

# Sustainable Growth and Value Chain Optimization in Assam's Tea Gardens: A Study on Tea Gardens of Assam a Agrital India Approach

Partha Pratim Saikia<sup>1</sup>, and Prof(Dr) Debomalya Ghosh<sup>2</sup>

<sup>1</sup>Assistant Professor, Faculty of Management Studies, ICFAI University Tripura, Agartala, India

<sup>2</sup>Professor and Head, Department of Business Administration, Assam University, Silchar, India

Correspondence should be addressed to Partha Pratim Saikia; 1995parthasaikia@gmail.com

Received: 18 February 2025

Revised: 4 March 2025

Accepted: 19 March 2025

Copyright © 2025 Made Partha Pratim Saikia et al. This is an open-access article distributed under the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.

**ABSTRACT-** Assam is among the leading worldwide tea growers, the tea sector is vital to India's economy. Still, challenges including supply chain inefficiencies, environmental problems, and market volatility call for a careful evaluation of the tea value chain. With an eye on sustainable methods, especially Agrital India's approach, this paper aims to assess Assam's tea gardens using a value chain analysis framework. While noting main players and their individual roles, the study looks at the many aspects of the tea value chain—including manufacturing, processing, distribution, and marketing. Examining Agrital India's attempts for operational optimization helps one to highlight present shortcomings in productivity, labor management, and environmental criteria. To evaluate their impact on environmental and financial sustainability, research on sustainable practices including organic farming, fair trade certification, waste management, and responsible sourcing is done.

It looks at how Agrital India guarantees ongoing profitability and ecological balance by including sustainability into their value chain. The results clarify best practices that would guarantee fair trade and ethical business models while also improving efficiency and sustainability in Assam's tea industry. The study ends with recommendations or ideas for the legislators, business players, and tea garden owners to enhance the whole value chain. This covers the application of sustainable agriculture methods, strengthening of supply chain openness, and use of technology to raise market access. By offering a model that may be followed across India's tea industry to increase resilience and global competitiveness, this study improves the conversation on sustainable agriculture and supply chain management.

**KEYWORDS-** Agrital India, Tea Industry, Sustainability, Value Chain, Tea Supply Chain.

## I. INTRODUCTION

Assam, in the northeastern part of India, accounts for more than half of the nation's overall tea output. Assam's tea output is well known. Covering around 216,200 hectares, the region's tea gardens are not only vital for the province's economy but also significantly contribute to the social and cultural fabric of the area. The British East India Company

has been in charge of Assam's tea output from the dawn of the 19th century. This was achieved once the business started commercial tea cultivation after finding native tea plants and led pioneers in this field. Assam is a major participant in the worldwide tea market and well-known for its especially strong and malty teas derived from *Camellia sinensis* var. *assamica* plant. Assam's rich past has helped to establish Assam as a major participant in the tea industry. Over the past few years, Assamese tea business has been giving sustainability and value chain analysis more and more relevance. Growing demand for environmentally friendly approaches on a global level challenges stakeholders to adopt sustainable solutions that increase output while also lowering their impact on the surroundings. Using sustainable practices not only helps to address climate change's problems but also raises the whole resilience of the tea supply chain. This study aims to evaluate the tea gardens in Assam by means of a thorough value chain analysis. The study will focus on environmentally friendly methods and the effects those ones have on profitability and output. The purpose of this research is to identify important bottlenecks and potential for improvement within the tea supply chain by providing an examination of various stakeholders within the chain, ranging from producers to consumers. Within this framework, our objective is to provide useful insights that have the potential to cultivate a more sustainable future for the illustrious tea industry of Assam.

