

Expected Role and Current Status of Use of Key Performance Indicators by Export-Oriented Firms in the Plantation Sector of Sri Lanka

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EXPECTED ROLE AND CURRENT STATUS OF USE OF KEY PERFORMANCE INDICATORS BY EXPORT-ORIENTED FIRMS IN THE PLANTATION SECTOR OF SRI LANKA

Abstract: Key Performance Indicators (KPIs) are critical tools for aligning organizational performance with strategic objectives, particularly for export-oriented firms in the plantation sector. This study examines the role and current state of KPIs in enhancing performance within the industry, focusing on how firms institutionalize these metrics to measure and guide their success. Semi-structured interviews (n = 10) with managers from export-oriented firms provided insights into KPI challenges and opportunities. Thematic analysis using MAXQDA software revealed five key themes: barriers to KPI implementation, performance challenges, strategic synergy, market value addition, and technological innovations for optimization. Although essential for aligning performance with strategic goals, significant challenges remain in integrating KPIs into existing organization strategic plans including rapid KPI changes and stakeholders' limited understanding of SMART objectives. The research highlights the need for KPIs to evolve alongside technological advancements, ensuring they remain intact and effective in guiding firms toward enhanced competitiveness and operational efficiency in the global market. Consequently, this study emphasizes the strategic importance of well-implemented KPIs for driving success and sustainability in Sri Lanka's export-oriented plantation sector.

Keywords: Export-oriented firms, Key Performance Indicators, Plantation sector, Performance evaluation

Introduction

The plantation sector is a major contributor to Sri Lanka's economy, occupying approximately 800,000 hectares of land and producing key exports such as tea, rubber, and coconut, collectively accounting for a significant share of the nation's foreign exchange earnings. Additionally, the plantation industry generates substantial employment opportunities, particularly in rural areas, thereby contributing to poverty alleviation, community development, and the overall socio-economic well-being of the nation. Beyond their economic value, these exports underscore Sri Lanka's agricultural expertise and reinforce its reputation for producing high-quality goods in global markets (Weerarathna, 2023).

Recognizing the importance of the sector, the Sri Lanka Export Development Board (SLEDB) aims to assist local exporters in expanding their business internationally. However, enhancing sector performance requires more than market expansion. Current challenges, such as the absence of tools for data-driven decision-making have hindered efforts to improve productivity and operational efficiency. Addressing these gaps through adopting performance monitoring frameworks, digital technologies, and precision agriculture methods can drive significant advancements in yield optimization, cost reduction, and supply chain management. By integrating these measures, the sector could not only improve its global competitiveness but also ensure sustainable growth and long-term economic resilience (SLEDB, 2023).

KPIs play a pivotal role in evaluating the economic viability and promoting the sustainability of export-oriented firms. These metrics help organizations achieve their vision and mission by focusing on SMART (Specific, Measurable, Achievable, Relevant, and Timebound) objectives, thereby helping them to achieve their vision and mission effectively (Abeyseriwardana & Jayasinghe-Mudalige, 2021a). KPIs not only serve as performance drivers but also provide actionable insights to improve productivity, streamline processes, and enhance decision-making.

While the potential of KPIs is well-established, their effective application within Sri Lanka's plantation sector is not very well explored. This study explores these gaps by analyzing their current application and the challenges that hinder their effective utilization within Sri Lanka's plantation sector. Through in-depth interviews with industry experts and stakeholders, the research aims to identify and define sector-specific KPIs and associated strategies that drive competitiveness, flexibility, and operational efficiency. Emphasizing the need for data-driven approaches, the findings seek to provide actionable insights to drive innovation and ensure long-term sustainability in the plantation sector.

Literature Review

The utilization of KPIs has been widely recognized as an effective mechanism for managing organizational performance across various industries, yet comprehensive research on KPI utilization in the plantation sector remains limited, despite its economic significance. KPIs provide a structured approach to evaluating both financial and non-financial metrics, enabling organizations to align their operational goals with strategic objectives (Kaplan & Norton, 1997; Parmenter, 2007). While prior studies have mostly focused on financial metrics such as yield per hectare and labor productivity, the integration of non-financial performance indicators such as environmental sustainability, employee well-being, and supply chain efficiency, has received less attention (Ministry of Plantation, 2021).

