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# The internal supply chain of operation and green sustainability

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## Abstract

The purpose of this paper is to explain and understand how green sustainability in the internal supply chain is achievable in a multinational corporation involved in the manufacturing industry with the corporation of corporate and stakeholders. This study adopts a qualitative study approaches hence the study is limited to secondary data and interviewee validation compared to theoretical models. As a result, Intel had created a strong governance structure that allows a vertical and horizontal team aligning themselves to achieve the vision and strategies set by the corporate. In conclusion, agility in the structure significantly improves collaboration in achieving environmental values.

**Keywords:** Green, sustainability, supply chain, operation.

## La cadena de suministro interna de la operación y la sostenibilidad verde

### Resumen

El propósito de este documento es explicar y comprender cómo se puede lograr la sostenibilidad verde en la cadena de suministro interna en una corporación multinacional involucrada en la industria

manufacturera con la corporación de empresas y partes interesadas. Este estudio adopta un enfoque de estudio cualitativo, por lo que el estudio se limita a los datos secundarios y la validación de los entrevistados en comparación con los modelos teóricos. Como resultado, Intel creó una estructura de gobierno sólida que permite que un equipo vertical y horizontal se alinee para lograr la visión y las estrategias establecidas por la empresa. En conclusión, la agilidad en la estructura mejora significativamente la colaboración para alcanzar valores ambientales.

**Palabras clave:** verde, sostenibilidad, cadena de suministro, operación.

## 1. INTRODUCTION

The sustainability debate is framed by the fact that an extended development program is defined by non-decreasing living standards, defence of crucial natural resources, and the mitigated risks of Ecological crises. The preservation of the natural environment is a current strategic concern. Ambec (2008) outlined how organizations can reduce costs (risk management and relations with external stakeholders; energy, cost of material, and services and cost of labour; the cost of capital) and how to increase revenue (better access to certain markets; differentiating products; and selling pollution-control technology). It was also pointed out that the distinguishing factors in the socio-economic goals of an organization are irrelevant, instead, organizational survival is crucial, and is influenced not only by the stakeholders, but also its employees, the government, and their customers. Issues conceptualized under the umbrella of corporate social responsibility (CSR) have become common in many mission

statements and annual reports from multinational corporations (Arnihalldorsson, 2009).

Things get more complicated in the verge of the supply chain management as the cost differentiation is no longer stipulated by the focal company but by the supply chain overall. Supply chain, be it internal supply chain or external supply chain plays a major role in the term of product pricing and cost structure in overall as this function serves as input and output for the local companies. Though it is becoming crucial not only for the focal company to structure its cost advantage but for the internal and external supply chain to perform the cost optimization especially in the global context where the multinational companies which serve as focal companies enable and utilize diverse global supply chain to achieve the competitive advantage.

Conventionally, the supply chains development is driven by measures like costs on top of service of the customer but with the current awareness and internet evolution which enables information exchange together with knowledge sharing creates the platform that pushes sustainability pressure even to this internal and external supply chains. In the context of sustainability, environmental issues are crucial and can be addressed via the addition of environmental constraints to supply chain models, accounting for carbon taxes and emission trading schemes, and including the influence of greenhouse gas (GHG) emissions when deciding on transportation modes. A systematic approach called the green supply chain management (GSCM), which

integrates environmental concerns into the supply chain management is increasingly being included in current schemes by forward-thinking organizations (Zhu, 2004).

## **2. PROBLEM STATEMENT**

Even with a four-decade of present in the region and manufacturing leadership, the company are in transition to adopt the mass customization and with their mass production capabilities shifting to plants in bigger layout facilities and other facilities in other neighboring countries, it became clear to the management that they need to add value by increasing the production per square feet and reduce the cost per square feet while maintaining the brand quality that is associated with the products. The problem arises when the reflection of how much involvement in green sustainability by the local subsidiaries in its locus of influence versus the direction given by the corporate. This problem constitutes more to awareness issue versus compliance issue as we know that mere compliance does not lead to innovation. The problem also inhabits on the relationship between the subsidiaries and it is corporate in terms of Multinational Corporation operation about green sustainability.

Secondly, a part of the strategies developed by the headquarters, it is becoming a prominent problem that does the internal supply chain has its own strategies for green sustainability. This is essential in developing and lead green sustainability at local context and be

relevant in the market the company is operating enabling the success of the subsidiaries stakeholders rather than the corporate stakeholders.

While emphasizing the stakeholders, it also becomes clearer that the subsidiaries are communicating and collaborating with different level stakeholders compared to the corporate which leads to different requirement and expectation from local aspects are set upon the subsidiaries compared to corporate. Though it also becomes a problem on how those strategies are designed to be delivered and mechanism to evaluate acceptance by the local stakeholders. While dwelling on this problem, it is also important that this activities, strategies, and goals are aligned to environmental values so that it does benefit the environment and humanity rather than it becomes mere stakeholder satisfaction drive activities.

