

Prioritizing IoT-driven Sustainability Initiatives in Retail Chains: Exploring Case Studies and Industry Insights

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Abstract

INTRODUCTION: Prioritizing sustainability initiatives is crucial for retail chains as they integrate Internet of Things (IoT) technologies to drive environmental responsibility. Retail chains have responsibility to establish environmental stewardship when they globally expand in terms of operations, supply chain and offerings. By prioritizing the initiatives retail chains can reduce impacts on environment, resource waster and mitigate risks related to that with the help of concepts like IoT.

OBJECTIVES: This paper aims to explore how IoT can aid in sustainable practices, mitigate risks, and enhance efficiency while addressing challenges, ultimately providing insights for retail chains to prioritize sustainability in the IoT context.

METHODS: The research employs a qualitative approach, focusing on in-depth case studies and analysis of industry reports and literature to explore IoT-driven sustainability initiatives in retail chains. It includes a diverse sample of retail chains, such as supermarkets and fashion retail, selected based on data availability related to their use of IoT for sustainability. The study involves descriptive analysis to present an overview of these initiatives and competitive analysis to identify sustainability leaders and areas for improvement. However, limitations include potential data availability issues and reliance on publicly available sources, with findings reflecting data up to the 2018-2021 timeframe.

RESULTS: The results highlight significant sustainability benefits achieved through IoT integration in various retail chain types. Case studies, such as Sainsbury's and Coca-Cola, demonstrate waste reduction and sustainable practices. Examples from Nordstrom and 7-Eleven showcase energy efficiency improvements. The versatility of IoT technologies across supermarkets, department stores, and convenience stores emphasizes the transformative power of IoT in driving sustainability in the retail industry. The study proposes a prioritization approach, considering key metrics and leveraging frameworks like the Triple Bottom Line, Life Cycle Sustainability Assessment, and Sustainability Framework for effective decision-making and goal alignment in IoT-driven sustainability initiatives.

CONCLUSION: In conclusion, this paper highlights the substantial potential of prioritizing IoT-driven sustainability initiatives in retail chains for positive environmental, social, and economic outcomes. Through case studies, the diverse applications of IoT, such as food waste reduction and energy-efficient lighting, demonstrate tangible benefits. The trend towards sustainable sourcing and materials is evident across various retail chain types. The discussion underscores the need for a systematic approach, utilizing frameworks like the Triple Bottom Line, to align with strategic objectives and optimize resources.

Keywords: Internet of Things (IoT), sustainability, retail chains, prioritization, case studies, industry insights, technology integration

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1. Introduction

While 64% of executives globally say sustainability is part of their leadership's agenda, actions on sustainability are

falling short of ambitions[1]. Retail chains can be classified in many ways like Fashion and Apparel store[2], Quick Service Restaurants, Pharmacy and drug store chains, Convenience stores, Supermarket/grocery stores, Electronic and mobile wear chains, Jewellery Retail chains,

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