The importance of incorporating a broader range of KPIs is emphasized in the literature on sustainable performance management. Non-financial KPIs are critical for addressing the long-term challenges faced by industries, including resource scarcity, environmental degradation, and fluctuating market demands (Neely *et al.*, 1995; Richard *et al.*, 2009). These indicators enable organizations to monitor key dimensions of sustainability, such as carbon footprint reduction and community engagement, which are increasingly relevant in the context of global supply chains (Schaltegger & Wagner, 2017; Bocken *et al.*, 2014).

In the plantation sector specifically, the reliance on financial metrics alone has been criticized for failing to capture the complexities of agricultural production systems and their socio-economic impacts (Udugama *et al.*, 2011; Ministry of Plantation, 2021). For instance, while yield per hectare is a vital measure, it does not account for the environmental costs or social implications of achieving high productivity levels. This gap highlights the need for a more balanced approach to performance measurement, where financial and non-financial KPIs are integrated to provide a comprehensive view of sector performance (Gunarathne *et al.*, 2021; IPS, 2021).

The role of KPIs in enhancing operational efficiency and competitiveness has been well-documented across industries (Parmenter, 2007; Marr, 2013). However, their application in the plantation sector, which is vital to Sri Lanka's economy, has yet to be fully explored. The plantation sector's contribution to foreign exchange earnings and rural employment underscores the importance of developing robust performance measurement frameworks to ensure its sustainability and competitiveness (Weerarathna, 2023). By identifying and implementing relevant KPIs, industry stakeholders can optimize resource allocation, enhance productivity, and strengthen market positioning (Kaplan & Norton, 1996; Neely *et al.*, 1995).

Recent studies have also highlighted the potential of digital technologies and data-driven decision-making in advancing the effectiveness of KPI systems (Abey Siriwardana & Jayasinghe-Mudalige, 2021; Abey Siriwardana & Jayasinghe-Mudalige, 2025). The integration of advanced analytics and real-time monitoring tools can further enhance the adaptability and responsiveness of KPI frameworks, making them better suited to address the dynamic challenges of the plantation sector.

This research addresses this gap by evaluating the KPIs most relevant to the sector and exploring their potential contributions to improving sector performance. The integration of both financial and non-financial KPIs is particularly important for aligning industry practices with national and global sustainability goals (Schaltegger & Wagner, 2017; Ministry of Plantation, 2021). By bridging the gap between financial and non-financial performance metrics, this research aims to contribute to the creation of a more holistic and effective performance strategy, ultimately ensuring the sector's long-term sustainability and competitiveness. Moreover, the findings of this research can guide policymakers and industry leaders in designing performance strategies that are not only effective but also equitable and environmentally sustainable.

Methodology

Conceptual and Theoretical Framework

This study uses a qualitative method to explore how managers view KPIs in performance management within the plantation industry. The research aims to gain insight into this sector's approach to measuring and managing performance. KPIs are essential for managing performance, and the study aims to explore the formulation, implementation, and assessment of KPIs in Sri Lanka's plantation sector, where firms are export-oriented.

The study used semi-structured interviews (n=10) to collect data from managers representing diverse firms within Sri Lanka's plantation sector. Participants were selected based on their extensive industry experience and involvement in KPI development. An interview guide was utilized to facilitate a consistent yet flexible approach, allowing for in-depth exploration of how organizations design, track, and utilize KPIs. This approach enabled the research to gather rich qualitative data, providing valuable insights into how KPIs enhance operational efficiency and competitiveness.

The 10 participants included senior and mid-level managers with roles in operations, quality assurance, and strategic planning. Their experience ranged from 5 to over 15 years in the plantation sector. And they represented firms of varying sizes from small-scale operations to large export-oriented enterprises. The sample size of 10 was deemed sufficient as it provided thematic saturation (Abey Siriwardana *et al.*, 2023; Francis *et al.*, 2009).

The attitudinal responses of the interviewees were categorized into codes, sub-themes, and themes, which addressed six core research questions based on past literature (Abey Siriwardana and Jayasinghe-Mudalige, 2021a, 2021b). These questions probed the existence of technical or psychological barriers to KPI use, the number of KPIs adopted, sector-specific KPIs, ease of understanding among non-managerial staff, decision-making facilitation via KPIs, and the adoption of digital tools for KPI tracking.

