Empowering Green Healthcare Supply Chain Management Practices Challenges and Future Research

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Abstract **— The purpose of this paper is to explore the internal challenging factors of green healthcare supply chain management practices that contributed to the sustainable development in Malaysia. Green healthcare supply chain management practices are unique, different and more complex because of the impact on the environment and also the human health. This study thoroughly analysed, reviewed and explained each factor in detail from the various previous literature perspectives. This paper is one of the first to identify and conceptually discuss the use of green healthcare supply chain management practices that contributes to the sustainable development of healthcare industries in a single setting in a developing country. This study explored the internal challenging factors of green healthcare supply chain management practices that contributed to the sustainable development of a private hospital in Malaysia. The findings of the research will enlighten our view on green healthcare supply chain management practices. Besides, it contributes to researchers, the existing corpus of knowledge and a promise to expand the research stream on green healthcare supply chain management practices. The empirical findings will suggest to green healthcare supply chain to practitioner possible ways to obtain and maintain competitive advantages in the healthcare industries as proactive strategies that contribute to the sustainable development in Malaysia.**

Keywords— *sustainable development, green healthcare supply chain, green supply chain, supply chain, internal factor*

1. Introduction

There has not been much research on green supply chain management practices in healthcare industries that contributes to sustainable development. In today's era of globalization, a disproportionate world, a boosting economy and a growing world population have a great impact on sustainable development, especially in the healthcare industry. Thus, the importance of sustainable development in the healthcare industry has garnered special attention [8]. Sustainable development in the healthcare industry poses complex issues and requires an innovation environment approach in healthcare industry through the supply chain [11]. Hence, green healthcare supply chain management (GHSCM) practices, as an innovation approach, could contribute to the sustainable development of the healthcare industry.

Yet, the adoption of GHSCM practices has significant challenges to overcome. For healthcare industry to fully realise the contribution potential of GHSCM practices, it needs to integrate internal practices emphasising on functional coordination with external practices, such as cooperation with suppliers and customers during the implementation. According to the [29], improving overall performance as a holistic approach requires coordination of both the internal and external GHSCM practices. However, the internal factors

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are a priority and influences the organization. Internal factors include people issues such as employees, strategic issues and functional issues within the organization [9]. This study basically highlights the healthcare industry that adopts GHSCM practices, which contributes to sustainable development from the viewpoint of internal factors. The internal factors cannot be denied and relate to the organization capabilities [25]. Moreover, as an expanding concept in the existing philosophy of environmental management that applies to the supply chain as a whole, GHSCM practices is a comparatively proactive approach that healthcare industries can adopt in an effort to contribute towards sustainable development.

2. Sustainable Development

The concept of sustainable development was designed to examine the global environment and development until 2000 and beyond started at the United Nations Conference on Environment and Development in 1987. Previous studies have defined sustainable development in various ways. The most popular definition was provided by the [26] as, "a development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs". Sustainable development it had to integrate into a holistic approach and balance environment, social, and economic intents for the healthcare industry by focusing on the whole supply chain management process. Hence, sustainable development has been gradually embraced as proof of an innovative approach for achieving sustainable profits and growth for industry [10]. But, in the financial context in healthcare industry, sustainable development is challenging because play a critical role in the social area, their environmental impact and the contribution to the economic [23].

However, improper management of the healthcare supply chain could create medical waste and pollution, which threatens human health and the environment. Rapid increase in environmental pollution has influenced the healthcare industry to adopt GHSCM practices as an innovative approach [28]. The GHSC acts as a global initiative to ensure sustainable development through the three pillars (i.e. economy, environment, social) and it plays a crucial role if the healthcare industry wishes to be sustainable in the global business world. The healthcare industry has to take this challenging as a strategic intent to ensure be a part of the global business world.