## II. RESEARCH GAP AND RESEARCH PROBLEM

The tea industry is a crucial contributor to India's economy, with Assam being one of the foremost global producers. Notwithstanding its significance, the sector has numerous problems, such as supply chain inefficiencies, variable market situations, and sustainability issues. Although several studies have investigated tea production and its economic impact, there is a paucity of study focusing on a comprehensive value chain analysis of Assam's tea sector from a sustainability perspective. The literature is deficient in thorough insights about the incorporation of sustainable practices in tea gardens, particularly concerning the novel

approaches employed by organizations such as Agrital India to improve efficiency and sustainability.

The research problem focuses on identifying inefficiencies in the tea value chain in Assam and evaluating the degree to which sustainability is incorporated into the production, processing, and distribution stages of the tea industry. Providing a case study that has the potential to serve as a paradigm for improving environmental and economic sustainability within the tea sector is the objective of this research project, which intends to remedy this shortcoming by analyzing the methods utilized by Agrital India.

### III. REVIEW OF LITERATURE

According to Shank and Govindarajan [20], strategic cost management arises from the integration of value chain analysis, strategic positioning analysis, and cost driver analysis. Among these three fundamental concepts, value chain analysis exerts considerable effect on other aspects of strategic cost management. Porter [18] presents the value chain idea for the strategic enhancement of enterprises or industries. This notion is elaborated upon by Shank and Govindarajan [19][20]. The fundamental concept of the value chain pertains to the series of value-creating operations that extend from primary raw material sources to component suppliers, culminating in the final product provided to customers. Shank and Govindarajan [20] assert that an expressive value chain facilitates strategic decision-making by enhancing the comprehension of a firm's competitive advantage. Porter [7] asserts.

The fundamental decision for a firm is to compete through either cost leadership or product differentiation. These two methodologies pursue markedly distinct conceptual frameworks [7] [8] [9][10]. The implementation of a cost leadership or differentiation strategy is contingent upon managerial decision-making and the characteristics of the business. The implementation of a cost leadership strategy in the commodity sector throughout the mature phase of company necessitates meticulous analysis to achieve the desired cost objectives. In this context, the accurate determination of target cost can assist the firm in establishing a competitive position within the industry. A multitude of studies has concentrated on strategic cost management, particularly the value chain and target costing concepts within the manufacturing and service sectors. Chen et al. [4] conduct study on Japanese subsidiaries in the United States, aiming to investigate the accounting practices employed within those subsidiaries. The study concludes that Japanese firms in the United States employ

analogous management accounting techniques, including target costing, value engineering, variable costing, and the strategic application of conventional methods such as standard costing and budgeting, akin to the Japanese utilization of activity-based costing and internal rate of return for evaluating principal firms. This study shows that Japanese enterprises based in the US are influenced by US firms to adopt activity-based costing and internal rate of return for evaluating capital investment projects. Shank [19] emphasizes the traditional Net Present Value (NPV) paradigm and connects this notion to strategic cost.

Management for the aim of decision-making. He conducts a comprehensive examination of US organizations and provides recommendations based on strategic cost management considerations, including value chain analysis, cost driver analysis, and competitive advantage analysis. Kato [14] focuses on the target costing methodology employed by Japanese firms aimed at cost reduction. He elucidates that an information system is essential for the implementation of target costing philosophy. Li and Whalley [15] examine the deconstruction and reconsolidation of the telecommunications industry from a transaction cost perspective and provide management strategies for this process. Maitland et al. [16] examine the European mobile data market and potential models for industry-wide value creation. Conversely, Chang and Hwang [3] conduct a comprehensive study on the manufacturing and service sectors in the US and Hong Kong, focusing on value chain cost analysis.

Remarkably, no research has been conducted on the agricultural sector, particularly the tea industry, emphasizing strategic cost management. Hazarika and Subramanian [11] elucidate the technical efficiency of production variables in the Assam tea business in India through the Stochastic Frontier Production Function Model. Their research focuses on productivity and production determinants. This study does not employ a value chain methodology, which is typically regarded as a fundamental analytical approach for the tea sector. Ariyawardana [1] conducts a comprehensive study on value-added tea producers in Sri Lanka, investigating the sources of competitive advantage and their correlation with the performance of tea growers. His analysis offers a comprehensive insight into this issue from a management perspective but neglects to evaluate the value chain and strategic remedies.