The data were analyzed using thematic analysis, a method that enables the identification and interpretation of patterns within the dataset (Braun & Clarke, 2006). Thematic analysis was chosen for its flexibility and capacity to identify patterns within qualitative data, enabling an in-depth exploration of complex phenomena such as KPI implementation. This method is particularly advantageous in understanding contextual nuances and deriving meaningful insights from managerial perspectives which are often shaped by unique organizational factors. The six steps of thematic analysis were used, starting from familiarization with the data and culminating in finalizing themes. This structured approach allowed for a comprehensive examination of how KPIs are employed to measure performance in the plantation sector.

Data collection and analysis

The target group for this study comprised managers of export-oriented plantation firms in Sri Lanka. A purposeful sampling method was used to select participants, ensuring that industry experts with significant experience in KPI development and implementation were included. Interviews were conducted via video conferencing to overcome geographical constraints, while minimizing logistical challenges. The use of open-ended questions facilitated an in-depth exploration of KPI practices, enabling respondents to share comprehensive insights and context-specific experiences that are essential for understanding the complexities of performance management in the plantation sector.

The interview data were manually transcribed and analyzed using MAXQDA 2024, a qualitative data analysis software. MAXQDA facilitated systematic coding, categorization, and visualization of themes, enabling the identification of relationships between key variables such as strategic alignment, sustainability, and technological adoption. Specific features, including the Code Relations Browser and Word Cloud were utilized to map interconnections and visualize patterns within the data. These tools enhanced the rigor and clarity of the analysis by offering detailed visual and textual representations of the findings. The thematic analysis identified five major themes: barriers to KPI implementation, performance challenges, strategic synergy, market value addition, and the role of technology in optimizing KPIs. The detailed insights managers provide will be useful for firms looking to improve their performance management systems. Addressing the challenges identified, such as providing better training for staff on KPIs, investing in technological upgrades, and ensuring that KPIs are aligned with strategic goals, could lead to significant improvements in organizational performance. Additionally, the findings suggest that firms should prioritize overcoming resistance to change and adopting robust digital solutions for KPI tracking.

This methodological approach builds upon prior studies by integrating thematic analysis with advanced qualitative software tools, allowing for a more structured and detailed examination of KPIs in the plantation sector. Unlike traditional qualitative analyses that may rely on manual coding, the use of MAXQDA provided a higher degree of precision and efficiency in identifying patterns. Additionally, this study's focus on a diverse sample of export-oriented firms ensures that the insights are both representative and actionable, addressing gaps in existing literature that often overlook non-financial KPIs and their impact on sustainability and competitiveness.

Results and discussion

A Word Cloud was generated from the interview transcripts to illustrate the frequency of important terms. In this visual representation, words like "KPIs", "Sustainability", "Vision and mission", and "Profitability" appeared prominently. The prominence of these words highlighted the key factors that managers prioritize when discussing KPIs, and they were particularly relevant to research questions 3 and 5, which explore how KPIs align with broader organizational goals such as sustainability and profitability.

performance more effectively. On the other hand, the CRB also identified weaker relationships or one-time interactions between certain codes. These included connections like:

- "Mitigation of risks" and "Importance of sustainability"
- "Performance metrics" and "Understanding of KPIs"
- "ERP system" and "Digitalization"
- "Non-managerial perception" and "Lack of knowledge of KPIs"

Digital tools including ERP systems, were increasingly adopted to streamline KPI tracking and enhance decision-making. However technological barriers, such as high implementation costs, persisted. A respondent noted: “Digitalization has helped us achieve better resource optimization, but the initial investment remains a challenge for smaller firms.”