Nowadays, in the globalization era and economic uncertainty, the challenging factors would come from internal and external sources. The healthcare industry also faces internal and external challenging factors, just like other industries. The internal factors refer to organizational behaviour in the organization that strongly affects the firm's vision and mission. The internal factor also adds strength and has a favourable impact on a business. But, to ensure the success of the business, the internal factor has to consider or priority to take action first. Consequently, the healthcare industry is facing increasing pressure to sustain its business that seriously consider the human and environmental impact. Meanwhile, if the healthcare industry fails to solve the issues related to internal factors it will have a deleterious effect when trying to sustain the business.

3. Interface of internal factors in green supply chain management in healthcare

Table 1. The Internal Challenging Factors

Internal Factors	Industry	Author
Firm,	Australian public healthcare sector	[1]
Firm, Technology, Employee	India mining industries	[18]
Firm, Technology, Employee, supplier	Mozambican manufacturing industry	[20]
Technology, Employee	Western green-tech manufacturers	[21]
Firm, Employee, supplier	Construction Industry	[4]
Technology	India Mining Industries	[3]

Source: Compiled by the author

The internal challenges exist within the organization itself and is related to organizational behaviour. The internal challenges also relates to the experience obtained during the adoption of green healthcare supply chain practices. [13], found that most internal challenges in the healthcare industry refer innovation within organizations in terms of management, system, and culture in order to sustain the business. For example, internal challenges are normally due to the lack of knowledge and awareness of green supply chain

practices aimed at achieving the business objective [4]. Table 1 shows the results of the internal challenging factors in various industries. The mining industry in India faces internal challenging factors, such as the firm, technology and employee. However, the public healthcare sector in Australia only faces the internal challenges in the firm. According to Table 1, the manufacturing industry also faces most of the internal challenges, such as firm, technology, employee and supplier. To shed light on these internal factors, a further clarification of the contribution of green supply chain management practices towards sustainable development in healthcare sectors is needed.

3.1 Firm

The firm issues are considered as internal challenges. The internal challenges that are resource-based arise from within the organization and its objectives are aimed at sustaining the firm's business. The scarcity of resources usually prevents firms from implementing green supply chain practices. For example, the public healthcare in Australia has challenging factors that are related to organisational attitudes and incentives needed to support green supply chain practices [1]. This contradicts the construction sector, whereby the challenging factors in implement green supply chain is related to cost and financial support [4]. For further discussions, focus on the internal challenging factors related to the firm should be on the lack of financial support, capacity constraints, corruption, lack of awareness, lack of knowledge, and lack of skill.

3.1.1 Lack of financial support

The issues pertaining to financial support in the healthcare industry were discussed by practitioners and researchers, especially that related to the adoption of the green healthcare supply chain. Is it worth implementing it in the globalization era and the prevalent economic uncertainty? For example, the Australian public healthcare sector also faces the same issues, which is lack of financial resources related to the green procurement [1]. Nevertheless, the private sector in the healthcare industry faces more challenges because of tight budget constraints and countervailing objectives about the cost-effectiveness and profit needed to sustain the business. Hence, the healthcare industry is required to consider the concept of value-for-money and not only profits but at the same time, achieve the sustainable development.

3.1.2 Capacity constraints

The healthcare industry is a service supply chain and has a more adverse impact on green supply chain practices compared to others industries. The service supply chain also includes information flow and capacity [7]. [18] stated that capacity constraints as an internal challenge and impact varied between large and small industries. The capacity constraint was greater for small industries compared to large industries. For example, the Indian mining industry indicated that capacity constraint was more conspicuous as an internal challenge in the case of small-scale mining [18]. Therefore, for the small-scale healthcare industry, it should focus more on the capacity factor by increasing its financial, technological, and human resource capacities in order to sustain the business.

3.1.3 Corruption

The corruption is also an internal challenge that contributes to the failure of sustaining a business. There is a lack of research on corruption as an internal challenge factor in the healthcare or others industries. According to [20], corruption is rampant in the manufacturing industry in Mozambique. In addition, the corruption is a major challenge for the manufacturing industry in Mozambique. Even though none of the reports about corruption in the healthcare industry poses an internal challenge and it is a very sensitive topic but this study believes it happens in real practice. The healthcare industry is bound by legislation to contribute towards sustainable development and face the hurdle in order to succeed in their business in simply way. This not only demotivates manufacturers who are investing and engaging in green practices but motivates dishonest and unethical manufacturers to gain advantage over their competitors. Hence, previously, none of the studies had reported corruption as an internal challenging factor in the healthcare industries and this requires further investigation.