Though, the problem in striking the balance in aligning stakeholders' requirement and environmental values are crucial in achieving the bottom line of green sustainability. While facing all this challenge, the research will focus on how in the agile manufacturing operation environment green sustainability are still pursued by rallying the stakeholders especially as internal supply chain for a multinational corporation and what is the depth of the relationship between corporate management and subsidiaries involved in getting this to be molded in the organization culture. The research also will share some actions that can be benchmarked by the industries which are adopted by the organization to develop green sustainability in the internal supply chain. However, these studies and research are a focus on the external

supply chain and focal companies' contribution to green supply chain management.

### **3. DEVELOPMENT OF GREEN SUSTAINABILITY IN INTERNAL SUPPLY CHAIN INDUSTRY**

Today, from the greenhouse effect, iceberg melting to river pollutions, environmental impact resulted by the industries become the major contributor to the problems that mankind faces every day. The traditional supply chain practiced in the industries in the early 1990s, focuses on the cost reduction and improvement of different flows within the organization but the environmental consideration is ignored. This created avenue for the researchers and businesses redefine the traditional supply chain by including the environmental factors into the supply chain while trying to benefit this green supply chain to maintain the profitability. In the present globalized and competitive market, the industries are pressurized to follow environmental management, these pressures are derived from the internal and external sources in the organization. Though, the essential of green sustainability increased among the industries till to the end customer.

Samir (2007) believe that the Green Supply Chain Management is rooted in the green management and supply chain management concepts. Samir (2007) defined the former as the integration of environmental thinking into supply-chain management, encompassing product design, material sourcing and manufacturing processes,

selection, delivery of the final product to the consumers, as well as end-of-life management of the product after its useful life. Environmental features are currently being integrated into each stage of product development and life cycles.

Johansson (2009) highlighted the fact that the green supply chain intends to continuously improve industrial processes and products at minimal damage to the environment Richards (1994) outlined a few challenges vis-à-vis green manufacturing, such as addressing customer requirements for environmentally friendly products, designing effective recycling schemes, reducing materials use/wastage, and selecting environmentally friendly materials. A green supply chain is limited by predefined boundaries and scopes, encompassing green procurement, integrated green supply chain, and green distribution from supplier, to the manufacturer, and customer Zhu (2004) even incorporated the concept of Reverse Logistics (RL) into his Green Supply Chain Management.

#### **4. LITERATURE REVIEW**

##### *4.1. Green Sustainability in Internal Supply Chain Globally*

In earlier 90s, the supply chain concept had gained its entry due to multiple reasons. As globalization flourish, geographical borders eliminated, and businesses start to operate in diverse countries as part of blue ocean strategy while improving their operation cost. Through this,

due to immense competition, it becomes very vital that competitive no longer by the focal firms but actually between the supply chains. The traditional supply chain is defined as an integrated manufacturing process wherein raw materials are manufactured into final products, then delivered to customers via distribution, retail, or both (Beamon, 1999). After the supply chain, the Green Supply Chain Management's definition has ranged from green purchasing to integrated supply chains flow from supplier to manufacturer, to customer and reverse logistics, which is closing the loop as defined by supply chain management literature (Zhu, 2004).

In order for businesses to realize a green supply chain, they must adhere to the principles outlined in the ISO 14000 (Beamon, 1999). ISO 14000 principle details the framework guiding firms in their implementation of EMS for the enhancement of operational boundaries outside of its supply chain. Eltayeb (2009) analysed 21 publications pertaining to green supply chain initiatives and concluded that the initiatives can be categorized into three major elements: i) Eco-design or design for environment, ii) Green Purchasing, and iii) Reverse Logistic. He also posited that focal firms are influential only on the internal supply chains operating in the context of green sustainability.

#### *4.2. Green Sustainability in Internal Supply Chain in Malaysia*

In the scenario of Malaysia which a developing country, the prominence of green accepted by the organizations in maintaining their business model. The industry which has an inverse impact on

environment and society will be more concern for CSR in order to sustain their business operations. In the Malaysian context, the supply chain industry can be categorized into two main players which are Government Linked Corporation (GLC) and Multinational Corporation. A brief definition of GLC is a business yielding entity owned by the government either through share or interest while Multinational industries can be differentiated to different categories such as foreign subsidiaries or national corporation either owned by foreign or Malaysian operating internal and externally. Examples on GLC in Malaysia such as Telekom Malaysia, Tenaga Nasional Berhad, and Malaysian Airlines and in electronic sector MIMOS Berhad while Multinational Corporation examples are like Nestle, Agilent, and Shell and so on.

