSR's roots find its origin in early 20th century, with pioneers like Henry Ford and John D. Rockefeller who recognized their responsibility toward workers and communities. However, CSR as a structured concept took shape in the mid-20th century, particularly in response to the rise of social movements and environmental concerns. Scholars like Howard Bowen, through his work "Social Responsibilities of the Businessman" (1953), has laid down the foundation for modern CSR. He argued that businesses must consider their social impact alongside profits. By the 1970s and 1980s, CSR became more formalized, with codes of conduct and social audits becoming common. The 1990s and 2000s saw CSR become central to corporate strategy, driven by globalization, consumer awareness, and media scrutiny. The notion of "corporate citizenship" emerged, emphasizing businesses' roles in addressing global challenges such as poverty and climate change.

Today, CSR is seen as integral to long-term corporate sustainability. Businesses are expected to integrate ethical considerations into their core operations, not merely to mitigate harm but to actively drive positive social and environmental change. This shift toward proactive CSR reflects a broader transformation in corporate mindset, with companies prioritizing long-term societal well-being alongside economic success.

The Drivers of CSR

Several factors have contributed to the rise and widespread adoption of CSR. One of the key drivers is consumer demand. In today's marketplace, consumers are increasingly informed regarding socially conscious issues and their mindful purchase. than ever before. With the proliferation of social media and increased access to information, consumers are increasingly holding companies accountable for their actions. They demand products and services that are not only of high quality but also ethically produced. Businesses that fail to meet these expectations risk damaging their brand reputation and losing customer loyalty. Another important driver is regulatory pressure. Governments around the world have introduced various regulations and frameworks to encourage businesses to adopt socially responsible practices. For example, laws governing environmental protection, labour rights, and fair trade have prompted businesses to develop CSR policies and practices that comply with national and international standards. In some countries, CSR has even become a legal requirement, as is the case in India, where the Companies Act, 2013 commissions companies to allocate a portion of their profits to spend on CSR activities. Investors and shareholders also play an important role in driving CSR. There is burgeoning reputation among the investment community that socially responsible companies are likely to perform better in the long run. Investors are increasingly considering environmental, social, and governance (ESG) factors when making investment decisions. Resulting, businesses are under increasing pressure to demonstrate that they are committed to sustainable and responsible practices, both to attract investors and to enhance their long-term value. Lastly, employee engagement is another critical factor that has contributed to the growth of CSR. Employees, particularly Millennials and Gen Z, are seeking employment with companies that share their values and are committed to making a positive impact on the world. Companies that prioritize CSR are seen as more attractive employers, which can help with talent acquisition and retention.

Corporate Social Responsibility and Sustainable Development

According to stakeholder theory Corporate social responsibility is a multifaceted concept (De Andres, P.; Garcia Rodriguez, I.; Romero-Merino, E.; Santamaria-Mariscal, M., 2022, Sang, M.Y.; Zhang, Y.Q.; Ye, K.H.; Jiang, W.Y, 2022). CSR as per the economics perspective, In a market situation CSR monitors and constraint the profit-seeking behaviour of stakeholders. Considering CSR in business situation, it must consider the impact of the business on society and environment as well as fulfilling its responsibilities and obligation towards its effect on social and environmental consequences, of stakeholders (Arenas-Torres, F.; Bustamante-Ubilla, M.; Campos-Troncoso, R. ,2021, Tibiletti, V.; Marchini, P.L.; Furlotti, K.; Medioli, A 2020). The CSR impact on sustainable development can be demonstrated in two aspects. Firstly, if CSR is fulfilled in an effective way, then it strengthens the soft power of the organisations and also set up a favourable branding and public image and persona. Pavla Vrabcová et al. (2021) observed that engaging in CSR process is basically fostering a favourable situation for utilising human, social, and other resources for enhancing the sustainable competitiveness of the companies (Vrabcová, P.; Urbancová, H,2021). Lopez Belen et al. (2022) opined that in the development of the corporate the focus should be on short-term profit maximization as well as CSR initiatives. CSR plays a crucial for business growth and social development (Lopez, B.; Rangel, C.; Fernández, M ,2022). Second, early advantage can be gained by the organisation regarding sustainable development through social responsibility performance (Pawlowska, E.; Machnik-Slomka, J.; Klosok-Bazan, I.; Gono, M.; Gono, R,2021). According to Doukas John A. et al. (2021) for building effective and unique corporate culture CSR needs to be integrated. This integration may lead to innovation in the product, process and culture that enables the organisation to gain a competitive advantage with enhanced economic returns. The research suggests that the social responsibility is an inevitable act and is an essential driver of competitiveness (Samet Marwa et al. 2022).CSR as a strategic resource can be used by the companies to maintain sustainable development and competitive advantage for long run.

Legal Framework of CSR in India

Corporate Social Responsibility (CSR) has emerged as a significant force shaping contemporary business practices globally. (Mehta D & Aggarwal M, 2015), however, in India, CSR remains in its formative stages, with considerable gaps between theoretical concepts and practical implementation. While developed economies have effectively integrated CSR into their corporate governance structures, India's CSR landscape continues to face challenges such as limited awareness, inadequate training, and a lack of robust data on CSR activities. This gap has hindered businesses in adopting well-structured, long-term CSR strategies, often causing them to struggle with identifying impactful social causes and designing meaningful programs.

Despite these obstacles, India's CSR ecosystem is undergoing a transformation driven by the country's ground-breaking legislative intervention. For the first time in India CSR was mandated in 2013, through a legal framework. Under Section 135 of the Companies Act, 2013, companies having a net worth exceeding Rs. 500 crores and an annual turnover of at least Rs. 1,000 crores, or a net profit of Rs. 5 crore or more—are required to allocate at least 2% of their net profits toward CSR activities." This regulation aims to channel corporate resources toward pressing social and developmental challenges, ensuring that businesses contribute actively to addressing India's socio-economic disparities.

Before the enactment of the Companies Act, 2013, CSR in India was largely voluntary. The Companies Act, 1956, which governed corporate regulations for nearly six decades, did not contain provisions specifically addressing CSR. As a result, corporate philanthropy was at the discretion of businesses, leading to fragmented and inconsistent CSR initiatives. Many companies viewed CSR merely as a tool for reputation management rather than as a structured commitment to societal development. This led to a scenario where some progressive businesses voluntarily undertook impactful CSR programs, but many others remained indifferent, contributing to the lack of uniformity in CSR efforts across the corporate sector.

This landscape underwent a significant transformation after Section 135 of the Companies Act, 2013 was introduced. "The Act brought CSR into the realm of statutory obligations, making it mandatory for companies that meet the defined financial criteria to allocate 2% of their average net profits from the preceding three years toward CSR activities." This shift not only institutionalized CSR but also positioned India as a global leader in legislated corporate responsibility. It marked a departure from traditional voluntary approaches, introducing a legally enforceable framework for corporate social responsibility.

The enactment of the Companies Act, 2013, and its CSR provisions has had far-reaching implications. Unlike many developed countries, such as Australia, Denmark, and France, where companies are only required to report on their CSR activities, India has taken a more rigorous approach by mandating both reporting and financial expenditure on CSR. This unprecedented move has made India a trailblazer in the global CSR arena, emphasizing the importance of corporate accountability beyond profit-making. The intent behind these legislative changes was to ensure that businesses, while pursuing growth and profitability, also actively contributed to the socio-economic development of the country.

"The Indian government's proactive engagement with CSR began in 2009 when the Ministry of Corporate Affairs issued the Corporate Social Responsibility Voluntary Guidelines." These guidelines represented the first structured attempt to institutionalize CSR within the Indian corporate sector, and vitalize businesses to integrate social, environmental, and ethical considerations into their operations (M.H. Hirani, 1997). However, these guidelines were non-mandatory, and companies were not legally bound to follow them. Although they outlined important principles, such as ethical business practices, stakeholder engagement, respect for human rights, and environmental sustainability, their voluntary nature meant that CSR efforts remained sporadic and inconsistent.

"In 2011, the guidelines were significantly upgraded with the introduction of the National Voluntary Guidelines on Social, Environmental, and Economic Responsibilities of Business (ESG Guidelines)." These guidelines expanded the scope of CSR to include environmental sustainability and economic responsibility alongside social welfare. The ESG Guidelines underscored the need for businesses to balance profit-making with broader societal obligations, reinforcing the idea that CSR is integral to long-term business sustainability. These guidelines provided a more comprehensive framework, encouraging businesses to adopt responsible labour practices, engage in environmental conservation, and actively contribute to social upliftment.

Despite these voluntary frameworks, the real breakthrough in India's CSR journey came with the legal mandate introduced in 2013. Businesses having a specified financial threshold under the Companies Act, 2013, must allocate at least 2% of their average net profits from the last three years toward CSR activities." The Act also specifies the types of CSR activities that companies should prioritize, that are detailed in Schedule VII of the Act. (Mehta D & Aggarwal. M., 2025). These activities cover a wide range of social, environmental, and developmental concerns, ensuring that CSR efforts are not limited to philanthropy but are aligned with broader societal needs.

Schedule VII outlines various categories of CSR activities, such as:

- Eradication of Hunger, Poverty, and Malnutrition: Encouraging businesses to fund initiatives that provide food security, improve nutrition, and uplift economically disadvantaged sections of society.
- Promotion of Preventive Healthcare, Education, and Gender Equality: This includes investments in medical infrastructure, vaccination programs, scholarships, and initiatives that promote gender equality and access to education.
- Support for Vulnerable Populations: Initiatives that provide shelter, healthcare, and other services to orphans, women, senior citizens, and other vulnerable groups.
- Environmental Sustainability and Animal Welfare: Corporate involvement in protecting biodiversity, reducing carbon footprints, and promoting renewable energy to ensure ecological preservation.
- Cultural Heritage and National Development: Funding programs for the restoration of historical sites, promoting traditional arts, and supporting the welfare of armed forces veterans.

Furthermore, the Companies Act mandates that CSR initiatives should be focused on local areas where the companies operate, ensuring that the social impact is meaningful and targeted. This localized approach strengthens the connection between businesses and the communities in which they function, ensuring that CSR funds address real, pressing issues rather than abstract or generic causes.

CSR committee has been established under the Companies Act, 2013 to oversee CSR activities. This committee is responsible for framing and monitoring the company's CSR policy, evaluating potential projects, and ensuring that funds are allocated effectively (Kumar A, 2025). The CSR Committee plays a critical role in ensuring that CSR activities are not mere token gestures but are part of a long-term strategy for social impact. By institutionalizing CSR within the corporate governance framework, the Act has made CSR an integral part of business operations, ensuring that corporations act as responsible stakeholders in society rather than merely profit-driven entities (Mohad. Ashraf Ali & Azam Malik, 2012).

"The Companies (Corporate Social Responsibility Policy) Rules, 2014 (Milton Friedman, Routledge, London 2008), further support the Act by providing detailed guidelines on the implementation and monitoring of CSR initiatives." These rules mandate that companies with a CSR obligation establish a clear CSR policy that defines their goals, priorities, and the processes for identifying and implementing CSR activities. This formalized structure ensures that CSR efforts are aligned with the company's overall strategy and are effectively managed and monitored.

In conclusion, the enactment of the Companies Act, 2013, and its subsequent amendments has transformed CSR in India from a voluntary, discretionary activity into a legally mandated corporate responsibility (Thomas Mulligan,1986). This groundbreaking move not only enhances the credibility of CSR initiatives but also ensures that businesses contribute meaningfully to the social, environmental, and economic development of India. The law's holistic approach to CSR and its emphasis on local, targeted interventions reflect a clear intent to bridge the gap between corporate profitability and societal welfare, setting a global precedent for legislated corporate responsibility. With the CSR provisions in place, India has established itself as a pioneer in integrating corporate responsibility into legal frameworks, setting a benchmark for other nations to follow.