3.1.4 Lack of knowledge and awareness

Green Healthcare Supply Chain Management is one of the proactive strategies aimed at enhancing the capabilities of the Supply Chain Management in the healthcare industry. GHSCM enables organizations to comply with legislative requirements & maintain a competitive advantage that contributes to sustainable development. Green business practices in the healthcare industry are not easy to adopt and implement due to the presence of

numerous challenging factors. [16] stated that managers are not properly equipped to control the supply of medication due to low levels of awareness regarding the supply chain concept in hospitals. In addition, [24] stated that the lack of awareness in the healthcare industry regarding the waste handler is the main reason for the mismanagement of medical waste.

Furthermore, the internal challenges faced when implementing GHSCM practices, such as lack of awareness by customers, staff, suppliers, and management, requires the enhancement of their knowledge on green practices through training [22]. However, the situation in the construction industry is different in regards to the lack of knowledge and awareness. According to [4], the lack of knowledge and awareness related to practices and benefits lead to the lack of spending on resources needed to implement the green supply chain. As for the Indian mining sector, it is more concerned about cost-saving opportunities during the implementation of the green supply chain. This sector believes that green supply chain practices would increase costs and deny the sector of benefits such as mitigating pollution, waste minimization, effective utilization of energy and resources for implementing the green supply chain [18]. Therefore, the industries need to increase knowledge and awareness of green practices through the bottom-up management approach and concerted organizational efforts, such as training programs and individual context to increase knowledge. Then the implementation of Total Quality Management (TQM) also aids for the companies that able to improve quality of awareness and knowledge [12].

3.1.5 Lack of skill

The firm's internal challenging factors that implement the green supply chain practices is related to lack of skill. The healthcare industry faces the same issue during practices. The healthcare industry is a critical industry and the process is related to humans who require special training to be employees. [12] stated that the employer must provide managerial knowledge and skills to the employee through a right combination of strategies and practices. According to the [1], the lack of training for public procurement officials in the Australian public healthcare sector is a challenge when implementing green procurement. Thus, proper training is needed for healthcare industry employees in order to upgrade existing skills and competencies. The proper training will also develop a new 'mindset' and enhance knowledge.

According to [18], the employee's lack of skills will have a negative impact on productivity and maintenance of equipment and indirectly increase pollution. In order to succeed in business, the top management, as a tangible resource, also needs skill, knowledge and experience to blend with the strategies and practices. Therefore, if the healthcare industry wants to be competitive in the overall market, it has to provide better skill for its employees. [14] shared the same view, whereby in order to reap the better performance, the firm requires organizational learning and skills to generate a highly competent skilled workforce in the long run. For further discussion, focus should be on internal challenging factors related to information technology.

3.2 Information Technology

The information technology (IT) system is being progressively considered as an internal challenge for efficiency in green healthcare supply chain management practices. The building of an IT system for green healthcare supply chain management practices is crucial for achieving the purpose of sustainable development. [15] supported this by saying that the IT-based approach for green growth in various industries is based on the initiative to achieve sustainable development. According to the [16], the IT system used in the healthcare industry in Malaysia is intended to improve information and communication through automated processing of orders and suppliers. However, [17] gave a different view by saying that the IT system is a weapon to compete on a worldwide scale through increased competence, being closer to the client and build a strong relationship with the supplier. In addition, the IT system provides benefits to the organization through the prompt exchange of real-time information. For example, the benefits of the IT system for service sectors in Bangladesh was the contribution towards improving its competitiveness [17]. Therefore, to ensure that the healthcare industry is sustainable in the global economy it has to build an IT system and use it in its supply chain practices in order to be more competitive. For further discussion, focus would be on internal challenging factors related to suppliers, such as the quality of the supplier, which contributes to the sustainable development of the healthcare industry.