Tea Supply Chain.

The Assam Tea Supply Chain as described by (Partha Pratim Saikia et. al [17] is as follows (See figure 1)-

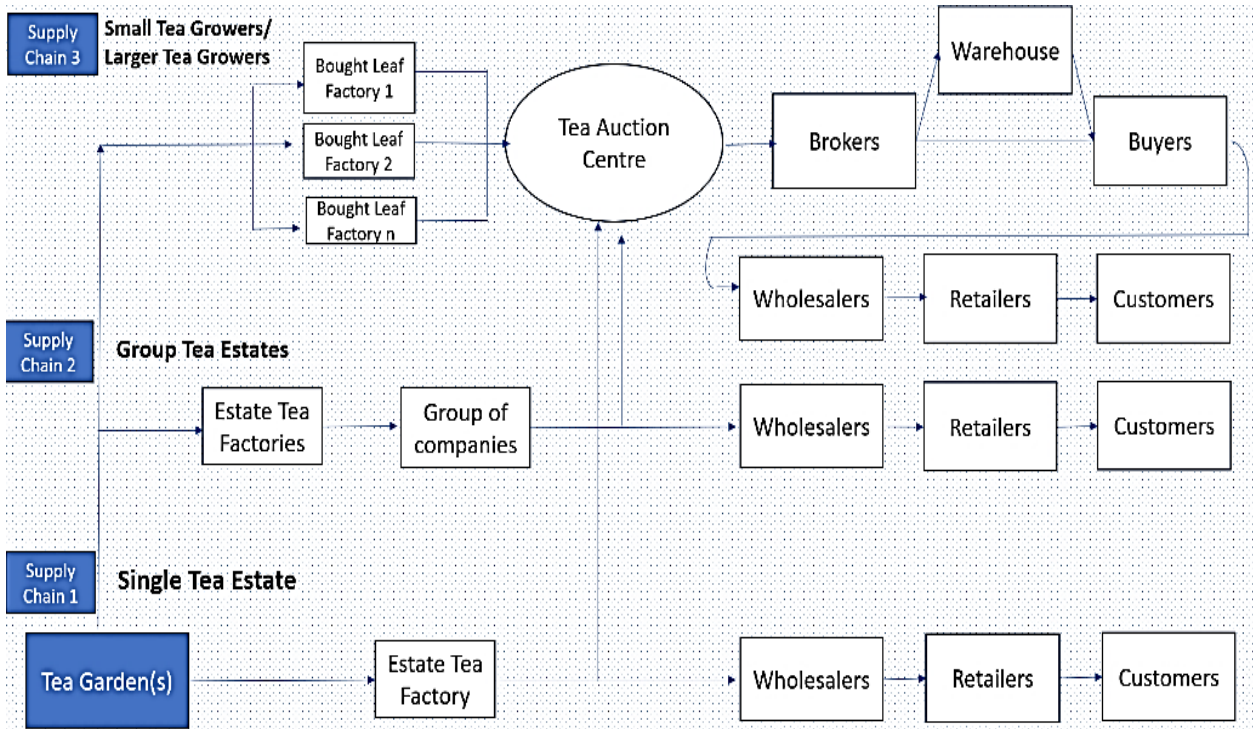


Figure 1: Adopted from the study done by Partha Pratim Saikia et. al, [17]

Also, in a study done by Huque, S. M. R. [13] discusses about the Japanese tea value supply chain. The value chain of the Japanese tea business commences with tea farmers and tea processing facilities. It is part of a collective of farmers who operate the business using a cooperative farming model. The farmers harvest green leaves based on the capacity of the processing facilities. Managers determine the quantity a farmer should harvest based on the production capability of the manufacturing facility on a

given day. The manufacturing facilities transform the green leaves into aracha, while agents maintain communication with the processing factory to establish pricing and assess the quality of aracha. The agents maintain communication with processing businesses, wholesalers, and cooperative farming associations that sell aracha. The distributors turn aracha into final green tea, further grade it, and ultimately sell it to retailers (Figure 2).