Case Study of the Tata Sustainability Group

The Tata Sustainability Group's Corporate Social Responsibility (CSR) initiatives are grounded in a commitment to sustainable development, with a focus on local, national, and global contexts. These programs aim to empower disadvantaged communities and are carried out in collaboration with governments, NGOs, and other stakeholders to ensure lasting impact. Tata's approach transcends traditional philanthropy, aiming to create systemic change and improve the quality of life for millions through collaborative partnerships and leveraging collective expertise.

The diverse array of CSR programs undertaken by Tata spans several critical areas of development, each targeting a fundamental pillar of societal progress. One of the key areas of focus is education, where the group actively works to improve access to quality learning opportunities, particularly for underprivileged children. In addition to education, the group has made significant strides in skill development and livelihood enhancement programs, empowering individuals with the necessary tools to secure sustainable employment. These efforts are particularly impactful in rural communities, where economic opportunities are often scarce, and skill-building initiatives serve as a bridge to financial independence. Through various interventions, Tata ensures that communities are not merely recipients of aid but active participants in their own growth and development. Beyond economic empowerment, Tata's CSR initiatives extend into essential areas such as healthcare, water and sanitation, and rural development. The group has undertaken numerous health and wellness programs aimed at improving medical access in underserved regions, reducing disease burdens, and strengthening healthcare infrastructure. Similarly, their water and sanitation projects address critical issues of hygiene and public health, ensuring that clean drinking water and proper sanitation facilities reach remote communities. Their environmental sustainability efforts also play a crucial role, focusing on preserving natural resources and promoting ecological balance. By integrating these diverse initiatives, Tata Group continues to reinforce its commitment to holistic development, demonstrating that corporate success and social responsibility are not mutually exclusive but deeply intertwined.

In the fiscal year 2022-23 (FY23), Tata allocated INR 1,095 crore toward CSR, a significant financial commitment that underscores the group's dedication to social upliftment. The group's initiatives impacted the lives of approximately 11.7 million individuals, reflecting a strategic approach to embedding sustainability in its corporate ethos. This commitment is not just measured in financial terms but in the tangible difference made to the lives of people through its extensive outreach.

Tata's CSR initiatives focus on several critical development areas. Education is a key priority, with programs aimed at improving access to quality learning, especially for underprivileged children. Additionally, the group has made strides in skill development and livelihood enhancement, particularly in rural communities, where such initiatives provide essential tools for economic independence. Through these efforts, Tata empowers communities to actively participate in their growth, not just as recipients of aid but as contributors to their own development.

The group also addresses other essential needs such as healthcare, water and sanitation, and rural development. Tata's health and wellness programs target underserved regions, aiming to improve medical access and reduce disease burdens. Their water and sanitation projects focus on providing clean drinking water and proper sanitation to remote communities, which is vital for public health. In the environmental sustainability sector, Tata has undertaken projects to conserve natural resources and promote ecological balance, reinforcing the link between corporate success and social responsibility. These diverse initiatives demonstrate Tata's holistic approach to CSR and its commitment to making a meaningful difference in the communities where it operates.

Educational programs like MPowered and the Engineering Employability Program aim to improve digital literacy, vocational skills, and job-readiness for underprivileged youth and women. Healthcare interventions such as MANSI, Operation Smile, and the Digital Nerve Centre (DiNC) have improved access to medical care in remote areas, reduced maternal and infant mortality, and expanded virtual healthcare services. Economic empowerment initiatives, including Okhai and Community Enterprise Development, support women artisans and rural entrepreneurs by enabling market access and financial independence.

Tata's rural and environmental sustainability programs have also had far-reaching impacts. Projects like Pathardi Integrated Village Development and Decentralized Solar Off-Grid Systems have enhanced infrastructure, energy access, and local governance. Water management projects such as Amrutdhara, IVDP, and the Jawhar Water Management Project address water scarcity through irrigation reform, rainwater harvesting, and groundwater replenishment, benefiting farmers in drought-prone areas. These efforts not only increase agricultural productivity but also reduce the burden on rural women by improving access to clean water.

Digital financial inclusion has been another area of focus, with initiatives like E-Dost mobile banking and the Pro-Poor Inclusion Fund helping bridge the gap between underserved populations and essential financial services. These technology-driven, community-centered programs highlight how CSR, when executed strategically, can play a transformative role in addressing inequality, enhancing livelihoods, and fostering sustainable development

Conclusion

Corporate Social Responsibility (CSR) has become an integral part of contemporary business practice, serving as a strategic pathway for companies to contribute to sustainable development while reinforcing their legitimacy in society. In an era where businesses are increasingly expected to operate responsibly, CSR provides a platform for corporations to address environmental and social challenges while aligning such efforts with their operational strengths. Companies are adopting various voluntary initiatives such as ethical sourcing, environmental certifications, and social impact programs, which not only improve their reputation but also generate long-term value for communities. CSR, therefore, acts as a bridge between profit-making and inclusive growth, promoting equity, empowerment, and resilience within society.

In India, the enactment of Section 135 of the Companies Act has formalized the role of businesses in social development by mandating eligible companies to allocate a percentage of their profits to CSR activities. While these obligations enhance accountability, they are not meant to replace government intervention but rather to complement it. Corporate CSR funding remains a small component compared to public expenditure in the social sector. However, the flexibility of the law enables businesses to channel their resources into areas where they possess domain expertise, resulting in more efficient and impactful interventions. The law encourages alignment between business strategies and developmental goals, creating a balance between shareholder value and societal welfare.

The Tata Sustainability Group exemplifies how CSR can be transformed into a powerful instrument for social impact. Rooted in a legacy of nation-building and social responsibility, Tata's CSR philosophy transcends compliance and aims to bring systemic, long-term change. In FY 2022–23, Tata Group allocated INR 1,095 crore to CSR initiatives, directly impacting over 11.7 million individuals. These efforts span key areas such as education, healthcare, water and sanitation, skill development, rural development, and environmental sustainability. Tata's initiatives are often executed in collaboration with governments, NGOs, and grassroots organizations, ensuring scalability and community ownership.

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Evaluation of Minimum Support Price on Paddy Cultivation in the Indian State of Punjab: A Comprehensive Study

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Abstract

The study evaluates the efficiency of the Minimum Support Price on paddy cultivation in Punjab. The data spanning from 1996–1997 to 2019–20 on area, production, yield, cost of production, operational cost, different cost components, and MSP of paddy in Punjab were collected from the secondary sources. For this study, data were collected from the Directorate of Economics and Statistics and the Commission for Agricultural Costs and Prices (CACP) underneath the Ministry of Agriculture and Farmers Welfare, Government of India. The descriptive statistics and the Compound Annual Growth Rate (CAGR) were used to analyze the collected data with appropriate analytical tools. The study exposed that the area and production of paddy has significantly increased over the year, whereas the yield has decreased. The findings of the study shows that the relative share of the different inputs, adequacy of the MSP in meeting the cost of production, and the percentage difference between the MSP and different cost components have significantly increased over the period. Therefore, the outcome of the study revealed that the MSP has significantly increased and the MSP for paddy to be found very effective in Punjab state.

Keywords: *MSP, Cost of Production, Paddy Cultivation, Sustainable Agriculture, and Punjab*

Introduction

In India, agriculture acts as a primary pillar of economic growth, since independence, this sector helps the county achieve food security and reduce poverty. India has been primarily an agrarian economy since independence, and approximately 70% of the country's population directly or indirectly depend on agriculture for their livelihood. The agricultural sector is vital to the Indian economy and its development is very important for a developing country. The Indian agriculture sector is the engine of the Indian economy because about 70% of the country's population lives in rural area, which is primarily dependent on agricultural or its related activities, hence the development of agriculture sector is very essential for Indian economy. The agriculture sector is a highly labour-intensive sector, according to the 2011 census 54.6% of the country's workforce has interested in farming and related pursuits. Agriculture and related activities contribution in the total Gross Value Added (GVA) has 18.8% according to the Indian economic survey 2021-22. Indian agriculture largely depended on rainfall and traditional agricultural techniques; therefore, agriculture has highly vulnerable to unfavourable climatic and weather condition, hence, peculiarity in climatic factors and non-remunerative prices for the agriculture crop results to diminution in the farmers income (Dhananjaya et al., 2020). Agriculture development is possible through increasing investment in agriculture sector to meet the increasing capital needs of the modern day. The growth of the agriculture industry greatly benefits from institutional lending. Due to the passage of time, farmers tend to shift from the traditional cultivation to modern farming practices in suit the growing needs of the people. This has urged the farmers to incline toward the cultivation of cash crops so as to reap the highest profitability. Since the colonial era, how crop cost of production and farmer income have changed in India can be inferred from India, whereas large section of the population lives in the rural area and depend on agriculture and allied industries to support themselves and their livelihood. It is very important to make a detailed investigation of costs incurred, returns, and farmers income in order to formulate an appropriate farm policy. The argument has been made that agricultural price policy has also increased disparities in farm income (Singh et al., 1986). The agricultural sector development and the economy as a whole are significantly influenced by agricultural price policy. In order to advance and improve itself, the Indian government performs numerous actions that advance the agriculture situation in India, in which the agricultural price policy like MSP is one of the major components to protect both producer and consumer. Since independence, the Government of India feels to construct a body that think about farmers, and Agricultural Price Commission (APC) came into force in first January 1965. Later it was renamed as the Commission for Agriculture Costs & Prices (CACP) in 1985 to maximise productivity and create a production design that is consistent with all of the nation's demands (Acharya, 1997). In India, after crop harvest the farmers often do not get their fair and reasonable prices for their crops. Further, due to the lack of marketing awareness, storage facilities, huge production, and pressure from creditors, the farmers of the country resort to distress sale of their crops at far below the cost of production of that crop. The government felt that to protect farmers from this distress sale furthermore the MSP was presented by the Government of India in 1966–67. The MSP-driven price policies in Punjab led to a dominant wheat–paddy cropping pattern, which reducing the cultivation of pulses, maize, bajra, and oilseeds (Khowajazada et al., 2022).

The MSP is the price at which the government procure crops from farmers at whatever price prevails in the market. It protects farmers from distress sales and provides sufficient payment to the farmers. All facets of society have benefited from the MSP and input subsidies vital contributions to achieving food security and faster economic growth (Acharya, 1997). The MSP is based on the calculation of the cost of production, demand and supply, and many other factors incurred by farmers. Over time, the MSP has aided Indian farmers in fending off the consequences of market swings. Thus, MSP helps farmers obtain profitable revenue and safeguard satisfactory food grain production in the country. Ironically, this is the basis on which the MSP has declared to safeguard farmers by the Indian government. Therefore, the present study reveals the evaluation of paddy cultivation in Punjab and its methodology adopted by the Government of India in declaring the MSP and the scope, which the MSP meets the actual cost of production.

Data and Methodology

This study is based entirely on secondary data collected from various official sources. Information on paddy cultivation in Punjab—including production, yield, cost of production, and cost of cultivation—was obtained from the Directorate of Economics and Statistics, Ministry of Agriculture and Farmers Welfare, Government of India. The MSP data for different time periods was sourced from the Department of Economics and Statistics via its official website. Descriptive statistics such as means and percentages were used to estimate the share of different inputs in the cost of production and to analyze their changes over time. This study chosen to capture long-term trends and policy impacts on paddy cultivation and MSP in Punjab because this period offers a comprehensive view of how MSP policies influenced cropping patterns and costs, and evaluates the MSP policy over time.

