

**EMPLOYEE PERCEPTIONS OF ENERGY EFFICIENCY AND
SUSTAINABILITY PRACTICES IN TEA FACTORIES: A CASE
STUDY FROM RATNAPURA, SRI LANKA**



By

K. A. R. M. Bandara

(EU/IS/2018/BST/047)



FTC234

Project Report
Main Library, Eastern University, Sri Lanka

Department of Biosystems Technology

Faculty of Technology

Eastern University, Sri Lanka

2025

ABSTRACT

The tea industry plays a pivotal role in Sri Lanka's economy and contributes significantly to export earnings and employment. However, the sector faces challenges in maintaining economic stability while adapting to environmental sustainability. This research aims to bridge this gap by examining how employees perceive and engage with energy efficiency and sustainability initiatives. The study employed a quantitative research design, utilizing a structured pre-tested questionnaire to collect data from 154 employees across 27 tea factories in Ratnapura. The data were analyzed using SPSS version 27 software, with regression and ANOVA tests performed to evaluate the relationships between variables such as awareness, attitudes, organizational support, challenges, and employee engagement in sustainability practices. By the R Square (0.293) value, 29.3% of the variation in the Employee Engagement in Energy Efficiency and Sustainability Practices is explained by the independent variables. 5.8% of employees surveyed were under the age of 25, 20.1% between 26-35, 22.7% between 36-45, 43.5% between 46-60, and 7.8% over 60. Also, 70.8% of them were female and 29.2% were male. Key findings revealed that organizational support and workplace culture significantly enhance employee engagement in sustainability initiatives ($p = 0.004$), while challenges and barriers negatively impact participation ($p = 0.003$). Older employees showed lower engagement ($p = 0.027$) levels, whereas those with more experience ($p = 0.040$) were more likely to participate. The majority of employees had only primary or secondary education, highlighting the need for targeted training programs. The study concludes that improving organizational support, reducing barriers, and implementing age-specific engagement strategies are critical for fostering sustainable practices in tea factories. Recommendations include developing clear sustainability policies, conducting regular training, allocating resources, and collaborating with policymakers to incentivize renewable energy adoption. This research contributes to achieving global sustainability goals, such as the United Nations Sustainable Development Goals (SDGs), by promoting energy efficiency in Sri Lanka's tea industry.

Keywords: Energy efficiency, Sustainability practices, Employee perceptions, Organizational support, Barriers, Sustainable development goals, Tea factories

TABLE OF CONTENT

DECLARATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
ABSTRACT	v
TABLE OF CONTENT	vi
LIST OF FIGURES.....	ix
LIST OF TABLES	x
ABBREVIATION.....	xi
CHAPTER 1.....	1
1. INTRODUCTION.....	1
1.1. Background of the study	1
1.2. Statement of the problem.....	3
1.3. Research gap.....	4
1.4. Objectives of this study.....	4
1.4.1. General objective.....	4
1.4.2. Specific objectives.....	4
1.5. Research questions.....	5
1.6. The significance of the study	5
1.7. Limitations of this study	5
1.8. Organization of the study.....	5
CHAPTER 2.....	7
2. LITERATURE REVIEW.....	7
2.1. Tea industry	7
2.2. History of tea factories in Sri Lanka.....	7
2.3. Energy efficiency and sustainability.....	8

2.3.1.	Global trends in energy efficiency and sustainability	10
2.3.2.	Trends in energy efficiency and sustainability in Sri Lanka	10
2.3.3.	The importance of employees in promoting energy efficiency and sustainability	11
2.3.4.	Energy efficiency and sustainability in tea factories in Sri Lanka ...	12
2.4.	Employee engagement in energy efficiency and sustainability practices	13
2.4.1.	Awareness of energy efficiency and sustainability practices	13
2.4.2.	Attitudes toward sustainability initiatives	13
2.4.3.	Organizational support and workplace culture	14
2.4.4.	Challenges and barriers	14
2.5.	Conceptual framework.....	15
CHAPTER 3.....		17
3.	RESEARCH METHODOLOGY	17
3.1.	Introduction.....	17
3.2.	Research design.....	17
3.3.	Study area	17
3.4.	Target population and sample size.....	18
3.6.	Data analysis	22
3.7.	Validity	23
3.8.	Ethical considerations	23
CHAPTER 4.....		24
4.	RESULTS AND DISCUSSION	24
4.1.	Introduction.....	24
4.2.	Respondents' demographic information.....	24
4.2.1.	Response rate.....	24
4.2.2.	Age of the respondent.....	25
4.2.3.	Gender of the respondent.....	26

4.2.4.	Education level of the respondent	26
4.2.5.	Employment type of the respondent.....	27
4.2.6.	Experience of the respondent	27
4.3.	Regression analysis.....	28
4.3.1.	Model Summary	28
4.3.2.	ANOVA.....	29
4.3.3.	Coefficients.....	30
4.4.	Hypothesis testing results	32
CHAPTER 5.....		33
5.	CONCLUSION AND RECOMMENDATIONS.....	33
5.1.	Introduction.....	33
5.2.	Findings of the study.....	33
5.3.	Conclusion	34
5.4.	Recommendations.....	35
5.5.	Suggestions for future research.....	36
REFERENCES.....		37
ANNEXURES.....		45
ANNEXURES 01.....		45
ANNEXURES 02.....		50