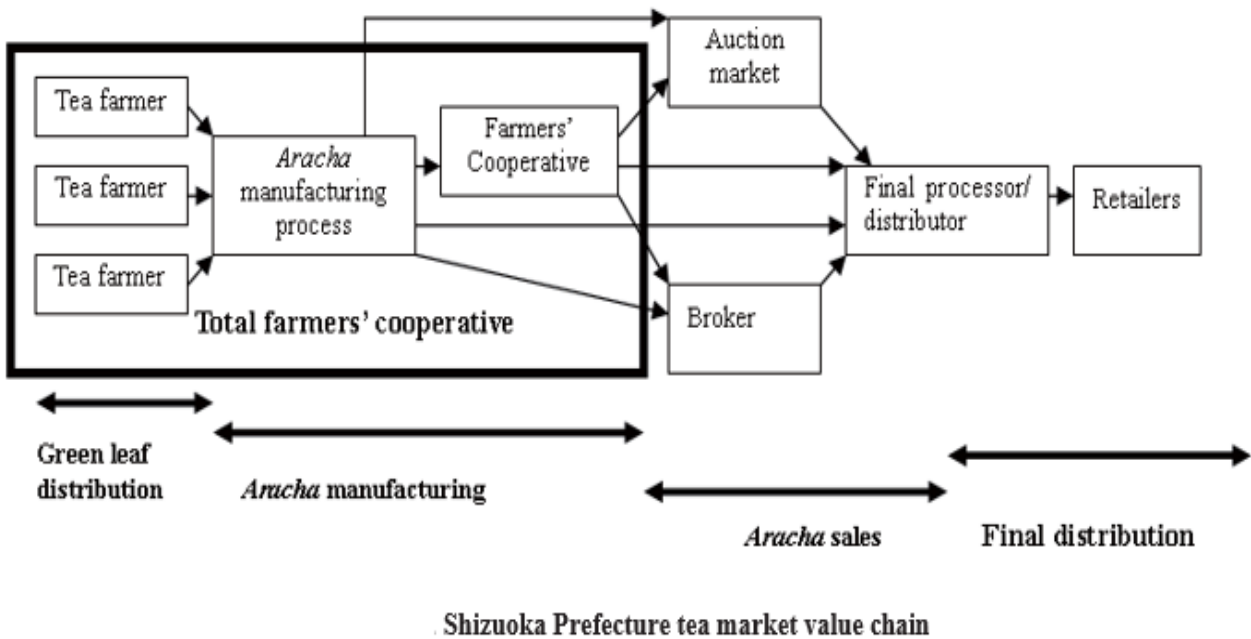


Figure 2: Adopted from Huque, S. M. R. [13]