Compound Annual Growth Rate (CAGR)

The quantitative research approach for CAGR has used to estimate the annual growth rate. The exponential function used after altering the original data into a semi-log specification. Finally, the semi-log trend function has used to evaluate the annual rate of growth in the cost of production, cultivation, input costs, and MSP. The semi-log function is used as follows:

There is an exponential form of the growth function as;

$$Y_t = a\, b^t e^{ut}$$

Where;

y_t = dependent variable

a = intercept

b = regression coefficient {(1+g), and g = CGR}

t_i = time

The CAGR were intended as follows:

$$Y = ab^t$$

or

$$Y = A(1+r)^t$$

$$\ln Y = \ln A + t \ln(1+r)$$

Let,

$$\ln(A) = a$$

$$\ln(1+r) = b$$

Then,

$$\ln Y = a+b^t$$

$$(1+r) = \text{anti ln of } b^t$$

$$r = ((\text{anti ln of } b)-1)\times 100$$

Where; a = coefficient, b = slope, t = time, and

$$r = (b-1)\times 100$$

When, r × 100 it gives the percentage growth rate basal on the dependent variable. Therefore, r = (Antilog of b-1) × 100 is the CAGR in percentage.

Results and Discussions

Punjab is a state with a large expanse of fertile land in India, and its economy is mostly based on agriculture. Punjab has been the nation's top supplier of food grains since the start of the Green Revolution. Following the Green Revolution and implementation of the MSP the Punjab's overall food grain production increased dramatically, and paddy plays a major role in this increase in agricultural production. Paddy has the second most crop in the state that covers the highest area under the crop, it covers 2831 thousand hectares area of the state (Government of Punjab, 2018). Paddy is a significant cereal crop from both consumption and production perspectives. Punjab is a cereal surplus state and MSP has more beneficial to the cereal surplus state and the state of the country where the highest number of farmers are aware of the MSP (Aditya et al., 2017). Therefore, because of the perception that MSP policy mainly favours surplus states, the state of Punjab, which has a surplus crop surplus is used to study and analyse MSP role and influence to output.

Table:1. Growth in Area, Production, and Yield of Paddy Cultivation in Punjab State

Year	Area	Production	Yield
1996–97	2159	7334	10542
1997–98	2281	7904	10542
1998–99	2519	7940	3152
1999–2000	2604	8716	3347
2000–01	2611	9154	3506
2001–02	2487	8816	3545
2002–03	2530	8880	3510
2003–04	2614	9656	3694
2004–05	2647	10437	3943
2005–06	2642	10193	3858
2006–07	2621	10138	3868
2007–08	2610	10489	4019
2008–09	2735	11000	4022
2009–10	2802	11236	4010
2010-11	2831	10837	3828
2011–12	2818	10542	3741
2012–13	2845	11374	3998
2013-14	2851	11267	3952
2014–15	2894	11107	3838
2015–16	2975	11823	3974
2016-17	2898	11586.20	3998
2017–18	3065	13381.79	4366
2018–19	3103	12821.60	4132
2019–20	2920	11779.28	4034
CAGR	**1.14**	**2.09**	**-1.00**

Source: *Directorate of Economics and Statistics GoI,* www.eands.dacnet.nic.in

Note: Area in thousands of hectares, production in thousand tonnes, and yield is kg per hectare

Agriculture sector plays a significant role in socio-economic and comprehensive development of Punjab. Usually, Punjab was not a paddy-cultivating state. However, Punjab's agriculturalists began growing paddy throughout the green revolution to help fill the depot of the Food Corporation of India (FCI) and ensure the food security of the country (Jigeesh, 2022; Dev, 2023). Punjab has long played a significant role in supporting India's agricultural output and food security. Punjab is one of the leading paddy cultivation states in the nation. It has the third largest paddy-growing state in India, with an area of 2.97 million hectares on which paddy is cultivated (India Today, 2018). Punjab contributes 11.78% of the country's rice production (Government of Punjab, 2022). This study examines the minimum support price of paddy cultivation in Punjab and analyses the growth pattern from the last half and two decades from 1996–1997 to 2019–20. Table 1 illustrates the expansion of paddy farming in Punjab from 1996–1997 to 2019–20 in terms of area, output, and productivity. The growth in the paddy cultivation in Punjab state in Table 1 shows that the area and production of paddy cultivation in Punjab has increased with the CAGR of 1.14% and

2.09%, respectively. In the last 24 years; nevertheless, the yield (kg/hectare) decreases with 1% CAGR and shows a negative growth rate in the yield of paddy cultivation in Punjab over the period of time. Similarly, a study found that increasing MSP significantly shifted cropping patterns in Punjab which leads to a dominant wheat and paddy rotation while plummeting the cultivation of pulses, maize, bajra, and oilseeds amid 1970–71 and 2016–17 (Dhawan, 2019).

Table: 2. Relative Proportions of Various Inputs to the Operational Cost of Paddy Cultivation in Punjab

Year	Labour Cost			Input Cost				Total Operational Cost
	Human	Animal	Machine	Seeds	Fertilizers and Manure	Insecticides	Miscellaneous	
1996–97	3407.69 (33.43)	34.00 (0.33)	1789.07 (17.55)	354.81 (3.48)	1959.53 (19.23)	825.04 (8.10)	1824.52 (17.89)	10194.66 (100)
1997–98	3342.09 (34.96)	25.06 (0.26)	1816.41 (19.00)	397.09 (4.16)	1702.31 (17.81)	767.52 (8.02)	1508.95 (15.79)	9559.43 (100)
1998–99	3716.70 (34.64)	23.71 (0.22)	2164.17 (20.17)	467.06 (4.36)	1880.3 (17.52)	860.08 (8.02)	1617.04 (15.07)	10729.06 (100)
1999–2000	3635.14 (31.84)	11.37 (0.10)	2432.86 (21.31)	529.63 (4.64)	2205.07 (19.32)	922.18 (8.08)	1679.18 (14.71)	11415.43 (100)
2000–01	3857.42 (32.71)	16.98 (0.14)	2435.45 (20.65)	512.69 (4.35)	1956.55 (16.60)	1139.37 (9.67)	1874.89 (15.90)	11793.35 (100)
2001–02	4124.68 (33.47)	32.15 (0.26)	2670.31 (21.67)	557.25 (4.52)	1974.26 (16.02)	1169.39 (9.49)	1797.06 (14.59)	12325.10 (100)
2002–03	5199.93 (29.30)	117.16 (0.66)	3398.72 (19.15)	554.39 (3.12)	2678.62 (15.10)	1179.12 (6.64)	4620.67 (26.03)	17748.61 (100)
2003–04	4525.82 (29.01)	35.03 (0.22)	3068.12 (19.67)	569.48 (3.65)	2507.63 (16.08)	1603.78 (10.28)	3289.7 (21.09)	15599.56 (100)
2004–05	4794.34 (28.60)	89.82 (0.54)	3653.01 (21.79)	595.04 (3.55)	2535.92 (15.12)	1298.26 (7.74)	3797.55 (22.66)	16763.94 (100)
2005–06	4981.22 (32.06)	26.16 (0.17)	2969.02 (19.11)	656.90 (4.23)	2446.74 (15.75)	1439.51 (9.26)	3017.41 (19.42)	15536.96 (100)
2006–07	5161.77 (34.19)	89.83 (0.60)	3029.11 (20.07)	651.28 (4.31)	2466.90 (16.34)	1251.89 (8.30)	2445.46 (16.20)	15096.24 (100)
2007–08	5472.15 (34.17)	90.43 (0.56)	3630.81 (22.67)	725.97 (4.53)	2518.00 (15.72)	1486.25 (9.29)	2089.96 (13.05)	16013.57 (100)
2008–09	8369.91 (39.91)	162.19 (0.77)	4510.37 (21.51)	901.84 (4.30)	3063.68 (14.60)	1977.14 (9.43)	1985.81 (9.47)	20970.94 (100)
2009–10	10047.78 (41.90)	224.09 (0.93)	4942.54 (20.61)	1109.10 (4.62)	2900.74 (12.09)	2104.67 (8.78)	2649.79 (11.05)	23978.71 (100)
2010-11	10485.69 (43.84)	110.49 (0.46)	4569.14 (19.10)	1263.59 (5.29)	3097.10 (12.95)	2279.75 (9.53)	2110.36 (8.83)	23916.12 (100)
2011–12	12117.40 (45.55)	44.30 (0.17)	4372.33 (16.44)	1328.31 (4.99)	3334.92 (12.54)	2672.43 (10.05)	2730.86 (10.26)	26600.55 (100)

2012–13	13320.81 (43.41)	45.83 (0.15)	5098.44 (16.62)	1509.04 (4.92)	4129.84 (13.46)	3159.29 (10.29)	3422.21 (11.16)	30685.46 (100)
2013-14	14221.28 (43.92)	45.65 (0.14)	5576.06 (17.22)	1562.58 (4.82)	4240.38 (13.09)	3716.37 (11.48)	3020.13 (9.33)	32382.45 (100)
2014–15	14718.57 (43.24)	40.87 (0.12)	6371.44 (18.72)	1771.16 (5.20)	3704.80 (10.88)	3928.25 (11.54)	3506.09 (10.30)	34041.18 (100)
2015–16	15528.77 (44.61)	41.82 (0.12)	6020.04 (17.30)	1838.03 (5.29)	3648.39 (10.48)	4458.79 (12.81)	3271.85 (9.40)	34807.69 (100)
2016-17	16348.37 (45.48)	38.11 (0.11)	6359.77 (17.69)	1716.39 (4.78)	3717.12 (10.34)	4426.05 (12.31)	3338.4 (9.29)	35944.21 (100)
2017–18	16649.46 (44.44)	19.61 (0.05)	7149.24 (19.08)	1625.67 (4.34)	3432.73 (9.16)	4146.26 (11.06)	4444.25 (11.87)	37467.22 (100)
2018–19	16664.60 (39.31)	32.37 (0.08)	10184.21 (24.02)	1635.39 (3.86)	3760.09 (8.87)	4920.53 (11.60)	5193.23 (12.26)	42390.42 (100)
2019–20	17000.14 (38.91)	18.58 (0.04)	9559.14 (21.88)	1738.41 (3.98)	4106.42 (9.39)	5624.54 (12.88)	5643.32 (12.91)	43690.55 (100)
Average	4650.12 (39.60)	30.27 (0.26)	2302.57 (19.61)	524.94 (4.47)	1495.68 (12.74)	1225.07 (10.43)	1514.98 (12.90)	11743.65 (100)
CAGR	**8.88**	**0.99**	**6.91**	**7.91**	**3.76**	**9.27**	**4.06**	**7.07**

Source: *Directorate of Economics and Statistics GoI, www.eands.dacnet.nic.in*

Note: *Figures within parentheses indicate percentages of the total.*

For the cultivation of any crop, different types of inputs are used. The share of the different input costs comes under the total operational cost of the crop. There are various inputs of operational cost in paddy cultivation in Punjab. The comparative proportions of the numerous inputs in the operational cost of paddy farming in Punjab from 1996–1997 to 2019–20 is shown in Table 2. The above table reveals the total operational cost, which comprises human labour, animal labour, machine labour, seeds, fertilizers, insecticides, and many other costs. The result of the table illustrates the CAGR of the total operational cost of paddy cultivation in Punjab escalation of 7.07% from 1996–1997 to 2019–20. The table also shows that the CAGR of human labour, animal labour, machine labour, seeds, fertilizers, insecticides, and other costs rise by 8.88, 0.99, 6.91, 7.91, 3.76, 9.27, and 4.06%, respectively, of paddy cultivation in Punjab. The result of the table shows that the share of human labour is the uppermost, followed by machine labour, and the share of animal labour is the lowest in the total operational cost. This is due to the non-availability of human labour and the inflation of mechanical tools. In another side insecticides shows a highest noticeable growth CAGR of 9.27% from 1996–97 to 2019–20, followed by human labour (8.88%) and seed (7.91%). The animal labour CAGR was also the lowest (0.99%) during the study period. Therefore, the cost of cultivation of crops has increasing over the time as compare to the MSP, similarly Gill at el. (2017) reveal that MSP has increasing less significantly as compared to the cost of inputs.

