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Assessing Sustainability in Supply Chain at Ethiopian Airlines: Strategies, Practices, and Areas for Improvement

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Ethiopian Airlines is a leading airline in the world. Its supply chain management is one of the most critical aspects in achieving its sustainability objectives. The present study aims to assess the sustainability practices and strategies of Ethiopian Airlines in its supply chain, identifying areas for improvement and recommending strategies for enhancing sustainability. The study concentrates on pertinent sustainability concerns within the aviation sector while examining antecedent research on the sustainability of Ethiopian Airlines' supply chain management strategies. The findings of the study reveal that there are several areas in need of improvement, including the implementation of waste reduction measures, the establishment of a recycling program, and the reduction of single-use plastic usage. It is suggested that promoting responsible tourism embodying sustainable practices is imperative, particularly within the airline context.

Keywords: sustainability, airlines, supply chain, aviation, air quality, clean energy

Introduction

Ethiopian Airlines is the largest airline in Africa, with an extensive network of flights connecting over 125 destinations worldwide. As a major player in the aviation industry, Ethiopian Airlines is responsible for operating sustainably and reducing its impact on the environment and local communities. There has been an increasing focus on sustainability in supply chain management in recent years, as companies recognize the importance of addressing social and environmental concerns throughout their operations.

This desk-based research paper aims to assess the sustainability practices and strategies of Ethiopian Airlines in its supply chain management, identifying areas for improvement and recommending strategies for enhancing sustainability. The study concentrates on pertinent sustainability concerns within the aviation sector while examining antecedent research on the sustainability of Ethiopian Airlines' supply chain management strategies.

This study comprises a set of research questions which are:

- What are the current sustainability practices and strategies of Ethiopian Airlines in its supply chain management?
- What are the key areas of sustainability practices and strategies at Ethiopian Airlines that require improvement?
- What are the implications of these issues for Ethiopian Airlines' supply chain management practices?
- What are the recommendations for improving Ethiopian Airlines' sustainability practices in supply chain

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management?

The results obtained in this investigation are expected to significantly contribute to the expanding literature on sustainability in supply chain management. Furthermore, they are poised to provide valuable recommendations and insights for Ethiopian Airlines and other enterprises functioning in the aviation sector on how to improve their sustainability practices and strategies.

Ethiopian Airlines — Cargo Wing

Despite its humble beginnings, Ethiopian Airlines (Ethiopian) has had more than 75 years of a successful journey which made it the leading Aviation Group in Africa. Of course, Ethiopia is aging beautifully. "Over the decades, the airline has established itself as the leader in all facets of the aviation business: technology leadership, network expansion, and aviation mentoring. Ethiopian started its operation with five C-47 aircraft back in 1946 and made its debut fight to Cairo via Asmara" says the group CEO Mesfin Tassew.

Ethiopian is the largest cargo network operator in Africa and one of the major global cargo carriers with a modern warehouse of 1 million tons storage capacity. In the 2020/2021 fiscal year, Ethiopian recorded an annual cargo uplift of 750,000 tons.

The firm provides freight services to global customers in more than 125 international destinations in Africa, the Middle East, Asia, Europe, and the Americas with belly-hold capacity and 66 dedicated cargo destinations. They have been one of the vanguards of the global cargo business; they were serving customers with over 12 dedicated freighters including 9 Boeing B777-200LRF and 3 Boeing B737-800F. Besides, Ethiopian had reconfigured 25 of its passenger aircraft to boost cargo capacity and provided essential services at a time when they were desperately needed. 19 of these converted aircraft are still operational as freight fleets.

Sustainability in Supply Chain Management

In contemporary business operations, sustainability has emerged as a vital element within the domain of supply chain management (Abdi et al., 2022; Bartle et al., 2021; Webster et al., 2020). The utilization of ecologically and socially accountable practices along the entire supply chain, from the acquisition of raw materials to the final disposal of products, constitutes the notion of sustainability within the domain of supply chain management (Abdi et al., 2022). The adoption of sustainable practices within the domain of supply chain management can result in various advantageous outcomes for commercial entities, encompassing diminished cost, optimized productivity, augmented corporate image, and ameliorated risk mitigation (PWC, 2011).

Based on research conducted by the MIT Sloan Management Review, entities that accord priority to sustainability in their supply chain operations can attain enhanced financial performance and heightened customer retention (Goworek et al., 2019).