Table 1: Review Matrix

AUTHOR(S)	YEAR	FOCUS AREA	KEY FINDINGS / CONTRIBUTIONS
Shank & Govindarajan [19][20]	1992, 1993	Strategic Cost Management (SCM)	SCM arises from Value Chain Analysis, Strategic Positioning Analysis, and Cost Driver Analysis. Value chain analysis significantly influences other SCM aspects. Enhances strategic decision-making by understanding competitive advantage.
Porter[7][18]	1980, 1985	Competitive Strategies & Value Chain	Firms compete via Cost Leadership or Product Differentiation. Value chain helps enhance firm/industry strategy.
Dess & Devis[7]	1984	Strategic Decision-Making	Cost leadership and product differentiation require distinct strategic frameworks.
Gilbert & Strebel[8]	1987	Strategic Frameworks	Strategic approaches depend on managerial choices and business characteristics.
Hall[9]	1980	Business Strategy	Effective cost leadership needs precise cost analysis, particularly in mature industries.
Hambrick[10]	1983	Strategic Choices	Business characteristics influence the adoption of cost leadership or differentiation strategies.
Chen et al.[4]	1997	Accounting Practices (Japanese Subsidiaries in US)	Japanese subsidiaries use Target Costing, Value Engineering, Variable Costing, Standard Costing, Budgeting, Activity-Based Costing (ABC), and Internal Rate of Return (IRR) for capital evaluation, influenced by US firms.
Shank[19]	1996	NPV & Strategic Cost Management	Links NPV with Strategic Cost Management using Value Chain Analysis, Cost Driver Analysis, and Competitive Advantage Analysis. Provides strategic recommendations based on US company studies.
Kato[14]	1993	Target Costing (Japanese Firms)	Emphasizes Target Costing for cost reduction and highlights the importance of an information system for implementation.
Li & Whalley[15]	2002	Telecom Industry (Transaction Cost Analysis)	Explores deconstruction and reconsolidation in telecom industry using Transaction Cost Perspective. Provides management strategies for these processes.
Maitland et al.[16]	2002	European Mobile Data Market	Examines models for industry-wide value creation in the mobile data sector.
Chang & Hwang[3]	2002	Value Chain Cost Analysis (US & Hong Kong)	Conducts value chain cost analysis in manufacturing and service sectors.
Hazarika & Subramanian[11]	1999	Assam Tea Industry (Technical Efficiency)	Uses Stochastic Frontier Production Function Model to analyze technical efficiency of production variables in Assam's tea industry. Focused on productivity, not value chain analysis.
Ariyawardana[1]	2003	Sri Lankan Tea Industry (Competitive Advantage)	Studies value-added tea producers and their competitive advantage sources, but does not evaluate value chain analysis or offer strategic cost solutions.

#### IV. RESEARCH OBJECTIVE

The main aim of this study is to perform a value chain analysis of Assam's tea gardens, emphasizing sustainability and operational efficiencies. By evaluating the activities of several stakeholders and pointing up areas of production, labor management, and environmental standards lacking, this study aims to propose specific solutions for development.

The main objectives are as follows:

- To assess the several phases of the tea value chain—from marketing to production.
- To identify the supply chain inefficiencies that affect general output.
- To suggest tactics to help industry players and legislators increase global competitiveness and sustainability. The study emphasizes the need of improved agricultural techniques, supply chain openness, and technology application to give more market access. The research provides strategic analysis to help Assam's tea industry

choose a more resilient and environmentally friendly corporate plan.

Summary: Emphasizing sustainability and operational efficiencies, this study aims to offer a complete value chain analysis of Assam's tea gardens. The study assesses the obligations of several stakeholders, investigates inefficiencies in labor management, environmental compliance, and manufacturing, and offers doable solutions for improvement.

From farming to marketing, the major goals are to evaluate the several stages of the tea value chain, spot supply chain inefficiencies, and examine how they affect general production. The report also seeks to offer recommendations for actions that industry players and legislators could follow to increase sustainability and raise Assam's world tea sector competitiveness.

The study points up pressing problems requiring quick attention including outdated farming techniques, workforce shortage, and environmental restrictions. It underlines the need of improved farming methods, more open supply chains, and the use of cutting-edge technologies to help

market access. Through addressing these issues, the industry may ensure ongoing resilience and sustainable development.

The results show the need of implementing technology-driven solutions including digital tracking systems for supply chain efficiency and sustainable agriculture practices to lower environmental harm as well as In order to ensure adherence to international environmental standards and encourage fair work practices, the report also advises policy initiatives.

This study aims to provide strategic insights to help the Assam tea industry to apply a sustainable and resilient business model, thereby improving its competitiveness in the worldwide market and preserving environmental and financial sustainability.