To protect the interests of farmers from reduced market prices, the government purchases the commodities from the farmers at the MSP. The minimum support price is a guarantee price fixed on behalf of the Government of India on the recommendation of CACP to shield farmers from distress sales during bountiful crops, which cause a fall in the prices of the crops. The Government of India announces minimum support prices for every kharif and rabi season, which covers cereals, pulses, oilseeds, and some commercial crops. The MSP is determined on the basis of the cost of production, demand and supply, and price trends in both domestic and international markets. Vaishnavi et al. (2024) found that MSP for the key crops have steadily increased due to the rising costs of inputs and policy support, and that the ARIMA model effectively forecasts MSP trends contribution valuable insights for agricultural policy and food security planning.

Table: 3. Adequacy of MSP in Meeting the Cost of Production

(Rs/Quantal)

Year	MSP	A2+FL	MSP as % A2+FL	C3	MSP as % of C3
1996–97	380	210.54	180.49	384.67	98.78
1997–98	415	211.14	196.55	392.54	105.72
1998–99	440	256.12	171.79	448.69	98.06
1999–2000	490	227.31	215.564	422.95	115.85
2000–01	510	233.57	218.35	424.92	120.02
2001–02	530	240.43	220.44	432.20	122.62
2002–03	550	335.92	163.73	549.28	100.13
2003–04	550	299.13	183.86	487.23	112.89
2004–05	560	296.58	188.82	493.48	113.48
2005–06	570	280.45	203.24	536.01	106.34
2006–07	580	266.69	217.48	525.16	110.44
2007–08	745	275.94	269.99	556.51	133.87
2008–09	900	367.99	244.57	736.85	122.14
2009–10	1000	444.21	225.12	850.50	117.58
2010-11	1000	503.76	198.51	920.11	108.68
2011–12	1080	528.04	204.53	996.77	108.35
2012–13	1250	542.27	230.51	1040.30	120.16
2013-14	1310	607.78	215.54	1147.60	114.15
2014–15	1360	591.34	229.98	1200.93	113.25
2015–16	1410	586.31	240.49	1167.83	120.74
2016-17	1470	607.08	242.14	1201.21	122.38
2017–18	1550	565.10	274.29	1190.79	130.16
2018–19	1750	708.77	246.91	1371.46	127.60
2019–20	1815	776.88	233.62	1480.56	122.59
Average	**925.62**	**415.14**	**217.36**	**789.94**	**115.25**
CAGR	**7.32**	**5.97**	**1.27**	**6.57**	**0.70**

Source: *Directorate of Economics and Statistics, GoI, www.eands.dacnet.nic.in*

The MSP has announced twice a year by the Cabinet Committee of Economic Affairs (CCEA) of the Government of India, as recommended by the CACP. The MSP has been calculated by the CACP to take a comprehensive view of the entire economy. The cost of production is one of the most crucial elements in determining the MSP, and the CACP carefully weighs all costs before suggesting the MSP. While recommending the MSP, the CACP takes into account both the A2+FL and C2 expenses, but just the A2+FL costs for the return. By promising to buy farmers' commodities at specified prices the MSP ensures that farmers receive fair prices for their produce. In addition to raising the MSP, the government has taken other measures to confirm that farmers receive fair prices for their produce. The adequacy of MSP in meeting the cost of production in paddy cultivation in Punjab is shown in the above table, which shows that the MSP as a percentage of the cost of production in A2+FL cost has increased with a CAGR of 1.27%, whereas in C3 cost it increases only 0.70 percent from 1996–1997 to 2019–20. The results show an increasing trend in MSP and production costs. The minimum support price of paddy has increased with a CAGR of 7.32% in the last two and a half decades. The cost of production A2+FL and C3 of paddy cultivation in Punjab has grown with a CAGR of 5.97 and 6.57% respectively in the previous 24 years from 1996–1997 to 2019–20 which is lower than the 7.32 % CAGR of MSP.

Table: 4. Percentage Variance Between MSP and Various Cost Components of Paddy Cultivation in Punjab

Year	MSP	A1	A2	A2+FL	B1	B2	C1	C2	C2*	C3
1996–97	380	114.0	50.21	44.59	47.97	14.9	42.34	9.26	7.97	-1.23
1997–98	415	156.9	54.18	49.12	57.08	19.09	52.11	14.12	14.01	5.41
1998–99	440	117.2	48.61	41.79	49.06	14.04	46.41	7.29	7.29	-1.98

1999–00	490	164.9	58.78	53.61	57.82	26.74	52.62	21.53	21.53	13.68
2000–01	510	179.7	59.31	54.20	60.5	29.34	55.41	24.26	24.26	16.68
2001–02	530	196.0	60.02	54.63	63.07	31.19	57.75	25.87	25.87	18.45
2002–03	550	107.6	46.14	38.92	47.42	16.62	40.24	9.43	9.21	0.13
2003–04	550	154.7	50.53	45.61	56.69	24.44	51.79	19.53	19.46	11.41
2004–05	560	167.3	52.28	47.04	58.88	25.10	53.66	19.89	19.89	11.88
2005–06	570	151.9	55.99	50.79	54.35	19.69	49.17	14.51	14.51	5.96
2006–07	580	175.7	59.21	54.02	58.78	22.85	53.62	17.69	17.69	9.45
2007–08	745	260.2	66.89	62.96	68.04	35.98	64.15	32.09	32.09	25.30
2008–09	900	222.2	63.47	59.11	63.75	30.84	58.48	25.57	25.57	18.13
2009–10	1000	218.0	61.37	55.58	63.87	28.39	58.16	22.68	22.68	14.95
2010-11	1000	193.0	55.04	49.62	61.11	21.62	55.84	16.35	16.35	7.99
2011–12	1080	187.3	58.36	51.11	60.81	23.44	53.64	16.27	16.09	7.71
2012–13	1250	232.4	62.68	56.62	66.63	30.44	60.61	24.42	24.34	16.77
2013-14	1310	214.2	59.89	53.60	64.56	26.62	58.30	20.36	20.36	12.39
2014–15	1360	220.4	62.98	56.52	65.03	26.13	58.62	19.72	19.72	11.69
2015–16	1410	246.6	65.03	58.42	67.52	31.27	60.96	24.70	24.70	17.17
2016-17	1470	246.5	65.28	58.70	67.97	32.27	61.43	25.73	25.71	18.28
2017–18	1550	271.2	69.24	63.54	70.74	35.83	65.06	30.16	30.16	23.17
2018–19	1750	225.4	64.70	59.50	68.27	34.03	63.08	28.85	28.75	21.63
2019–20	1815	217.6	62.20	57.19	66.18	30.93	61.21	25.96	25.84	18.43
Average	**925.6**	**193.4**	**58.85**	**53.20**	**61.09**	**26.32**	**55.61**	**20.68**	**20.59**	**12.65**
CAGR	**7.32**	**2.88**	**1.08**	**1.17**	**1.26**	**2.47**	**1.29**	**3.34**	**3.50**	**17.96**

Source: *Directorate of Economics and Statistics, GoI, www.eands.dacnet.nic.in*

In order to protect farmers from a sudden drop in price, the government purchases certain commodities from them at MSP. It has a vital component of agricultural price policy to protect farmers against any sharp fall in prices. There are different cost components of a crop cultivation in India, for a scientific costing should have consistency in the pricing models employed, which have to be approved and embraced across the nation. The different types of costs are used in India, cost A1 is the corresponding for the tenant cultivator, cost A2 is the cost A1 plus assigned value of own-labour, and in the cost A2+FL is cost A2 plus family labour cost, cost B is cost A plus payment value of owned-land and assigned interest on demand capital and therefore cost C has a comprehensive cost which include total of all costs actual as well as imputed. Table-4 shows the percentage difference between MSP and different cost components of paddy cultivation in Punjab. The result investigates that CAGR of cost C3 has 17.96 per cent which has a tremendous growth in the year during 1996-97 to 2019-20, whereas CAGR of MSP has only 7.32%. The table clearly shows different cost components has increasing with the time period and the MSP also increasing, and there has positive growth relation in the costs and MSP.

Conclusions

The Government price policy for agricultural crops has assay to provide a compensable price to the farmers, the MSPs has public procurement system, which served well in the country since the 1960 decade. Indian agriculture is the dominant source of livelihood of the people, where about 70% population live in the rural area which has primarily depend upon agriculture and related pursuits for their livelihood. The economic condition of the farmers has not very good, thus MSP has an essential tool to boost their income and to improve the production and productivity. This MSPs are the lifeline of Punjab's farmers and hasty dismantling of the MSP system will strictly affect the livelihood of the farmers. Punjab is a production surplus state and MSP has very effective in this state (Ali et al., 2012). The prime object of the study has to analysis the trends in MSP and cost of production and different inputs cost with their relationship of paddy cultivation in Punjab state. The study reveals that the increase in the percentage of CAGR of MSP has significantly more as compared to the cost of production and inputs cost. However, the CAGAR of both MSP and cost of production in paddy cultivation in Punjab has positive growth rate over the period of the year 1996-97 to 2019-20. In terms of CAGR in the MSP of paddy has 7.32% and A2+FL cost has 5.97%, and in C3 has 6.57% respectively, and there is a significant association amid MSP and cost of production. Therefore, with the increasing in area, production, yield and cost of production, the MSP of crop also increasing which ultimately leads to increase the wellbeing of the farmers.

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Educating the Change-Makers: Sustainable Hospitality and Tourism Education for Emerging Economies

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Abstract

This study investigates how European sustainability principles and ethical requirements are integrated into Indian hospitality tourism education. Equip students with gear to cope with industry issues. The intention is to build stronger establishments. Prepare the following generation of employees for a strong and sustainable tourism region via aligning training with international sustainability desires. The research uses two main frameworks: education for sustainable development and the business excellence model. Education for Sustainable Development focuses on equipping students with the knowledge and skills to address environmental, social, and economic challenges by promoting transformative learning for sustainable practices. Research Gap: This research addresses the gap in hospitality and tourism education. This is especially true in emerging regions of the world, such as India, where research on how to integrate sustainability and business performance is lacking. Although contemporary research often focuses solely on sustainability or business performance, this organization limits the development of a holistic approach to education in the tourism sector. This observation aims to close this gap by developing a paradigm that combines the concepts of sustainability and business performance. This study uses a PRISMA-guided systematic literature review (SLR) to examine the introduction of sustainability and business ethics in hospitality and tourism education. After analyzing 850 documents from databases such as Scopus, Web of Science, and industry data from UNESCO and WTO, 60 key studies were selected, which provide valuable insights for developing education systems that integrate sustainability in hospitality and tourism education for emerging economies? This study observes that integrating sustainability and business excellence in hospitality and tourism education is best while theory is blended with realistic application. This consists of internships, case studies, and experiential learning. However, there are demanding situations that include limited sources. A shortage of certified teachers and resistance to curriculum changes ought to be corrected together with more potent cooperation between academia and enterprise. To allow college students to better meet the needs of real global industries. Education in hospitality and tourism that integrates enterprise excellence and sustainability will make the industry extra resilient. Students can acquire the specified talents through real projects, internships, and business models. To align instructional requirements with industry targets, authorities support and instructor education is required.