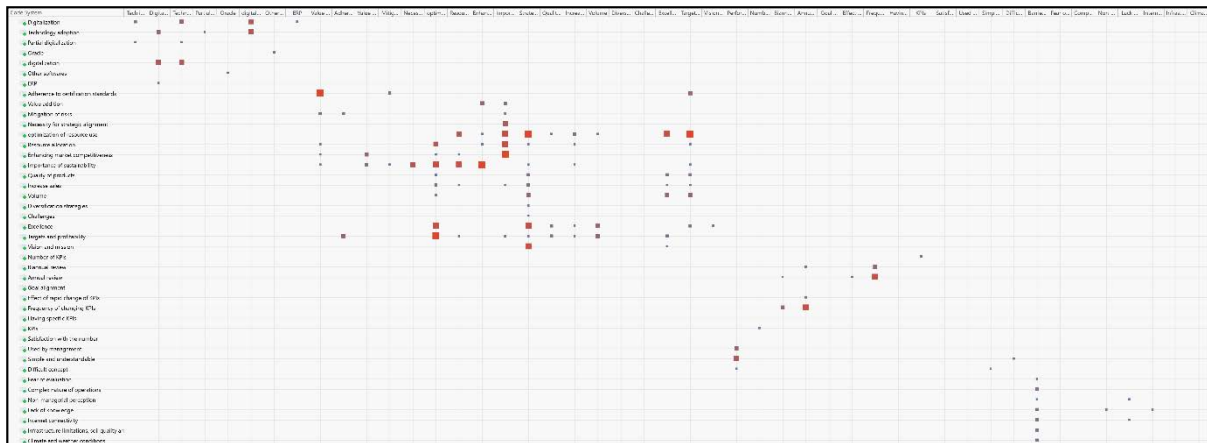


Figure 2: Code relations browser for KPIs in export-oriented firms

These weaker relationships suggest areas where further investigation is needed. For instance, while some managers recognized the importance of risk mitigation and performance metrics, these topics were not widely discussed or thoroughly explored, pointing to potential gaps in understanding or application. However, the author believes these challenges can be mitigated to a certain extent through several measures as described below:

1. Capacity Building and Training Programs: Conduct targeted workshops and hands-on training to improve understanding and effective utilization of KPIs across all levels of staff, particularly non-managerial roles.
2. Subsidized Access to Technology: Introduce public-private partnerships or government subsidies to lower the financial barriers for smaller firms adopting ERP systems and digital tools.
3. Participatory KPI Development: Engage employees at all organizational levels in the design and adjustment of KPIs to foster ownership and reduce resistance to change.
4. Incremental Digitalization: Implement digital systems in phases to distribute costs and reduce operational disruption. This allows smaller firms to gradually adapt to technological advancements without overwhelming financial burdens.
5. Tailored Sustainability Metrics: Incorporate specific sustainability-focused KPIs that align with both industries needs and global environmental goals, ensuring broader stakeholder buy-in.
6. Monitoring and Feedback Mechanisms: Establish continuous feedback loops to evaluate the effectiveness of KPIs and make necessary adjustments, ensuring they remain relevant and actionable.

The Single Case Model provided a comprehensive visualization of the relationships between various codes, highlighting key factors influencing KPI use and performance management. This graphical representation included coded segments of the interview data, illustrating the importance of several major themes. Some of the dominant factors that emerged in the analysis included:

- "Importance of sustainability"
- "Effect of rapid change of KPIs"
- "Strategic synergy"
- "Performance challenges"

These entities were represented by thicker lines in the visual output, indicating their central role in shaping organizational performance. For example, sustainability and strategic alignment were consistently identified as critical to enhancing performance in export-oriented firms. Conversely, certain areas were represented by thinner lines, signaling weaker or less frequent discussions. These included:

- "Having specific KPIs"
- "Digitalization"
- "Understanding of KPIs"
- "Barriers to KPI implementation"