## V. RESEARCH METHODOLOGY

### A. Type of Research

The study problem has not been previously investigated or clarified in great detail, so exploratory research[5] is necessary. Complementing a Qualitative Approach aiming at getting factual information, the study uses a Quantitative Approach for data collecting and numerical representation [2], therefore avoiding abstraction regarding the objectives of the investigation. The study is empirical [12] and exploratory [6] in character.

### B. Type of Data

The research included both primary and secondary data.

### C. Source of Data

For Secondary statistics: Government statistics and data pertaining to tea factories were utilized.

Primary data pertinent to the study was gathered from managers of tea gardens.

### D. Demographics

The study's geographical scope is limited to Assam, with a total of 803 tea gardens [21].

### E. Sample Size

The Yamane (1967) formula was employed for the calculation of the sample size.

The population of Tea Garden in Assam is 803 [21].

Confidence level: 90 percent

The sample size for the specified population is 89 tea gardens.

### F. Sampling Methodology

Cluster sampling was utilized, concentrating on the geographic regions of Assam, which were categorized into four unique clusters. Approximately 23 tea gardens were chosen from each cluster. Subsequently, simple random sampling was employed inside each cluster to choose the tea gardens, guaranteeing an equitable and representative selection process.

## VI. MAJOR FINDINGS OF THE STUDY AND IMPLICATIONS OF THE STUDY

### A. Major Findings

The analysis identifies inefficiencies in logistics, procurement, and distribution that result in elevated costs and diminished market competitiveness.

- Labor Management Challenges- Assam's tea gardens encounter difficulties concerning labour shortages, wage inequities, and substandard working conditions, adversely affecting total production.
- Environmental Issues- Numerous tea plantations employ unsustainable farming methods, resulting in soil degradation, overuse of pesticides, and deforestation.
- Market Access and Digital Transformation- The implementation of digital marketing and direct-to-consumer sales strategies enhances revenue and guarantees increased transparency within the value chain.

### B. Implications of the Research

- Policy Recommendations- The research advocates for governmental policies that prioritize the promotion of sustainable agricultural practices, the incentivization of fair-trade certifications, and the investment in labor welfare initiatives.
- Industry Best Practices- Stakeholders in the tea sector may implement Agrital India's sustainable methodology to enhance efficiency, minimize waste, and uphold ethical business practices.
- Economic and Environmental Sustainability- The incorporation of sustainable agriculture techniques into the value chain can yield enduring profitability while mitigating environmental damage.
- Enhanced Market Positioning- Emphasizing sustainability and ethical sourcing bolsters the worldwide competitiveness of Assam's tea business, appealing to premium markets and fostering consumer trust.

## VII. CONCLUSION

The thorough value chain analysis of Assam's tea estates underscores the essential requirement for a comprehensive strategy to tackle operational inefficiencies, sustainability issues, and changing market demands. Assam, as a prominent worldwide tea grower, is essential to both India's economy and the international tea supply chain. Nonetheless, the report highlights that despite Assam's robust historical legacy and international acclaim, the region's tea sector confronts numerous urgent issues, including antiquated agricultural methods, workforce deficits, environmental non-compliance, and supply chain inefficiencies.

The study's findings indicate that enhancing supply chain transparency, implementing sustainable agriculture methods, and incorporating digital technologies can markedly improve productivity and profitability. Labor management challenges, such as wage inequities and substandard working conditions, must be resolved to foster a more equal and efficient workforce. Moreover, unsustainable agricultural practices, including excessive pesticide use, deforestation, and soil deterioration, provide enduring threats to both environmental integrity and the economic sustainability of Assam's tea fields.