Keywords: *Sustainable Tourism Education; Business Excellence; EFQM Model; Hospitality Management; Emerging Economies.*

Introduction

The hospitality and tourism sectors have become an important part of economic growth. This is especially true in developing countries. However, the increasing environmental, social, and economic challenges these industries are facing are increasing. A sustainable solution is needed. Sustainable tourism focuses on reducing negative impacts on the environment. Promote social harmony and ensure long-term economic viability (UN, 2023). To achieve these goals Higher education institutions need to prepare the next generation of workers with knowledge, skills, and attitudes toward sustainability. This article examines the role of education in promoting sustainability in the hospitality and tourism sectors in developing countries emphasizing the importance of aligning the educational curriculum with established guidelines. Analyze the challenges in the field and provide advice on effective educational strategies.

Hospitality and Tourism Development in Emerging Economies

Promote economic growth. Promote entrepreneurship and attract external capital. Tourism is becoming increasingly important for developing countries (UN, 2023). According to World Bank projections, from 2022 onwards, tourism will account for approximately 10% of global GDP, with developing countries accounting for a significant portion of total GDP. Countries in Asia, Africa, and Latin America, as an example, have visible fast tourism growth, contributing to poverty remedy and infrastructure improvement (Scheyvens & Biddulph, 2018). The hospitality enterprise, as an essential component of tourism, creates job possibilities for millions, consisting of marginalized communities. However, this boom regularly comes with environmental prices, inclusive of pollutants, a lack of biodiversity, and social challenges like over tourism and cultural dilution (Gössling et al., 2020). Sustainability in hospitality and tourism is consequently crucial to ensuring that those industries keep providing economic advantages without compromising environmental and social assets for future generations.

The Sustainable Hospitality and Tourism Education

To achieve sustainable development desires, the hospitality and tourism enterprises should turn out to be extra aware of sustainable practices (Global Sustainable Tourism Council [GSTC], 2021). Educational packages that integrate sustainability put together college students to remedy complex social and environmental problems. They sell vital wondering, innovation, and management and encourage college students to make modifications in their industry (Dredge et al., 2018). Additionally, sustainable tourism schooling helps make certain that destiny employees recognize the stability among productiveness and obligation as well as selling ethics in enterprise operations in rising economies wherein the impact of tourism is obvious. The need for sustainability-targeted schooling is even more urgent. If there is no proper teaching, students may engage in practices that are not sustainable. This contributes to social destruction and social inequality (Sharpley, 2020). Therefore, hospitality and tourism education should incorporate best practices in environmental stewardship community participation and conducting business responsibilities.

Integrating Sustainability in Educational Curriculum

Integrating sustainability into hospitality and tourism education curricula requires a multifaceted approach. Companies need to move beyond traditional business models. Focus on environmental measures In addition to quality social responsibility and cultural conservation (Gössling et al., 2020), studies in fields such as ecotourism Pollution control, renewable energy, and inclusive tourism are important in raising students' awareness of sustainability. With a learning experience that combines straightforward experiences such as internships and community service. The gap between theory and practice can be bridged (Jamal et al., 2022), for example, by collaborating with universities and non-local organizations or a travel agency that helps students gain real-world experience in sustainable employment. In addition, the adoption of problem-based learning strategies supports students in determining how to respond to real-world sustainability research issues creatively (Dredge et al., 2018). Additionally, access to knowledge in online forums plays an important role in sustainability education. This is especially true in developing countries where access to physical components is limited. Massive open online courses (MOOCs) on sustainable tourism are available for free or at a low cost. This allows a wide range of students to participate (Sharpley, 2020).

Implementing Sustainability Barriers to Focused Education

While the significance of sustainability schooling is widely diagnosed, several demanding situations preclude its implementation, especially in rising economies. A tremendous barrier is the dearth of economic resources and infrastructure needed to aid superior academic programs (Jamal et al., 2022). Access to technology that might facilitate effective learning, qualified teachers, and sustainable teaching resources are all challenges faced by many educational institutions. Concerns about increased costs and more complex operations are another reason why business stakeholders are usually hesitant to adopt sustainable practices (UNWTO, 2023). Educational establishments should therefore align with enterprise companions to illustrate the lengthy-term blessings of sustainable tourism. Cultural resistance can also gift an assignment, specifically in areas where conventional hospitality practices conflict with current sustainability ideas. Overcoming these cultural barriers calls for the involvement of neighborhood communities and stakeholders in designing educational curricula to ensure that they mirror regional values and needs (Scheyvens & Biddulph, 2018).

Case Studies: Success Stories in Sustainable Hospitality and Tourism Education

Many institutions and programs have successfully integrated sustainability into hospitality and tourism education. They provide valuable training for developing countries. For example, the Asian Tourism Institute in the Philippines offers courses in ecotourism and sustainable tourism management. To provide students with the skills to balance conservation efforts with economic development in Africa, the University of Cape Town has integrated a sustainability module into its hospitality management program. It makes a specialty of issues together with water control and natural world conservation. And network engagement (Jamal et al., 2022). These packages exhibit training that can promote sustainable tourism practices in areas with various social and environmental demanding situations. In the identical manner, Costa Rica, a frontrunner in ecotourism, offers specific tourism applications centered on biodiversity conservation and coffee carbon emissions (Gössling et al., 2020). These programs have now not most effectively contributed to the United States of America's reputation as a sustainable journey location. But it additionally helps college students have awesome competencies in integrated tourism activities.

Advancing Sustainable Hospitality and Tourism Education

To promote sustainability effectively, educational institutions and the government should take a collaborative approach. The following indicators summarize techniques for developing sustainable hospitality and tourism training in growing countries: Curriculum development: Institutions need to map closely with company experts. Policymakers and community To create a curriculum that truly meets the conditions and opportunities of global sustainability needs. Faculty Development Training: Continuing professional development packages are critical to equipping educators with the knowledge and tools needed to effectively teach sustainability. Public-Private Partnership: cooperation projects between educational institutions and organizations able to provide appropriate enjoyment to students and promote sustainable practices within the company. Policy Support: Governments ought to assist sustainable training via investment, coverage incentives, and accreditation necessities that inspire establishments to undertake sustainability-focused programs. Technology Integration: Leveraging generation to supply online guides and virtual internships can increase admission to sustainability training, in particular in some distance-flung or underserved areas.

Literature Review

The hospitality and tourism industries play an important function in global financial development, specifically in emerging economies. However, speedy growth in these sectors has resulted in environmental, economic, and socially demanding situations (Gössling et al., 2020). To address those concerns, sustainability training has grown to be a crucial component of tourism and hospitality curricula globally. This literature overview examines the contemporary body of studies on sustainable tourism schooling, identifies key topics, which include curriculum development, experiential learning of, and stakeholder collaboration, and discusses challenges in integrating sustainability concepts in education structures within rising economies.

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Curriculum Development and Integration of Sustainability

The integration of sustainability into hospitality and tourism curricula is a multi-dimensional method. Several researchers argue that sustainability ought to no longer merely be an additional challenge but must be embedded at some point of the entire curriculum (Dredge et al., 2018). Gössling et al. (2020) advocate that tourism schooling desires to cover now not only the most effective environmental topics but also financial and social elements of sustainability. This multidisciplinary method prepares university college students to deal with complicated, annoying situations, together with balancing profitability with environmental conservation and community well-being. The model of the European Foundation for Quality Management is a useful framework for studying sustainable business practices (Jamal et al., 2022). Further, students will have a greater understanding of how sustainability and entrepreneurship are related. University students may also get useful insights from case studies and actual instances of sustainable tourism operations worldwide by fusing organizational frameworks like the European Quality Management Foundation with tourist education (Gössling et al., 2020). Some packages in advanced international locations have all commenced to combine sustainability into their curricula. For example, the University of Cape Town offers a module on sustainable tourism law. Similarly, it emphasizes environmental sustainability and community participation (Jamal et al., 2022). The Asian Tourism Office inside the Philippines gives specialized guides on ecotourism and ecotourism in full size emphasizing the significance of participating in sustainable tourism improvement.

Experiential Learning and Sustainability Education

The experiential learning in sustainability training in hospitality and tourism faculties have been heavily researched (Dredge et al., 2018) a realistic exercise is available to address this issue. Students can apply rationing concepts to real-world situations through internships, fieldwork and online initiatives such as ecosystem research and environmentally conscious hospitality. Supporting college students to decide their very own sustainable practices (Sheyvens & Biddulph, 2018) Problem-based totally learning (PBL) is an opportunity studying version that encourages students to do more true Sustainability (Sharpley, 2020). This technique promotes crucial inquiry creativity and teamwork. This may be taken into consideration as an essential skill for destination tourism operators. Furthermore, in regions with low levels of physical interest, on-line gaining knowledge of sources and courses like Massive Open Online Courses (MOOCs) provide a convenient and adaptable method of continuing schooling (Jamal et al., 2022). Some establishments have evolved partnerships with tourism organizations and nearby communities to increase clinical schooling. For example, students on the University of Costa Rica are working on an ecotourism undertaking that targets to hold culture and save nature (Gössling et al., 2020). In addition to giving kids terrific instructional possibilities, this kind of collaboration fosters social boom.

Challenges in Implementing Sustainability Education in Emerging Economies

This is despite the increasing recognition of sustainability in tourism education. But several challenges impede its effective implementation. This is especially true in emerging economies. A key challenge is the lack of financial resources and infrastructure required to support sustainability-focused projects (Jamal et al., 2022). Many academic establishments attempt to provide good enough schooling centers, laboratories, and fieldwork opportunities, which can be crucial for experiential analyzing. Furthermore, confined get admission to era and online getting to know systems poses a barrier to the dissemination of sustainability training in faraway areas. Another massive challenge is the dearth of certified faculty with information in sustainability and tourism control (Dredge et al., 2018). It is challenging for educational institutions to find and retain teachers who can effectively teach sustainability concepts in a tourist setting. This ultimately limits students' capacity to contribute to sustainable tourism practices by allowing them to get inadequate or out-of-date training. Cultural resistance is likewise a primary barrier to sustainability training. In a few regions, traditional tourism practices and commercial agency fashions may additionally clash with current sustainability thoughts (Scheyvens & Biddulph, 2018). Overcoming the ones disturbing situations calls for educational applications to have interaction local communities and stakeholders, making sure that sustainability tasks align with neighborhood values and practices. Industry resistance is another obstacle. This is because some travel agents are unwilling to adopt sustainable practices. Due to the increasing problems of high costs and intensive operations (UN, 2023), the College wanted to build stronger relationships with business partners to demonstrate the long-term benefits of sustainability in the tourism industry.

Best Practices and Success Stories

Several educational packages and establishments have efficaciously included sustainability into their hospitality and tourism curricula, presenting treasured classes for rising economies. Costa Rica, for instance, has become a worldwide leader in eco-tourism with the aid of aligning its tourism training applications with country-wide sustainability dreams (Gössling et al., 2020). Students will be taught in areas such as biodiversity conservation. Greenhouse gas emissions and network integration to prepare for a career in sustainable tourism in Asia, countries such as the Philippines have developed specialized tourism programs that specialize in sustainable practices. The Asian Tourism Institute gives courses in ecotourism and digital tourism. To provide students with competencies in sustainable conservation and economic achievement (Jamal et al., 2022).These programs spotlight the importance of stakeholder collaboration and nearby involvement in sustainable tourism initiatives. Similarly, African universities are beginning to incorporate sustainability into their hospitality packages. The University of Cape Town, for instance, gives guides on water conservation, waste control, and wildlife protection, reflecting the place's environmental challenges (Scheyvens & Biddulph, 2018). These initiatives show that sustainability training can be tailored to cope with the particular wishes and challenges of various regions.