The integration of sustainable supply chain management practices may encompass the reduction of waste, implementation of renewable energy sources, ethical sourcing of materials, and incorporation of ethical labor practices. It is noteworthy that corporations may partake in closed-loop supply chains, which strive to curtail waste using recycling or repurposing products and materials.

Importance of Sustainability in Supply Chain Management

The concept of sustainability has garnered significant attention (Singh & Trivedi, 2016) and recognition within the realm of business, with a specific emphasis on managing supply chains. The recognition of sustainability in the domain of supply chain management is progressively gaining significance in response to companies' efforts

to alleviate environmental impacts, effectively handle social risks, and augment their corporate image (Nisar et al., 2022).

The concept of sustainability within the realm of supply chain management entails the harmonious fusion of environmentally conscious practices at each stage in the supply chain, commencing from the acquisition of raw materials, to the ultimate distribution of finished goods to clientele (Türkay et al., 2016). This encompasses a range of sustainable practices, specifically the reduction of waste, adoption of renewable energy sources, enhancement of labor conditions, and mitigation of carbon emissions (Nisar et al., 2022).

The implementation of sustainable practices within supply chain management has the potential to give manifold advantages to organizations such as decreased expenses (Webster et al., 2020), bolstered corporate image, and heightened competitiveness. The adoption of sustainable practices by corporate entities can lead to the reduction of wastage and inefficiencies, ultimately translating into cost reductions. Singh and Trivedi (2016) also indicated that adopting sustainable practices may augment a firm's standing, notably with customers who are progressively mindful of the ecological and societal effects of the merchandise they acquire.

Various empirical evidence has established that businesses that accord priority to sustainability in their management of supply chains can realize a competitive edge over industry peers (Abdi et al., 2022; Amankwah-Amoah, 2020; Nisar et al., 2022). According to research conducted by the MIT Sloan Management Review, corporations that incorporate sustainability principles into their supply chain management processes can attain enhanced financial performance and increased customer commitment.

Key Sustainability Issues in the Aviation Industry

The aviation industry's substantial contribution to worldwide carbon emissions has resulted in a variety of sustainability concerns. The sustainable aviation agenda seeks to mitigate the adverse environmental consequences of the aviation sector while maintaining economic feasibility and societal accountability. Several crucial sustainability concerns in the aviation sector comprise the emission of carbon, noise pollution, management of waste, as well as conservation of water (Musa Ardo et al., 2022).

The aviation industry faces a prominent sustainability challenge in the form of carbon emissions, which are known to significantly contribute to the adverse effects of climate change. The International Air Transport Association (2021) established a target for the aviation sector to attain carbon-neutral expansion by the year 2020 and to curtail carbon emissions by 50% by 2050. To attain this objective, the aviation industry has directed its efforts towards the advancement of aircraft with higher fuel efficiency as well as the employment of sustainable aviation fuels.

Noise pollution represents a pressing concern within the aviation industry's sustainability framework, especially for individuals residing near airports. The industrial sector has taken several initiatives to mitigate the negative impact of noise pollution (Macilree & Duval, 2020). For example, it has adopted several noise reduction strategies, including the introduction of quieter aircraft, as well as the implementation of noise abatement procedures.

The management of waste, specifically hazardous waste produced by aircraft maintenance, is an important aspect of sustainability within the aviation sector. The industry has executed waste management initiatives, encompassing recycling and waste minimization programs, to alleviate the aforementioned concerns (Lai et al., 2022).

Water conservation represents a notable sustainability concern within the aviation industry, particularly for

airports situated in regions where water resources are scarce. The industry has undertaken initiatives for water conservation, including the adoption of strategies such as the utilization of recycled water and the practice of rainwater harvesting.

The aviation sector encounters an array of sustainability concerns, primarily centered around carbon emissions, noise pollution, waste treatment, and water preservation. The implementation of sustainable aviation practices and technologies facilitates the mitigation of these challenges whilst simultaneously guaranteeing economic sustainability and social accountability.