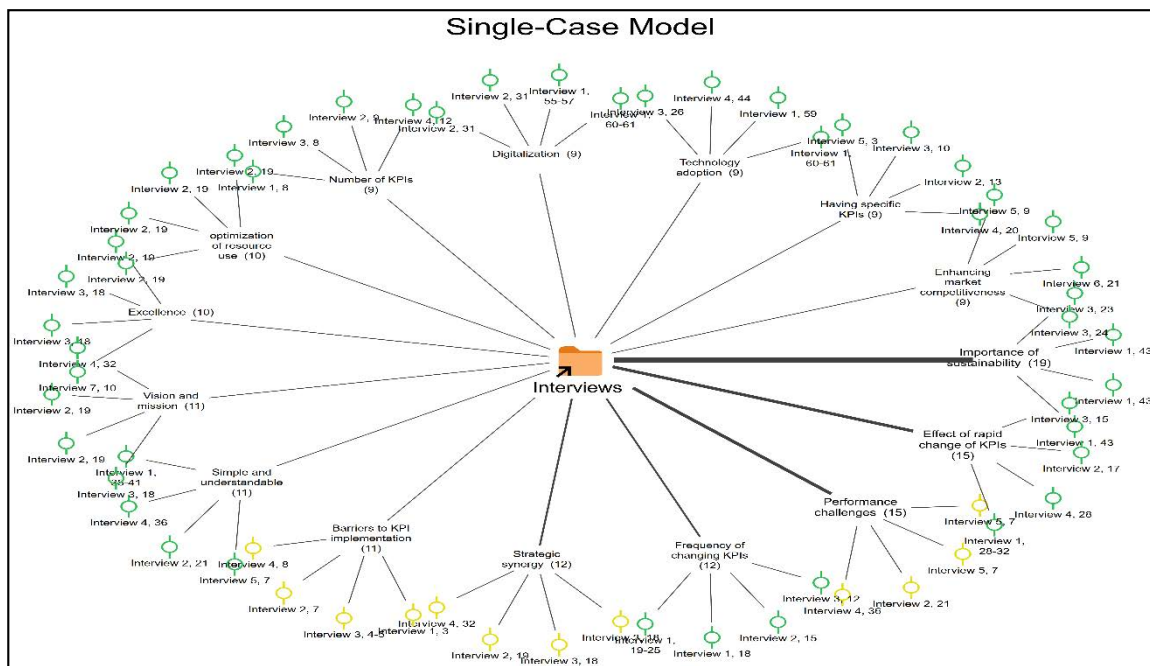


Figure 3 Single case model (coded segments) for interviews

These weaker connections suggest that these aspects of KPI management may need further development. For example, organizations may benefit from enhancing their understanding and use of specific KPIs, improving digitalization for better KPI tracking, and addressing barriers to KPI implementation to foster a stronger performance culture.

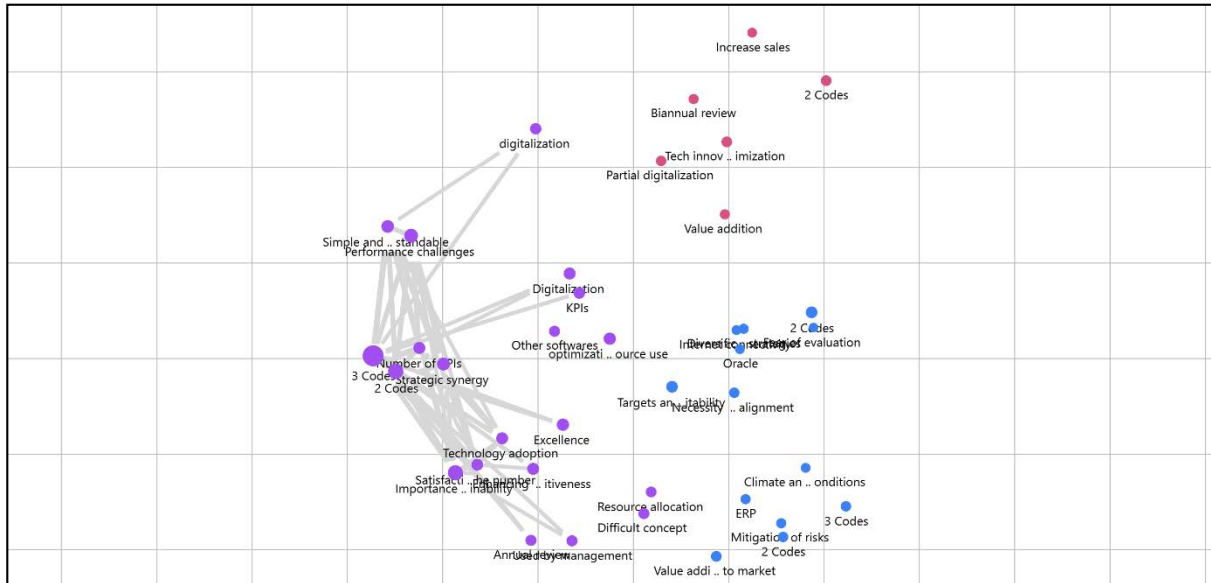


Figure 4: Code Map: relationship between “Strategic decision making and sustainable practices” and “Quantitative dynamic”