Future Directions in Sustainable Hospitality and Tourism Education

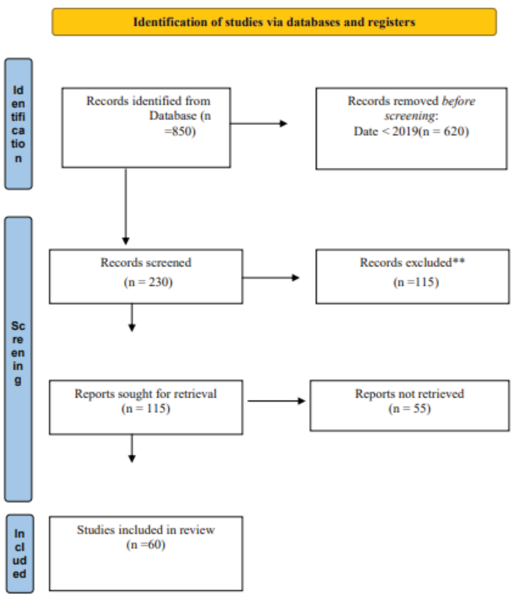
Many researchers argue that tourism schools need to evolve to meet emerging sustainability challenges (Dredge et al., 2018). For example, time-based trading is emerging as a key challenge that requires more attention to the Hospitality and Tourism Education Project. Future educational activities should include literature on climate outcomes disaster management and reducing greenhouse gases. To integrate students with the changing needs of the tourism industry (Gössling et al., 2020), digitalization and people may become increasingly important for the role they play. By studying sustainability Navigating virtual places online simulation and e-learning systems can enhance students' experiences in sustainable tourism, especially in regions with limited access to physical resources (Jamal et al., 2022). Additionally, higher education institutions should develop lifelong skills opportunities. To enable the tourism industry to continuously transfer its knowledge and skills in the context of sustainability. The literature on hospitality and sustainable tourism education emphasizes the importance of developing future professionals with the skills and understanding needed to market reserved tourism. Emerging economies that may rely heavily on tourism for financial development Face specific sustainability challenges that require focused education initiatives. This is despite the fact that many tools have appropriately incorporated sustainability into their curricula. But the challenges combined with financial constraints and culture clash and the industry's stillness persists. To overcome these limitations Higher education institutions need to adopt progressive learning strategies. Promote cooperation with industry partners and participate with the community in the learning community. Future research should explore new methods. To integrate the study of climate change and its practical applications into the tourism curriculum. To ensure that students are adequately prepared to meet the changing needs of the industry.

Research Methodology

The present study used a systematic literature review (SLR) to review, analyze, and synthesize the literature on the integration of sustainability and business ethics in hospitality and tourism education. It is a systematic review and meta-analysis) which ensures a systematic and transparent review process (Moher et al., 2009). This rigorous approach provides an integrated framework for identifying trends, issues and best practices in integrating sustainability and tourism education marketing.

Identification of Relevant Keywords

The author conducted systematic literature searches across a variety of reputable academic and industry-specific databases to guarantee that all pertinent sources were included. Web of Science, Scopus, Google Scholar, Research Gate, and Science Direct, were the databases employed for this review. In addition, information from internationally recognized organizations such as UNESCO and the United Nations (UN) World Tourism Organization was examined to identify relevant studies to provide good guidance. Current evidence-based initiatives include "Entrepreneurship in Hospitality," "Education for Sustainable Tourism," and "EFQM in Tourism" (European Foundation for Quality Management) to promote cooperation. In 2010, 2024 was the only article of the year included in the search. Qualitative and quantitative research is considered essential to sustainability and effectiveness in the education system as a whole.



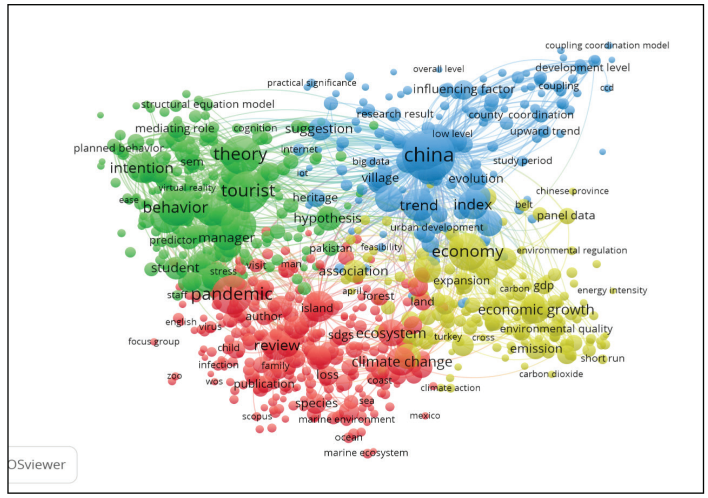
Source: PRISMA Flow Chart of Screening Process

Table 1. The Number of Research Paper Discovered

S. no	The Online Publishers' Databases	No of Research Paper Found
1	Web of Science (webofscience.com)	213
2	Scopus	167
3	Google Scholar (googlescholar.com)	157
4	Research Gate (researchgate.com)	97
5	Science Direct (sciencedirect.com)	216
	Total	850

Approaches to Literature Identification and Screening

The review process followed the PRISMA (Preferred Reporting Items for Systematic Reviews) framework, which ensures a systematic, transparent, and reproducible literature choice technique (Page et al., 2021). Key steps of the technique PRISMA for identity, screening, eligibility, and inclusion have been meticulously accomplished to ensure that the best extremely good research relevant to the study goals was protected. The identification process consisted of searching Scopus, Web of Science, and the online databases Science Direct, Research Gate, and Google Scholar through reputable academic journals and service-related industry reports. This study used a systematic literature review (SLR) approach following the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) structure, with the aim of providing a comprehensive analysis of tourism. Energy saving and sustainable hospitality practices PRISMA's structured approach guarantees transparency and rigor. It allows for a systematic synthesis of existing research to reveal practical principles, benefits, challenges, and gaps. Each step of the PRISMA-focused process has been meticulously documented. This allows for reproducibility and reliability of both results.



Source: Co-occurrence map for Sustainable Hospitality and Tourism Education for Emerging Economies.

Discussion

The discussion from this study highlights the importance of integrating sustainability and business excellence frameworks in hospitality and tourism education. To develop industry experts who can tackle environmental challenges. Society and Economics Schevens and Biddulph, 2018).This paper suggests an interdisciplinary approach. The curriculum does not consider sustainability as a distinct subject. Instead, it gives students thorough knowledge and useful abilities (Dredge et al., 2018), making future graduates more capable of managing tourist operations in line with tourism objectives. Sustainable Development (UNWTO, 2023) a key finding of the literature review is the value of integrating business excellence models but also ethical decision-making and environmental responsibility (Jamal et al., 2022) by using a business model that promotes continuous improvement. Students will learn to strike a balance between profitability and sustainability. This is an important capability in today's tourism industry where competitiveness in the market depends on more responsible practices (Gössling et al., 2020).

Experiential learning has become an important teaching strategy for sustainability education, internships, and fieldwork and collaborative projects with local communities help students apply theoretical knowledge in real-world settings. Promoting deeper engagement with sustainability concepts (Dredge et al., 2018), the success of such projects in Costa Rica and the Philippines Emphasis is placed on ecotourism and community tourism. Demonstrating the effectiveness of hands-on studying in selling sustainable tourism practices (Jamal et al., 2022), those tasks additionally highlight the importance of stakeholder engagement. This is because nearby groups aren't passive beneficiaries. But it is a accomplice in growing sustainable tourism. However, the problem continues. Especially in the context of emerging economies many classrooms face financial challenges. Lack of infrastructure and limited access to the era it contributes to sustainability related initiatives (Sheyvens & Biddulph, 2018). The institution is recognized for its understanding of sustainability and tourism. Lack of these also makes these problems worse. It limits students' exposure to modern knowledge and practices (Dredge et al., 2018). In addition, cultural resistance and skepticism create barriers to the implementation of sustainability education in some areas. To overcome these demanding conditions Academic institutions need to meaningfully collaborate with business stakeholders and policymakers to foster an environment to support sustainable projects.

This study also highlights the need to build stronger partnerships between academia and industry to promote sustainable practices. Businesses play an important role in providing internships, case studies, and other experiential learning opportunities. While educational institutions can help businesses adopt innovative practices (Gössling et al., 2020), this mutually beneficial relationship contributes to building a workforce that is both skilled and committed to sustainable development. Looking ahead Rapid technological advances provide new opportunities to expand sustainability education. Virtual simulation online courses and digital tools can remove geographic barriers and enhance student learning experiences especially in rural areas or resource-poor areas (Jamal et al., 2022). In addition, tourism education must be developed to address emerging problems such as climate change. Graduating students can adapt to new problems by being prepared for calamities and over tourism. In summary, the development of highly skilled professionals who are accountable and self-assured depends on the integration of sustainability and professional excellence in tourist education. This is particularly true in developing nations. Promising solutions are provided by recent partnerships between the educational and technology sectors. Consequently, the future of the sector is significantly shaped by sustainable tourism education social responsibility and environmental management in with economic growth.

Practical Implications

Integrating sustainability into hospitality and tourism education provides a number of practical benefits for industry and society. Graduates with knowledge of sustainability are more likely to drive environmentally responsible practices within tourism organizations, such as waste reduction, energy conservation, and carbon management (Gössling et al., 2020) for emerging economies. Sustainable tourism education aids in the promotion of tourism by supporting regional tourist development and providing a connection to the Sustainable Development Goals (SDGs). It safeguards natural and cultural resources while fostering economic progress (ONUTO, 1999, 2023). Additionally, integrating ethical and sustainable practices enhances student leadership and entrepreneurship. Business, such as that found in the EU curriculum, is a prime example. The framework can also promote collaboration with industry stakeholders to achieve a balance between social responsibility and profitability (Jamal et al., 2022) through field projects and internships. It helps students gain better experience in managing sustainable businesses (Sheyvens & Biddulph, 2018). These partnerships leverage tourism businesses by promoting innovation and sustainable strategies that increase capacity in the long-term competition. Tourism education plays an important role in shaping responsible personnel who can promote sustainable development and, in the face of global environmental and social challenges, the resilience of the tourism industry.

Limitations and Scope for Future Study

This research goes beyond providing a valuable perspective on how to integrate sustainability and business ethics into hospitality and tourism education. First, most of the academic publications included in the formal literature review system (SLR) are written in English. Although regional data from developing countries or other languages mayding to Sheyvens and Biddulph (2018), this restrict considered the results may be applied provide insight (Jamal et al., 2022), SY is still considered. The fact that issues and methods can differ greatly among settings and establishments present another challenge to the division of educational contexts. According to Sheyvens and Biddulph (2018), this restricts how broadly the results may be applied. Lastly, the research on the long-term impacts of sustainability education on academic results may be scant. This makes keeping an accurate check on the efficacy of research challenging. Future studies can deal with those barriers through engaging in cross-cultural comparative research to have a look at how sustainability schooling fits across exclusive regions and cultures. Longitudinal research looking at the career paths of tourism college students is also needed to verify the lengthy-time period impact of sustainability schooling on industry practices. In addition, researchers should explore the role of digitization in sustainability studies. It focuses on technology such as virtual simulation, augmented reality, and online platforms and how learning can be improved (Dredge et al., 2018). Further studies could also explore policy frameworks and incentives that encourage educational institutions and tourism businesses to adopt sustainability principles especially in low-income and developing regions. Expanding research to examine how education can respond to emerging issues such as climate change Disaster preparedness and how can it is over tourism. It will be helpful in creating flexibility in the tourism industry.