3.3 Supplier

The green healthcare supply chain management practices is a new tool for achieving sustainable development and supply chain transparency. In order to ensure the healthcare industry contributes to sustainable development, it must manage and work with its suppliers. Nevertheless, according to [2], managing suppliers is difficult and requires systematic monitoring, measuring and communicating. [4] also emphasized that suppliers play an important role in building green practices. For example, to successfully implement green

practices, the firm is dependent upon green materials provided by suppliers and needs to eliminate shortage issues by building a strong supplier partnership. Moreover, building a strong supplier partnership in green practices will develop organizational capabilities in the cost and quality aspects. Furthermore, green practices in the healthcare industry can also be successful if action is taken on supplier issues. [1] affirmed that suppliers are crucial stakeholders and without the full participation and support of suppliers, it will be impossible to succeed. Therefore, in order to succeed in green practices, it requires the improvement of supplier knowledge through training and education that is related to green practices. For example, enforcing the supplier to use an IT system (VMI) in the healthcare industry will create an inventory of all the customers and increase supplier knowledge [19].

4. Conclusion and future research direction

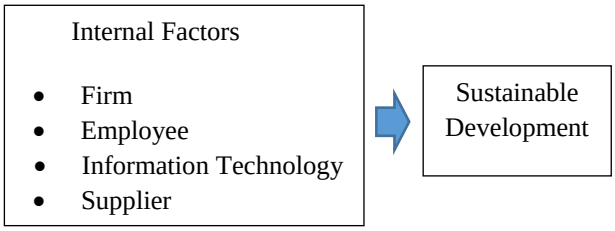

Figure 1. The proposed framework for the case study

With respect to the focus of this study, it is believed that empowering green healthcare supply chain management practices could provide opportunities for organizing and comprehending the sequence of new ideas. Based on the Figure 1, our conceptual framework proposes that internal factors of GHSCM practices (i.e., firm, employee, information technology, and supplier) will contributed to the sustainable development. This relationship was not considered in our empirical study and, therefore, needs to be addressed in future research. Green healthcare supply chain management practices also help this study to link its existing ideas with the knowledge to be taught. The literature review has shown that the internal challenging factors related to green healthcare supply chain management practices must be determined prior taking action to sustain the business in the global economy. Focus on the internal challenge factors will build organizational capabilities in order to sustain the business. The organizational capabilities are built by increasing firm capabilities, such as increasing employee's knowledge and financial support, information technology and strong supplier partnership. Furthermore, the focus on organizational capabilities is because it is a source of competitive advantage. Companies must leverage, strengthen, and diversify their competencies to sustain the business. From the author's viewpoint, the best strategy for implementing green supply chain management practices is for the firm to be sustainable in the global economy. The implementation of green supply chain management practices also serves as a competitive advantage for the firm and contributes to sustainable development. Therefore, the healthcare industry should take up the challenge to build the competitive advantage in the global economy implementing green healthcare supply chain management practices as a weapon. Focusing on the internal challenging factors will also build organizational capabilities of the healthcare industry and contribute to sustainable development.

The current study posits that the implementation of GHSCM practices would possibly need suitable capabilities in order to increase the competitive advantages. To address this specific concern, this study had focused on the internal challenging factors that contribute to building organizational capabilities that influence GHSCM practices and its subsequent effects on economic, environmental, and social aspects. The study is one of the first to conceptually identify and discuss the use of green healthcare supply chain management practices and its integration into the healthcare industry in a single setting in a developing country. In conclusion, green healthcare strategy could induce numerous benefits to a healthcare industry based on organizational capabilities as well as render benefits to the economic, environmental and social aspects. GHSCM practices are becoming increasingly popular and a global voice in environmental practices that contribute to sustainable development, which enables firms to secure economic profits while enhancing its image in relation to environmental concerns. Moreover, the result would help provide insight into Malaysia's healthcare industry on how it could improve internal challenging factors with the adoption of green healthcare supply chain management

practices and contribute to sustainable development.