Overview of Ethiopian Airlines' Sustainability Practices in Supply Chain Management

Ethiopian Airlines is recognized as one of the prominent airlines in the African region, showcasing a steadfast dedication towards sustainability in its operations, which also extends to its supply chain management practices. The firm has implemented diverse sustainable strategies to diminish its ecological footprints, enhance its societal obligations, and reinforce its economic durability. In a series of annual reports, the company made substantial effort and resource allocation to undertake the following steps (Ethiopian Airline, 2017; Ethiopian Airline, 2012, 2018):

1. Fleet modernization: Ethiopian Airlines has been replacing its older aircraft with newer, more fuel-efficient models to reduce its carbon footprint. One of the crucial sustainability strategies implemented by Ethiopian Airlines is its efficient fleet management that minimizes fuel consumption. The enterprise has made significant investments in contemporary, fuel-efficient aircraft, including the Boeing 787 Dreamliner, to diminish the utilization of fuel as well as abate the amount of carbon emissions released into the atmosphere. The aviation company has implemented sustainable procurement practices, exemplified through the sourcing of sustainable materials and waste reduction in its operations.

2. Sustainable aviation fuel: The airline has been exploring the use of sustainable aviation fuel (SAF) as an alternative to traditional jet fuel. In 2019, it operated its first flight using SAF.

3. Waste reduction: Ethiopian Airlines has implemented a waste reduction program that includes recycling and composting. It has also eliminated single-use plastics on its flights.

4. Community development: The airline has implemented various community development programs, including supporting education and healthcare initiatives in Ethiopia. Ethiopian Airlines has undertaken numerous community development endeavors to provide aid and assistance to the local communities in the regions where it operates, in addition to the aforementioned initiatives. As an illustration, the corporation has established collaborative relationships with various non-governmental organizations (NGOs) to facilitate the delivery of educational, healthcare, and socio-economic resources to the populations residing in Ethiopia and other nations within the African continent.

5. The establishment has incorporated sustainable tourism protocols as a means of fostering accountable tourism practices and upholding the welfare of local communities. Ethiopian Airlines provides sustainable tourism packages with a focus on environmentally friendly tourism, cultural immersion, and community engagement. These packages aim to promote the conservation of natural and cultural resources.

Generally, Ethiopian Airlines aims to become a carbon-neutral airline by 2025 and is committed to reducing its environmental impact while supporting sustainable development. Ethiopian Airlines has exhibited a resolute dedication towards sustainability in its management of the supply chain by implementing assorted endeavors such as fuel-effective management of the fleet, sustainable practices of procurement, projects of community

development, and practices of sustainable tourism. These measures have not solely diminished the ecological footprint of the airline, but have also facilitated its financial viability and ethical accountability.

Identification of Areas for Improvement

Although Ethiopian Airlines has implemented various sustainability practices and strategies, there exist certain domains that necessitate enhancement. Several domains of sustainability strategies and practices in Ethiopian Airlines require improvement.

1. The mitigation of carbon footprint: Ethiopian Airlines, despite its investment in fuel-efficient aircraft, can potentially enhance its carbon emissions mitigation efforts through the adoption of alternative fuels and the incorporation of sustainable aviation practices.

2. The improvement of waste management practices within Ethiopian Airlines could be achieved through the implementation of waste reduction measures including but not limited to the reduction in waste generation during operational processes, the establishment of a recycling program, and the diminution of single-use plastic usage.

3. To enhance supply chain transparency, Ethiopian Airlines may consider overseeing and revealing the ecological and societal repercussions generated by its suppliers, while also enforcing conformity to sustainability norms.

4. The concept of social responsibility is a critical aspect of corporate performance, and Ethiopian Airlines has taken proactive steps toward community development through various projects. However, there remains an opportunity for further expansion of efforts directed at marginalized groups, while also promoting diversity and inclusivity within the organization.

5. The promotion of responsible tourism could be advanced by Ethiopian Airlines through collaborative efforts with local communities to craft sustainable tourism arrangements that uphold the preservation of natural and cultural assets.

In summary, Ethiopian Airlines has demonstrated noteworthy advancements in sustainability practices and strategies, yet there remain areas in need of further enhancements. The organization possesses the potential to augment its ecological footprint mitigation, advance the transparency of its supply chain, and augment its undertakings in the domain of social responsibility to augment its sustainability initiatives.

Implications for Ethiopian Airlines' Supply Chain Management Practices

The areas of sustainability practices and strategies that have been identified as requiring improvement hold considerable implications for Ethiopian Airlines' management practices of their supply chain. Neglecting to attend to these matters bears the potential to escalate environmentally and socially adverse outcomes, tarnish reputation, and incur legal and regulatory non-compliance liabilities.