The research underscores that Assam's tea industry must aggressively adopt sustainable practices, fair trade certifications, and novel agricultural techniques to satisfy the increasing worldwide demand for ethically sourced, high-quality tea. Augmented digital marketing, direct-to-consumer avenues, and supply chain digitalization can

further enhance market access and competitiveness. By integrating sustainability at each phase of the value chain — encompassing cultivation, processing, marketing, and distribution — Assam's tea industry can establish a robust, future-oriented ecosystem. Stakeholders, such as tea garden managers, policymakers, and industry leaders, must collaborate to promote sustainable practices, improve working conditions, and increase transparency along the value chain.

The research offers practical insights and strategic recommendations to assist Assam's tea sector in preserving its heritage while adapting to modern environmental, economic, and social issues. By adopting sustainable and technologically advanced methods, Assam's tea gardens may improve their worldwide competitiveness, secure long-term profitability, and foster a more resilient and responsible tea industry.

### CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

### ACKNOWLEDGMENT

I extend my heartfelt gratitude to all the tea garden managers for their unwavering support throughout my research journey. Your cooperation and insights have been invaluable. A special note of appreciation to my guide, Prof. Dr. Debomalya Ghosh, whose guidance and encouragement have been instrumental in shaping this study. Thank you for your invaluable support.

### REFERENCES

1. Ariyawardana, "Sources of competitive advantage and firm performance: The case of Sri Lankan value-added tea producers," *Asia Pac. J. Manag.*, vol. 20, pp. 73–90, 2003. Available from: <https://doi.org/10.1023/A:1022068513210>.
2. Barton and M. Hamilton, *Local Literacies: Reading and Writing in One Community*. London, UK: Routledge, 2012. Available from: <https://doi.org/10.4324/9780203125106>.
3. J. Chang and N.-C. R. Hwang, "The effects of country and industry on implementing value chain cost analysis," *Int. J. Account.*, vol. 37, no. 1, pp. 123–140, 2002. Available from: [https://doi.org/10.1016/S0020-7063\(02\)00134-6](https://doi.org/10.1016/S0020-7063(02)00134-6)
4. Y. S. A. Chen, T. Romocki, and G. J. Zuckerman, "Examination of US-based Japanese subsidiaries: Evidence of the transfer of the Japanese strategic cost management," *Int. J. Account.*, vol. 32, no. 4, pp. 417–440, 1997. Available from: [https://doi.org/10.1016/S0020-7063\(97\)90031-5](https://doi.org/10.1016/S0020-7063(97)90031-5)
5. L. Dablanc, E. Morganti, N. Arvidsson, J. Woxenius, M. Browne, and N. Saidi, "The rise of on-demand 'Instant Deliveries' in European cities," *Supply Chain Forum: Int. J.*, vol. 18, no. 4, pp. 203–217, 2017. Available from: <https://doi.org/10.1080/16258312.2017.1375375>
6. S. De Jesus and R. R. Rivera, "Assessment on the allocation of Cash Grants of 4Ps beneficiaries to their daily expenditures," *Int. J. Adv. Eng. Manag. Sci.*, vol. 6, no. 2, 2020. Available from: <https://tinyurl.com/4bah2paf>
7. G. Dess and P. S. Davis, "Porter's (1980) generic strategies as determinants of strategic group membership and organizational performance," *Acad. Manage. J.*, vol. 27, no. 3, pp. 467–488, 1984. Available from: <https://doi.org/10.5465/256040>