Conclusion

Sustainable hospitality and tourism education is essential to fostering a workforce that can address the complex challenges these industries face. In emerging economies where tourism plays an important role in economic development. A sustainability-focused education equips graduates with the skills and mindset needed to promote responsible tourism. Although challenges such as financial barriers, cultural resistance, and limited infrastructure will remain in place same as time Socio-economic phase: Educating future change makers in hospitality and tourism will be critical to achieving environmental goals. This study highlights the importance of integrating principles of sustainability and business excellence in hospitality and tourism education. This research emphasizes how crucial it is to include professional excellence and environmental concepts into hospitality and tourism education. This is particularly true for developing nations. This is due to the fact that tourism plays a significant role in propelling global economic expansion. This is because tourism is an important factor in driving economic growth around the world. Therefore, studies should address the environmental and social impacts associated with this industry. To ensure long-term sustainability (UN, 2023), the document recommends integrating sustainability into the curriculum. There is an individual focus on continuous improvement. Instead, it will prepare students with the knowledge and skills to lead sustainable tourism practices. Judgment of performance and quality (Jamal et al., 2022) these experiences not only build technical competence but also an understanding of local culture and the importance of stakeholder cooperation in sustainable tourism (Dredge et al., 2018). However, challenges remain. This is especially true in areas with limited resources, which have limited financial resources and infrastructure and lack of qualified teachers. This hinders the full adoption of sustainability-focused learning (Sheyvens & Biddulph, 2018) and, with it, industry collaboration. Innovation therefore offers promising solutions. Virtual online platforms and blended learning systems can enhance learning. Particularly in low-resource areas (Gössling et al., 2020), future education programs will need to adapt to emerging challenges such as climate change.

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A Review on Deen Dayal Upadhyaya Grameen Kaushalya Yojana in India

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Abstract

The paper presents a comprehensive review of literature relevant to Deen Dayal Upadhyaya Grameen Kaushal Yojana. The first section examines studies on employment generation programs, excluding DDU-GKY. The second section focuses on literature related to poverty eradication efforts. The third section reviews research on skill development, training, and placement initiatives. The final section critically analyses studies specifically related to the DDU-GKY program and its impact. The paper concludes by identifying the research gaps that emerge from the existing body of literature. Numerous studies have examined rural employment programs, skill development, and poverty eradication initiatives, including the DDU-GKY. However, there is a notable absence of comprehensive evaluations that specifically address the nuanced impact of DDU-GKY on poverty alleviation in a regional context. Many studies focus on national-level evaluations or compare various rural development programs, often neglecting the specific socio-economic and structural challenges faced by states. Post-placement dynamics like job retention, income sustainability, and long-term economic mobility of the beneficiary were overlooked. The existing literature does not capture whether DDU-GKY promotes sustainable livelihood transitions or effectively addresses the interconnected dimensions of poverty distinct to rural communities across India.

Keywords: *DDU-GKY, Skilling, Training, Impact, Socio-Economic Transformation, Livelihood, Poverty Eradication, India*

Introduction

India, a nation renowned for its thriving economy and rich cultural legacy, struggles with the harsh reality of poverty. Even with notable progress across different sectors, a substantial segment of the rural population still grapples with severe issues related to poverty and insufficient access to essential services in the nation. The high incidence of poverty in rural India stems from various interrelated factors, including restricted access to education and healthcare services, poor infrastructure, and a lack of adequate employment opportunities. The interplay of these elements has created a self-reinforcing cycle of poverty, significantly obstructing the comprehensive development and welfare of rural communities throughout the country. Grasping the nuances and challenges of poverty is essential for formulating impactful strategies and interventions that can elevate these underserved communities and foster a more inclusive and equitable India.

In several nations, the issue of youth unemployment stands as a significant economic and political challenge. The Government of India has initiated several skill training programs to enhance employment opportunities for the youth. The ongoing pandemic and economic decline once more highlight the significant obstacles to job creation, particularly the reasons behind the sluggish pace of the Indian economy in producing more productive employment opportunities. Conversely, the growing population and significant migration from rural to urban regions have exacerbated the housing crisis, leaving many individuals without sufficient housing and essential amenities. Considering the prevailing supply and demand dynamics, the income generated from this endeavour may fall short of providing adequate household earnings for a family with non-working dependents to rise above the poverty threshold.

54% of India population is young and faces a high rate of disguised unemployment. The DDU-GKY program is distinctive in its focus on serving marginalised youth from rural backgrounds. They face substantial socio-economic obstacles to accessing formal employment. Youth unemployment is a significant concern in India, with rural youth facing particular disadvantages stemming from limited access to quality education, insufficient vocational training, and a scarcity of employment opportunities in their vicinity. DDU-GKY targets these deficiencies by emphasising skill development opportunities aligned with industry requirements.

Overview of Ddu-Gky

The Ministry of Rural Development, Government of India launched the Deen Dayal Upadhyaya Grameen Kaushalya Yojana in 2014 as a flagship skill development and poverty alleviation initiative under the National Rural Livelihood Mission. This program focuses on rural youth from economically disadvantaged backgrounds, aiming to equip them with industry-relevant skills and provide guaranteed placement opportunities in the formal sector. DDU-GKY is critical to the larger agenda of inclusive growth and long-term poverty eradication of the nation because it addresses unemployment and promotes economic empowerment. The scheme aims to transform lives of 55 million poor rural youth who are ready to be skilled by providing sustainable employment. The programme acknowledges that the youth of India are its most valuable resource and that over 60% population lives in rural areas, making them a crucial demographic for economic transformation.

DDU-GKY is distinguished by a focus on placement-linked skill development, which ensures that at least 70% of trained candidates find regular-wage employment. The scheme prioritises inclusivity by allocating minimum quotas to socially disadvantaged groups: 50% for Scheduled Castes (SC) and Scheduled Tribes (ST), 15% for minorities, and 33% for females. The scheme focuses on post-placement retention and career advancement, providing support mechanisms such as migration support centres and alumni networks to ensure long-term benefits for the beneficiaries. DDU-GKY stands out from other skill development programs by focusing on sustainable livelihoods rather than just training.

Recognising the diverse needs of the rural population in India, DDU-GKY includes several region-specific initiatives. "Roshni" addresses the challenges of left-wing extremism-affected areas by providing mandatory residential training that prioritises the participation of the women category. "Himayat" aims to help both rural and urban youth in Jammu and Kashmir, including those living below the poverty line (BPL) and above the poverty line (APL), find work and start their businesses. North Eastern states receive special attention through flexible guidelines and enhanced support structures to address the unique challenges of the regions.

DDU-GKY utilises a three-tier implementation model. At the national level, the MoRD is in charge of policy formulation, funding, and technical support. State Rural Livelihood Missions (SRLMs) and State Skill Missions execute the program at the state level, implementing its operational components. Project Implementing Agencies (PIAs), which include private, public, and civil society organisations, are critical in providing training and ensuring placements. The integration of the scheme with other rural development initiatives broadens its reach and impact.

The operational process of this scheme consists of several stages: beneficiary mobilisation, counselling, and selection; skill training using standardised curricula; and post-placement support. Mobilisation efforts are centred on identifying and enrolling candidates from underserved communities, with Gramma Panchayats and Self-Help Groups (SHGs) serving as primary outreach channels. Training centres are outfitted with cutting-edge infrastructure, qualified trainers, and IT-enabled facilities to ensure high-quality skill development. Placement strategies focus on matching candidates to industry demands, while post-placement services include migration assistance, alum tracking, and counselling to promote retention and career growth.

The implementation of DDU-GKY is based on robust monitoring and evaluation mechanisms. Performance is measured using a variety of metrics, including training quality, placement rates, retention metrics, and career progression outcomes. ERP systems and geotagged, time-stamped biometric attendance help to ensure transparency and accountability. SRLMs and MoRD conduct regular inspections, audits, and concurrent evaluations to maintain program standards and address implementation challenges.

Since its inception, DDU-GKY has made significant progress in skill development and poverty alleviation. Millions of rural youth have been trained and placed in formal sector jobs, thereby boosting their economic empowerment. Notable successes include increased participation from women and marginalised communities, as well as the impact of the program in remote and underserved areas. However, challenges remain, such as high dropout rates, regional disparities in implementation, and gaps in post-placement retention. Addressing these issues is critical for maximising the potential of the scheme.

The contribution of the scheme to poverty alleviation and rural livelihoods is consistent with an overall vision of the nation to become a global skills hub. By addressing unemployment and skill gaps, the program promotes inclusive growth and reduces socioeconomic disparities. Its emphasis on sustainable livelihoods and community engagement serves as a model for future rural development initiatives. It also represents a transformative approach to skill development and poverty alleviation in rural India. Its emphasis on placement-linked training, inclusivity, and post-placement support has enabled millions of rural youth to secure long-term employment opportunities. Moving forward, addressing implementation challenges and expanding its reach will be critical for realising its full potential and contributing to the socio-economic development of the nation.

Studies on Ddu-Gky

Krishnappa and Agarwal, 2023 propose the complexities of poverty in India necessitate ongoing policy reforms, transparent governance, and active community participation. Combating corruption, improving resource allocation, and encouraging innovation are critical to the success of these initiatives. By investing in sustainable agricultural practices, renewable energy, and education, India can close the urban-rural divide and pave the way for prosperity. Individual empowerment through education, skill development, and access to essential services breaks the cycle of poverty while also ensuring a brighter, more inclusive future for all.

The Economic Survey 2022–23 highlights the findings of the 2022 UNDP report on the Multidimensional Poverty Index, indicating that 41.5 crore individuals in India escaped poverty between 2005–06 and 2019–20. The relentless pursuit of the nation to eradicate poverty and enhance the quality of life for its citizens has yielded significant results, showcasing a noteworthy achievement in this endeavour. The significant advancements observed across the economic landscape are prominently featured in the Economic Survey 2022-23. Job prospects are emphasised, alongside the notable increase in job creation and the decline in unemployment rates. The survey underscores the advancements achieved in education and healthcare, revealing that more individuals now enjoy enhanced access to superior educational and medical opportunities. It underscores the focus of the government on enhancing infrastructure, leading to better connectivity and living standards in both rural and urban areas. As India advances in its adoption of digital platforms for financial transactions and service delivery, the survey recognises the significant impact of technology and digitalisation in fostering economic growth and inclusivity.

The Labour Bureau Report 2014 indicates that the formally skilled workforce of the nation is relatively limited, standing at around 2%. The absence of structured vocational education, elevated high school dropout rates, insufficient capacity for skill training, unfavourable attitudes towards skill development, and a deficiency of industry-relevant skills in professional courses collectively contribute to the subpar skill levels of this workforce. At the national level, approximately 6.8% of individuals aged 15 and older are engaged in vocational training. Previously, there existed a variety of programs lacking proper connections, and many of the initiatives have deviated from their original objectives. Prior research indicates that numerous initiatives have either faltered or become ineffective due to a lack of alignment with actual needs or an absence of expected outcomes. The implementation of placement-linked skill training through DDU-GKY is launched with heightened anticipation, as it is both need-based and driven by demand.

The National Policy for Skill Development & Entrepreneurship 2015 has recognised a significant skills gap of 109.73 million across 24 essential sectors by the year 2022. Achieving this figure necessitates a focus on the 55 million individuals living Below the Poverty Line in India. A study released by FICCI in 2012 highlighted a significant deficit of more than 47 million skilled workers worldwide by the year 2020. This represents a unique chance for India to leverage its demographic dividend into the global job markets, thereby capitalising on its economic advantages. DDU-GKY values its partners, and the collaboration is promoted to enhance the scale and capacity of the scheme.