In general, the vision of government-linked corporation is to enable betterment for the Malaysian citizens and induce national development towards uplifting the economy growth. Due to the ownership, they need to be committed to elevating community advancement. The profits they earned are not only for the companies' benefits but also for the nation as a whole while strategies and programs undertaken vary accordingly but with one goal that is to improve and enhance the quality of life in terms of safety, health and environment. Suitable management and control strategies are needed to grow and retain global customers while also thriving within a global economy. In this context, the Environmental Management System (EMS), or ISO 14001, was designed and implemented to deal with environmental issues.

## **5. DISCUSSION**

The analysis compromises the relationship of the corporate and the subsidiaries, the green sustainability of the internal supply chain then followed by the environmental values alignment by the subsidiaries. In addition, this study also recommends green sustainability refinement at the internal supply chain and at the corporate level. Intel had created a strong governance structure that allows a vertical and horizontal team aligning themselves to achieve the vision and strategies set by the corporate. This is driven by the complex nature of organization across the multi-nation. This model allows a better strategy to download posture while improves the empowerment at each site level. But it is important to take note that, for the empowerment given, it is essential also with the funding in term of resources and finance also provided to realize the green sustainability (Millanei & Bagheri, 2016).

In another hand, Intel also utilized every medium to connect with the stakeholder and ensure the feedback mechanism are enabled for a closed loop communication and future action would be able to define for green sustainability. Information technology is being highly used to enable this feature and enable auditing by third parties to counter checks the response mechanism so that it will really bring green sustainability. At internal supply chain level, it is clearly seen that the corporate strategies execution is key in aligning to achieve the green sustainability, but the internal supply chain also been enabled to proceed with the environmental sustainability initiatives by the own.

This allows a good employee engagement strategy which brings green sustainability to the next level and aligned with local norm needs. Employee engagement not only creates awareness on green sustainability but also becomes the learning stage for the society in large on environmental values. Employee engagement also allows innovation in green sustainability without increasing the human resources the organization employs. This point is proven by the performance prism analysis which concluded the stakeholder satisfaction and contribution are highly centric to the employee engagement. All the activities at the internal supply chain are focused and driven by employee engagement model which also leads to another stakeholder such as government, community and NGO satisfaction and contribution increment in green sustainability.

Though this is driven by employee engagement, the values added by the internal supply chain for green sustainability also confined to the locus of influence of the employee. Activities in Bright, Light and Deep green are driven by employee awareness and employee ambassador the green sustainability to the community. For the area of dark green, which is more related growth and consumerism, we do not observe much involvement as that is out of the locus of influence. For the first research question, how are the relation between corporate and the internal supply chain (subsidiaries) for green sustainability? Been answered from the case that a cross-geo group defining strategies from the guidance of centralized corporate while local empowerment method had established a collaborative relationship between the corporate and the subsidiaries.

Secondly, on what are the strategies in defining the success criteria for green sustainability in the internal supply chain? Shows that Intel adopted Employee Engagement Strategy as major strategy other than the policies that are guiding the operation and activities of the internal supply chain. Thirdly, the cross-functional team's execution and employee own initiatives on this strategy which are tied back to performance bonuses ensuring defined strategies reaches and accepted by the local aspects and fulfil the stakeholder's requirement. Except for the Dark Green, Intel and internal supply chain had aligned their activities with the Bright, Light and Deep green values with clear evidence and recognition given to corporate and local subsidiaries nationally and internationally which answers how is this green sustainability initiative is aligned with the environmental values?

Issues such as NGO and governmental cooperation in getting the stakeholders contribution, every layer employee awareness and engagement while community learning progress arises when answering what is the issue that is arising in green sustainability in the internal supply chain for a Multinational Corporation? On the other hand, new contemporary trends in the world have been given intensive attention to the Islamic financial Industry because of the financial crises as an alternative choice through using tools based on the real economy, and this also gives more attention to the risks management in Islamic financial instruments (Metsämuuronen, 2018).

## **6. CONCLUSION**

This study adopts a qualitative study approaches hence the study is limited to secondary data and interviewee validation compared to theoretical models. This cannot be generalizing as this would not be representing the population sample. Another limitation of this study is that it is focused on the internal supply chain of a multi-national company which might not be applicable to small and medium industry players as they might have the different economy of scale compared to the multinational corporation. In terms of the contribution, this study clearly stated that a correct posture and governance from the top management sets a clear direction for green sustainability. The research also reveals that agility in the structure significantly improves collaboration in achieving environmental values. Vertical and horizontal structure proven in the context of getting the more focus and empowerment given than vertical structure that only focus on a limited point of view and obscure innovation for green sustainability.

In addition to that, the research also contributes to the notion that the environmental values such as the Bright, light, dark and deep green approach would be able to give a good perspective of the improvement area for the green sustainability in any organization would like to explore. Secondly, the study also impacted on the note of employee engagement theory in green sustainability do benefit the organization in making it more effective and efficient while achieving the environmental needs. As the study significantly highlighted that employee engagement is one of a critical factor in green sustainability

for any organization, be it a large corporation, subsidiaries or even small and medium enterprise.

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