This study basically highlights the healthcare industry that adopts GHSCM practices in order to achieve competitive advantage. This is because the internal factors influence GHSCM practices. The framework was adapted from the literature review on GHSCM practices that focus on internal factors and impact sustainable development. GHSCM has evolved into a key blueprint that allows the healthcare industry to be competitive and reap benefits through the act of mitigating environmental pollution. A globalized economy and conditions for sustainable development requires that the Malaysian healthcare industry shift its priorities to the supply chain in its entirety. Moreover, this study intended to show that internal challenging factors can increase the firm's organizational capabilities, information technology and improve green practices leading towards sustainable development. Therefore, the active evolution of GHSCM is an important issue for implementing these practices. However, the occurrence of changes is unavoidable, such as global market uncertainty and government policy. The healthcare industry can better implement its GHSCM practices by adapting evolution to the changing global market and its requirements. Hence, a longitudinal study would be useful to complement the current study with a focus on examining recent circumstances surrounding GHSCM practices and sustainable development.

This study suggests the use of the resource-based view theory as an underpinning theory to explore internal challenging factors in green healthcare supply chain management practices because resources that exist in the green supply chain practices can be inimitable competition that contributes to sustainable development. [5] had a similar view about resource-based view theory, which refers to initiatives that represent a set of socially created by the organization to more capabilities during the practices that can ultimately result in competitive advantage leading towards sustainable development. Moreover, the author also suggested using resource-based view theory together with the stakeholder theory as an underpinning theory. The stakeholder theory will extend the firm's constituents beyond that of the direct representatives and shareholders [6]. Primary stakeholders (e.g., employees, customers, suppliers) are actors with direct influence on the firm's strategy (GHSCM practices), while secondary stakeholders can affect the company through influence on primary stakeholders (e.g., community) [6]. All key players in the supply chain are stakeholders in the firm. Furthermore, from the author's perspective, the internal challenging factors pertaining to GHSCM practices will increase organizational capabilities and requires full commitment from key players. Therefore, internal challenging factors also act as a strategic approach that contributes towards sustainable development.

In regards to the acceptance of management strategies that contribute to sustainable development, future research should focus on internal and external factors as a holistic strategy. Hence, the fundamental suggestion for industries that want to further develop their green supply chain management practices should not ignore the integration of internal and external challenging factors as their strategies. Another suggestion to develop a better understanding and exploration of the real phenomena of GHSCM practices in the healthcare industry that contributes towards sustainable development, future studies should employ the qualitative method by using multiple case studies. According to [27], using multiple case studies could thoroughly investigate a contemporary phenomenon (the "case") in its real-world context. Finally, it would be interesting to see if there are differences between service sectors and industry sectors in their green supply chain activities.

5. Implications

The main contribution made by the current study is the development of a framework, which was considered unimportant initially but eventually saw a big impact on the healthcare industry. Moreover, it also provided support for improvement and a starting point for future research on GHSCM practices in the healthcare industry that contributed to the sustainable Development in Malaysia. Besides that, it also uncovered the effects of internal factors (e.g., firms, information technology, suppliers) that contribute to sustainable development. In a practical sense, the internal factors could build organizational capabilities aimed at implementing GHSCM practices that contributes to sustainable development. The GHSCM practices also indirectly increase

competitive advantage and profits for the healthcare industry. Processes related to healthcare industry, such as procurement, warehousing, distribution and disposal of medical waste can stimulate growth in the healthcare industry and enhance improvements through the proliferation of green practices. This study also made significant contributions to R&D in efforts to develop environmentally friendly designs for services, which could improve organizational capabilities. From a managerial perspective, other than improving organizational capabilities through GSCM practices, such as firm information technology and supplier cooperation, it helps the healthcare industry to implement GSCM practices with an internal influence. Therefore, to improve economic, environmental and social aspects by building organizational capabilities through the increase of firm capabilities (increase employee's knowledge and finances), information technology and collaborative relationships with the supplier is a necessary ingredient for each of the GSCM practices in order to achieve sustainable development.

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