The DDU-GKY initiative is structured into three distinct phases as outlined in the Annual plan—the initial phase spanned from 2014 to 2016, followed by a second phase from 2017 to 2019. However, due to the COVID-19 pandemic, this latter phase has been extended until 2023. The implementation of the third phase is scheduled for the year 2024. Upon examining the initial two phases it is primarily characterised by a process of experimentation and adjustment. The government has implemented numerous adjustments and revisions to date. For instance, as outlined in the Standard Operating Procedures from July 2016, four significant changes have taken place in this scheme concerning project appraisal, PIA eligibility, the expansion of the target group, and industrial internships. Aside from this, during the pandemic, certain modifications were implemented by the respective committees under the Government of India. All the modifications are designed to enhance the efficiency and streamline the program. Analysing the various policy implementations can yield substantial outcomes for future governmental policy initiatives. The third phase of the scheme is poised to impact the economy significantly. Current research focuses on the beneficiaries, examining their achievements and exploring their expectations. This study will significantly enhance the efforts of the implementation committees and the Government of India.

T, Athira Krishnan K (2020) identifies that Kerala still has pockets of poverty despite having high social development indicators, especially in areas where traditional livelihoods are no longer viable because of economic shifts. Poverty is made worse by differences in access to healthcare, education, and opportunities for earning a living. Many people living in rural areas are caught in a cycle of poverty as a result of these disparities, particularly young people. While not as bad as in many other states, poverty is still a major problem in Kerala. Underemployment and disguised unemployment are the main problems of the state, particularly for young people who have little access to good vocational training and opportunities for employment that meet market demands. With its emphasis on job placement and skill development, the DDU-GKY scheme is especially pertinent for filling this gap. To assess the efficacy of present tactics, further study is needed on the influence of such programs on eliminating poverty and enhancing rural livelihoods in Kerala.

The current employment situation in India, as measured by the Labour Force Participation Rate (LFPR), Worker Population Ratio (WPR), and Unemployment Rate (UR), shows a mix of progress and persistent challenges. Between 2017-18 and 2020-21, the LFPR showed a gradual increase in all categories (male, female, and total population). For males, LFPR increased by two percentage points, from 55.5% in 2017-18 to 57.5% in 2020-21. Females showed a more significant improvement, rising from 17.5% to 25.1% during the same period, representing a 7.6 percentage-point increase. This positive trend indicates that women's labour force participation is increasing, albeit at a slower rate than men's, emphasising the need for skill development and employment generation programs such as DDU-GKY to accelerate this progress.

The WPR, which measures the proportion of employed people in the population, also saw a gradual increase over the same period. Male WPR increased from 52.1% in 2017-18 to 54.9% in 2020-21, while female WPR increased significantly from 16.5% to 24.2%. This indicates that women's employment participation has improved, thanks in part to rural-focused livelihood initiatives. The national average for WPR reached 39.8% in 2020-21, representing a 5.1 percentage-point increase since 2017-18. Despite this progress, the presence of underutilised labour, particularly among rural youth, emphasises the need for targeted interventions such as DDU-GKY to improve employability through skill development.

In contrast, between 2017-18 and 2020-21, the unemployment rate (UR) decreased. The UR decreased from 6.2% to 4.5% in males and from 5.7% to 3.5% in females. This decline reflects a positive shift towards job opportunities. However, the COVID-19 pandemic disrupted economic activity in 2020, temporarily raising the unemployment rate before stabilising it in 2021. The data indicate that while the labour force is improving, it remains underutilised, particularly in rural areas. Programs such as DDU-GKY, which provide skill development and job placements to underprivileged rural youth, are critical to reducing unemployment and empowering the workforce.

The paper studies DDU-GKY in the development of rural youth in the state of Haryana. The study examines public interest in DDU-GKY and the interns recruited using secondary data from 2015 to 2021. According to the study, the government should create the best policy to guarantee stable employment for Haryana's youth, who have traditionally worked in agriculture. The article emphasizes the value of skill development in sustaining India's growth and development in its conclusion. In addition to making recommendations for the government on how to encourage inclusive growth and job opportunities for the state's youth, the study offers insights into the role of DDU-GKY in the development of rural youth in Haryana. The study on skill development in sustaining India's growth and development is a crucial step towards ensuring that the country continues to progress in a sustainable and inclusive manner. With recommendations for the government on how to encourage inclusive growth and job opportunities for the state's youth, this study provides valuable insights into the challenges faced by rural youth in Haryana. The role of DDU-GKY in the development of these young people cannot be overstated, as it has been instrumental in providing them with the necessary skills and training to succeed in today's competitive job market. By investing in skill development programs like DDU-GKY, India can ensure that its youth are equipped with the tools they need to contribute meaningfully to the country's economic growth and development. With a focus on inclusivity and sustainability, India can continue to build a brighter future for all its citizens.

Lalitha examines Skill Training for Rural Youth under DDU-GKY through a case study of the NAC in Telangana. The purpose of this article is to assess the efficacy of DDU-GKY in equipping low-income individuals with the specific knowledge, skills, and attitudes required to obtain full-time employment in the formal sector. The authors collected data from the NAC centre in Telangana as part of the article's case study methodology. Collecting information regarding the age group, education level, pre-training, and post-training status of rural youth is required for data analysis. The article's findings indicate that DDU-GKY is effective at providing rural youth with skill training. The article emphasises that the training program consists of eight hours of daily classes, including four hours of domain instruction and two hours each of soft skills and computer skills. The DDU-GKY SOP manages the lecture schedule, and CCTV monitors the centre.

The study also emphasizes the training program's difficulties in retaining female graduates in formal employment. Many women drop out of the program after only three months in their predominantly urban placements. This is primarily due to family pressure or a personal preference to reside in a rural area. The article suggests that in order to overcome the program's challenges, more support for female graduates is required. The authors recommend that the program provide more flexible working hours and rural placements. In conclusion, the article offers valuable insights into the efficacy of DDU-GKY in providing rural youth with skill training. The report identifies the program's obstacles and offers solutions for overcoming them. The article is well-written and offers a thorough analysis of the subject.

Chakravorty and Bedi analysed the problem of high youth unemployment in India and the mismatch between skills and location. The purpose of this article is to evaluate the efficacy of an information intervention in the DDU-GKY training program, which aims to close the skills gap by providing training and job placement to low-skilled rural youth. Working with a pool of 86 batches in the states of Bihar and Jharkhand, representing 2,488 trainees, and randomly selecting a subset of 42 batches to receive interventions is the methodology employed in this study. Comparing the outcomes of trainees who received the interventions to those who did not is the basis for the data analysis. The results of the study suggest that providing trainees with accurate information about available jobs during the training program can significantly increase the likelihood that they will accept employment at the conclusion of the program. The article suggests incorporating a few hours per month into the curriculum for the purpose of addressing employment issues on a regular basis during training. The article also emphasises the issue of misaligned trainee expectations, which can lead to attrition. The intervention can assist trainees with misaligned expectations to leave the training sooner, allowing other trainees to reap the benefits. The article notes that the intervention has little to no effect on women's outcomes; however, across DDU-GKY, women are significantly less likely to drop out of training and are more likely to remain in jobs offered by DDU-GKY training centres. The article provides valuable insights into how training programs in India can be made more effective in order to bridge the gap between skills and employment opportunities. The article's findings can aid policymakers and training providers in the design and implementation of effective training programs.

The first point made in the article is how crucial skill development is for giving young people in rural India access to employment opportunities. The study's objective is to evaluate the effectiveness of DDUGKY in terms of the number of beneficiaries who were trained and placed, as well as the program's effects on those beneficiaries' employment prospects and earning potential. The study's methodology entails both a review of the body of knowledge regarding skill development initiatives and an analysis of secondary information obtained from the Ministry of Rural Development, Government of India. Additionally, for the ICSSR Project, primary data were gathered through a micro-level study carried out in a few Andhra Pradesh districts. The data analysis shows that from 2015–16 to 201–20, roughly 53.89 per cent of trained rural youth in India were enrolled in the DDUGKY program. The percentage in Andhra Pradesh was 89.18 per cent. The primary data gathered also shows that beneficiary households' monthly income increased significantly after enrolling in the program. According to the findings of the study, the DDUGKY program has improved rural youths' employment prospects and income levels, which has had a significant economic impact on their quality of life. The higher household incomes have raised spending levels, which has raised their standard of living as a result. The study concludes by emphasising the need for further advancement in the DDUGKY program's implementation as well as the necessity for thorough assessments of the results of other skill development programs in India. The study offers important insights into how well the DDUGKY program works to give young people in rural India access to employment opportunities.

S. M., Allagh, et al (2021) analysis will compare the benefits of telephone befriending to a control group during a pandemic. During the COVID-19 pandemic, keeping a physical distance is necessary, but staying socially connected and engaged is essential. The PIAs have a post-placement tracking system for providing retention support to their students. The PIAs are motivated to deliver effective support by financial incentives, accreditations, and ratings. In this way, the trial will have a low loss to follow-up rate.

The experiment taught that bridging the gap between rural and urban youth requires much more targeted, active measures. Government interventions, like expanding the DDU-GKY training and placement program, got these youths (many of them women) jobs before the lockdown. The program of DDU-GKY has a positive impact on beneficiaries' training. After training, the beneficiaries' monthly income was below average. Skills training must help youth gain employability and live comfortably with a sufficient income. Thus, the training had no effect on the trainees' income. The impact of the training, on the other hand, was praised by the beneficiaries. The study focused on the impact of training on monthly income but found no significant changes, and it is found that training under DDU-GKY is limited to better employment with reasonable monthly income. Rao found the DDU-GKY skill training program is very successful in Gujarat, achieving 100% placement as envisioned by policymakers.

Chakravorty, Bhaskar, et al. (2024) assess the effects of delivering comprehensive information regarding job placements to vocational trainees participating in the DDU-GKY program in India, utilising a randomised experimental design. The findings indicate that trainees who were provided with this intervention demonstrated an 18% higher likelihood of staying in their positions after placement, with notable advantages for lower-caste, less-educated, and low-expectation male trainees. The intervention helped over-pessimistic trainees finish training and accept placements while encouraging over-optimistic trainees to drop out, improving selection. The findings underscore the critical role of information in improving employment outcomes for vocational trainees. The study emphasises the significance of educating trainees regarding job opportunities to improve placement results.

The study assesses the impact of the DDU-GKY on rural youth in Gujarat, with a focus on vocational skill development and employability. It uses a mixed-methods approach based on the Kirkpatrick training evaluation model to assess training effectiveness. Quantitative data from over 500 beneficiaries, combined with qualitative insights, highlight critical success factors and areas for improvement. The study emphasises the significance of public-private partnerships for effective vocational training and skill development. The findings indicate that, while vocational training is important, its success is dependent on program delivery quality and institutional engagement. To increase inclusivity and effectiveness, recommendations include strengthening public-private partnerships and expanding digital learning opportunities.

Conclusion

The paper presents a comprehensive review of literature relevant to Deen Dayal Upadhyaya Grameen Kaushal Yojana. The first section examines studies on employment generation programs, excluding DDU-GKY. The second section focuses on literature related to poverty eradication efforts. The third section reviews research on skill development, training, and placement initiatives. The final section critically analyses studies specifically related to the DDU-GKY program and its impact. The paper concludes by identifying the research gaps that emerge from the existing body of literature. Numerous studies have examined rural employment programs, skill development, and poverty eradication initiatives, including the DDU-GKY. However, there is a notable absence of comprehensive evaluations that specifically address the nuanced impact of DDU-GKY on poverty alleviation in a regional context. Many studies focus on national-level evaluations or compare various rural development programs, often neglecting the specific socio-economic and structural challenges faced by states. Post-placement dynamics like job retention, income sustainability, and long-term economic mobility of the beneficiary were overlooked. The existing literature does not capture whether DDU-GKY promotes sustainable livelihood transitions or effectively addresses the interconnected dimensions of poverty distinct to rural communities across India.

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