8. X. Gilbert and P. Strebel, "Strategies to outpace the competition," *J. Bus. Strategy*, vol. 8, no. 1, pp. 28–36, 1987. Available from: <https://doi.org/10.1108/eb039185>
9. W. K. Hall, *Survival Strategies in a Hostile Environment*. Boston, MA: Harvard Business School Publishing, 1980.
10. D. C. Hambrick, "High profit strategies in mature capital goods industries: A contingency approach," *Acad. Manage. J.*, vol. 26, no. 4, pp. 687–707, 1983. Available from: <https://doi.org/10.5465/255916>
11. Hazarika and S. R. Subramanian, "Estimation of technical efficiency in the stochastic frontier production function model—An application to the tea industry in Assam," *Indian J. Agric. Econ.*, vol. 54, no. 2, pp. 201–211, 1999. Available from: <https://tinyurl.com/325pv4zy>
12. N. Huda, N. Rini, Y. Mardoni, and P. Putra, "The analysis of attitudes, subjective norms, and behavioral control on muzakki's intention to pay zakah," *Int. J. Bus. Soc. Sci.*, vol. 3, no. 22, pp. 271–279, 2012. Available from: <https://tinyurl.com/333wpv6u>
13. S. M. R. Huque, "Strategic cost management of tea industry: Adoption of Japanese tea model in developing country based on value chain analysis," *Yokohama J. Soc. Sci.*, vol. 11, no. 4/5, pp. 55–71, 2007. Available from: <https://tinyurl.com/yu6v4y2s>
14. Y. Kato, "Target costing support systems: Lessons from leading Japanese companies," *Manag. Account. Res.*, vol. 4, no. 1, pp. 33–47, 1993. Available from: <https://doi.org/10.1006/mare.1993.1002>
15. Li and J. Whalley, "Deconstruction of the telecommunications industry: From value chains to value networks," *Telecommun. Policy*, vol. 26, no. 9–10, pp. 451–472, 2002. Available from: [https://doi.org/10.1016/S0308-5961\(02\)00056-3](https://doi.org/10.1016/S0308-5961(02)00056-3)
16. F. Maitland, J. M. Bauer, and R. Westerveld, "The European market for mobile data: Evolving value chains and industry structures," *Telecommun. Policy*, vol. 26, no. 9–10, pp. 485–504, 2002. Available from: [https://doi.org/10.1016/S0308-5961\(02\)00028-9](https://doi.org/10.1016/S0308-5961(02)00028-9)
17. P. P. Saikia and D. Ghose, "Exploring the supply chain of Assam's tea gardens: Analyzing the dynamics of Assam's tea supply chain," *Int. J. Creat. Res. Thoughts*, vol. 13, no. 1, 2025. Available from: <https://tinyurl.com/3eauz62u>
18. M. E. Porter, *Competitive Advantage*. New York, NY: The Free Press. Available from: <https://tinyurl.com/5p2f7vu>
19. J. K. Shank, "Analysing technology investments—from NPV to strategic cost management (SCM)," *Manag. Account. Res.*, vol. 7, no. 2, pp. 185–197, 1996. Available from: <https://doi.org/10.1006/mare.1996.0011>
20. J. K. Shank and V. Govindarajan, "Strategic cost management: The value chain perspective," *J. Manag. Account. Res.*, vol. 4, 1992. Available from: <https://tinyurl.com/3hjm9b7c>
21. <https://ttwd.assam.gov.in/>

### ABOUT THE AUTHORS



**Partha Pratim Saikia** is currently serving as an Assistant Professor at ICAFI University, Tripura. He is also pursuing his PhD at Assam University, Silchar, with a research focus on the supply chain of tea gardens in Assam. Before transitioning into academia, he gained approximately 3.5 years of industry experience, working as a Software Research Analyst at Select Hub and as an HR Executive at Cholamandalam. Additionally, he has over a year of teaching experience. Academically, he holds an MBA in Operations and Marketing, for which he

was awarded a Gold Medal, and a B.Tech in Electronics and Communication Engineering (ECE), where he earned a Silver Medal. His research acumen was further honed through internships at esteemed institutions such as IIT Indore and NIT Silchar, where he gained valuable exposure to research and analysis.



**Prof.(Dr.) Debomalya Ghosh** is the Professor and Head of the Department of Business Administration at Assam University, Silchar. With over 20 years of teaching experience, he possesses extensive expertise in Operations Management, Operations Research, Supply Chain Management, and various other domains. His vast knowledge and academic contributions have significantly enriched the field of management studies.