The Code Map presents a visual representation of the co-occurrence of specific codes and their relationships, focusing on themes like strategic decision-making, sustainability, and performance management. In this visualization:

- The distance between codes reflects how frequently they occurred together in the data.
- The thickness of the connection lines shows the strength of the relationships between these codes.
- Larger circles represent codes that occurred more frequently, while smaller circles reflect less prominent codes.

One key relationship identified in the code map was between "Strategic decision-making and sustainable practices" and "Quantitative dynamics", suggesting that managers see a strong link between making informed strategic decisions and the use of quantitative KPIs to track progress towards sustainable goals. This underscores the importance of integrating sustainability into decision-making processes to achieve effective performance management. Other significant findings included the connection between "Digitalization" and "Technology adoption", further emphasizing the role of technological tools in optimizing KPI implementation. Managers recognized that technology adoption is essential for improving resource use, making data-driven decisions, and ensuring KPIs align with organizational goals. However, the analysis also revealed that certain relationships between themes were not as strongly established. For example, the connection between "Barriers to KPI implementation" and "Tech innovations for optimization" was weak, indicating that while firms acknowledge the importance of technology, they may face barriers to fully integrating innovative solutions into their KPI practices.

The findings align with existing studies that emphasize the role of KPIs in driving strategic alignment and operational efficiency. However, this study extends prior research by integrating non-financial metrics like sustainability and leveraging advanced digital tools of ERP systems in KPI optimization, a focus that is well-documented in this research.

Actionable Recommendations for Industry Stakeholders

1. Enhance Training Programs: Conduct workshops to improve staff understanding of SMART KPIs and their application.
2. Invest in Digital Tools: Adopt scalable ERP systems to streamline KPI tracking and data-driven decision-making.
3. Focus on Sustainability: Develop and implement sustainability-focused KPIs to meet international standards and improve market competitiveness.
4. Regularly Review KPIs: Establish a process for periodic KPI evaluation to ensure alignment with organizational goals and industry trends.

Conclusion

In conclusion, this research offers a thorough understanding of the role and current application of Key Performance Indicators (KPIs) in evaluating the performance of export-oriented plantation firms in Sri Lanka. The findings shed light on the challenges and complexities of implementing effective performance management systems through KPIs, as discussed by the firms' managers. Key insights include the importance of enhancing product quality, market competitiveness, and profitability through better resource optimization. Firms are increasingly focusing on eco-friendly strategies to ensure both environmental compliance and long-term sustainability. To achieve excellence in the sector, companies must navigate significant performance challenges and commit to continuous improvement to uphold high standards.

However, the research also highlighted areas for improvement. For instance, the limited co-occurrence between strategic alignment and risk mitigation suggests that firms recognize the need to better integrate risk management practices with their strategic goals. Additionally, the adoption of digital tools such as ERP systems and real-time KPI monitoring platforms, is strongly recommended to improve operational efficiency and decision-making. These technologies can help streamline processes, optimize resource allocation, and enable firms to remain competitive in global markets.

To address identified challenges like resistance to change, limited understanding of SMART KPIs, and frequent KPI adjustments, managers and policymakers should focus on fostering a performance-oriented culture. This includes providing targeted training programs, leveraging participatory approaches to engage stakeholders, and developing adaptive KPI frameworks to address shifting priorities. Additionally, government intervention could help mitigate high technological costs for smaller firms, enabling them to access advanced digital tools that are essential for achieving sustainability and productivity goals.

This research highlights actionable strategies for policymakers and industry leaders to design and implement performance management systems that are effective, equitable, and supportive of organizational structures designed to foster environmental sustainability in the plantation sector. By bridging gaps in strategic alignment, risk mitigation, and digital adoption, the sector can enhance its resilience and ensure long-term sustainability and competitiveness in both local and global markets.

Acknowledgement

The authors extend heartfelt gratitude to all the experts for their invaluable contributions and insights that enriched this study.

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