As an illustration, the implementation of carbon footprint reduction strategies by airlines is of paramount importance in accomplishing their sustainability objectives, alongside adherence to regulatory provisions aimed at curtailing greenhouse gas emissions. Neglecting to attend to this matter may potentially lead to escalated carbon levies, regulatory penalties, and a diminution in patronage from individuals who prioritize ecologically sustainable practices.

Furthermore, the dearth of transparency within the supply chain may engender reputational harm to the airline, given the growing apprehensions of modern-day consumers regarding the socio-environmental consequences of their procurement decisions. The failure of the company to oversee and divulge the ecological and

societal ramifications of its suppliers may potentially lead to public scrutiny and a diminution in consumer faith.

In a similar vein, the absence of a sense of social responsibility in a company's operations might result in substantial exposure to legal and regulatory compliance risks and reputation-related harm. The failure to endorse diversity and inclusion initiatives and provide support to underrepresented groups could result in allegations of bias and discrimination, ultimately affecting the operational efficiency of the airline.

The significance of identifying and ameliorating the areas of sustainability practices and strategies in Ethiopian Airlines' supply chain management practices cannot be overstated. In summary, addressing these aspects is crucial for ensuring sustainability and efficiency in the airline's operations. Addressing these concerns allows the corporation to curtail its environmental and social footprints, improve supply chain transparency, fortify its reputation, augment customer confidence, and ensure long-term sustainability.

Recommendations for Improving Ethiopian Airlines' Sustainability Practices in Supply Chain Management

In light of the areas of sustainability practices and strategies that have been identified as needing improvement in the supply chain management practices of Ethiopian Airlines, the present study proffers the following recommendations:

To decrease its carbon footprint, Ethiopian Airlines ought to allocate resources toward the implementation of sustainable aviation practices and the utilization of alternative fuels. One potential avenue for addressing the environmental impact of aviation may involve deploying sustainable aviation fuels (SAFs) and exploring emerging technologies like electric or hybrid aircraft.

It is recommended that Ethiopian Airlines implement a comprehensive waste reduction strategy which is geared towards the minimization of the waste generated during its operations, the establishment of a recycling program, and the reduction of its utilization of single-use plastic materials. One potential strategy is to establish partnerships with suppliers to minimize the amount of packaging waste generated. Moreover, it may also be prudent to foster a culture of responsible customer behavior whereby recycling is encouraged and promoted.

To enhance supply chain transparency, Ethiopian Airlines ought to intensify its monitoring efforts and disclosure practices regarding the environmental and social ramifications of its suppliers' operations, whilst ensuring strict adherence to sustainability standards. One possible approach to enhance sustainability in sourcing activities is to establish a supplier code of conduct, which sets forth the sustainability expectations of suppliers, and to carry out periodic assessments of suppliers' adherence to such standards.

It is recommended that Ethiopian Airlines broaden its initiatives aimed at reinforcing the welfare of underprivileged demographics and advocating for diversity and inclusivity throughout its organizational framework, as a manifestation of its social responsibility. The proposed course of action encompasses the development of community development projects that give priority to local needs, collaboration with local organizations to foster education and healthcare initiatives, and the adoption of diversity and inclusion policies.

The promotion of responsible tourism embodying sustainable practices is imperative, particularly within the context of Ethiopian Airlines. It is suggested that partnering with local communities to devise and offer sustainable tourism packages that effectively safeguard natural and cultural resources is a pertinent strategy. Possible academic rewrite: A range of strategies could be employed to foster sustainable tourism development in a given destination, such as forging alliances with local conservation entities to safeguard biodiversity and ecosystems, advocating for cultural tourism activities that uphold indigenous practices and norms, and providing

assistance to homegrown enterprises and craftspeople.

The integration of the aforementioned recommendations is likely to bolster the sustainability practices of Ethiopian Airlines in the realm of supply chain management. Furthermore, this adoption has the potential to mitigate the detrimental environmental and social effects, augment the transparency of the airline, and amplify its reputation and customer loyalty. As such, this approach holds promise for enabling the organization to operate ethically and responsibly whilst concurrently optimizing efficiency and effectiveness.

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