

GREEN BUSINESS MANAGEMENT AND GREEN SUPPLY CHAIN PRACTISES: A CASE STUDY IN A MANUFACTURING ORGANIZATION

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ABSTRACT

Green business management and green supply chain practices are drivers to sustainability of environment in which the organizations use to take care in their business operations. The research is conducted as a case study in a manufacturing organization that located in Shah Alam, Selangor. The research is trying to explore the organization's understanding about green business management practices and green supply chain implementation as well as the impacts on the organization. The research is applying a qualitative method where a few informants were selected for face-to-face semi structured interviews. In addition, some observations were made including photo collections. From the data analysis, we can see that the organization is applying some of green business management practices such as recycle bins, e-mail reminder, saving energy appliances, planting of trees, telecommuting, green team and green logistics. As overall, the results of green business management practices and green supply chain have improved organization's reputation and operations efficiency via cost savings of recycling procedures, minimizing wastes, reducing energy and improvement towards the employee's health issues.

Keywords: *Business, green, environment, management, organization*

INTRODUCTION

“There is a theory that you have to pick one: economics or environmental performance? That's nonsense. Innovation is the way you can have both. Companies that don't get this, really in risk as becoming as irrelevant to the marketplace.” - Mark Vachon, Vice President of GE's EcoMagination

Recently, the economic growth has increased the level of energy and material consumption, which contribute to the environmental issues and resource exhaustion problems (Bhool & Narwal, 2013) such as a limitation of resources and scarcity of foods. An increased of environmental issues also had been highlighted by many concerned parties such as governments, industry players, and pressure from consumers to push business organization to adopt green initiatives.

Business organizations were as well encouraged to innovate products and services with eco-design and minimize the negative impact to end consumers (Chiou et al., 2011). Moreover, competitive pressure has significantly improved the economics benefits when they implemented them (green initiatives). Therefore, a developing of awareness among the business organizations towards Green Business Management Practices (GBMP) and Green Supply Chain (GSC) has emerged, and becoming a tight competition among themselves, a strict policy and regulations, a humankind and community pressures in order to balance the economic. Growth as well as the protection towards the surrounding environment. Nowadays, a lot of business organizations have started to implement “Go Green Program” in their day-to-day operations as a concern to the environmental sustainability. For example, the implementation of GBMP and GSC in business operations will be resulted greater benefits not only to the organization itself, but to the rest of supply chain streams, which covers up-stream (*i.e.*, suppliers, manufacturers) and down-stream (*i.e.*, retailers, consumers). Concerning to be environmental sustainability in another hand is also a significant approach should be implemented due to it paybacks. Under Kyoto Protocol (KP), there is a mechanism called Clean Development Mechanism (CDM) as defined in Article 12 of the KP, a business organization in a developing country should be freely to implement an emission reduction project, which subjected to meet the KP targets to stimulate environmental sustainable development (United Nation, 2015).

In European Union, United States, and Japan, the implementation of GBMP and GSC has been around for a decade ago in which practiced by a lot of business organizations that involved in forward-thinking approach. These organizations (*i.e.*, Philips, GE, Honda, Sony and Toyota) seriously make huge investment for future existence and human life generations such as reducing in carbon footprint and CO² emissions, generating electricity from solar and wind, as well as promoting internal strategic motivations (among employees and top management) which are related to the gain the opportunities in agility of the market. In this research paper, we are trying to explore the practices of GBMP, including the GSC in a manufacturing organization as a case study that located in the industrial area of Shah Alam, Selangor. The research is motivated by the theory of Technological, Organizational and Environmental (TOE), in which three main elements are discovered for the business organization to be successful in implementing the GBMP. The paper is introduced by quoting a statement from General Electric’s president in which the organization can achieve economics and environmental objectives together with the embedding of innovations. Then, a literature review is presenting together with a statement of problem and also the research objective as well as questions. Next, the paper presents the method of data collection and the data analysis. The paper ends with some discussion on the findings, some limitations, and a conclusion.

LITERATURE REVIEW

GBMP and GSC are important elements for business organizations to be adopted. By adopting and implementing them, the greener image in manufacturing industry can be achieved and importantly the adopted organizations will minimize the contamination (*i.e.*, to air, land, and water) in which affect the human survival. There are some studies on GBMP and GSC that have determined a broad range of factors to develop

environmental management initiatives and practices to its operations and supply chain (Lee, 2008; Liu et al., 2011). It can be motivated by government green initiatives through campaigns, programs, and policies; the organizations' stakeholders through requisition to comply with Green Standard of Operating Procedures (GSOP) towards environmental regulations, or even promoted by the external strategic motivations which are together (*i.e.*, other business organizations, public agencies) that looking for producing greener products and services, which fulfil the consumers' needs as well as to stay in green competitive market. Some of the common benefits of GBMP in achieving sustainability are enhanced value for cost reduction, healthier customers, and a competitive advantage.

What is actually the GBMP and GSC about? First, the GBMP and GSC elements are concerning on saving something in the day-to-day business operations towards the sustainability of surrounding environment. According to Edmonton (2013), green business is about the organization's efforts to reduce its impact to the environment, society and economy through such methods as reducing waste (*i.e.*, pollution to air, water and land) and reducing and minimizing of energy consumption (*i.e.*, water and electricity). Therefore, a green business will engage in forward-thinking policies for environmental concerns and policies that affecting human rights for its survival in the present and future life. The green term in management or in a business organization reflects to the function that coordinates the efforts of people (*i.e.*, stakeholders, top management and their employees) to accomplish the green goals and objectives such as producing greener based products and services (Richard & Derek, 2001). Thus, business organization can utilize available resources to meet the goals efficiently and effectively. In order to do that, top management must involve into planning, organizing, staffing, leading or directing, and controlling the organization's green mission or vision to accomplish a goal.

Chen (2008) mentioned in his article that there is no proper definition of GBMP is available. However, since a few years back, there are words of "Green Companies," "Green Products" and "Green Services," but they are defined themselves to be "green" mostly through activities in their corporate social responsibility towards environmental and ecological issues. Presently, a globalisation market is rapidly developing, and the supply chains of the products and services were also established so fast, which is finally affecting the humankind as all. In addition, the GSC is commonly related to the entire supply chain members who must apply the green initiatives which reduce the negative impact to the entire economic community and its environment. Those influencing issues like employees, natural resources or the pollution were seen to be not changing at all. Thus, sustainability is often seen in business organizations as the strategy to keep an organization's profits on a high level in the future.

Green Business Models

There are two main models in green business: the incentive models and the life-cycle models. The incentive models include functional sales or product service systems and performance-based models, which may have green effects such as Energy-Saving Companies (ESCOs), Water Saving Companies (WASCO), Material Saving Companies (MASCO), Chemical Management Systems (CMS), and Design, Build, Finance, Operate (DBFO) etc. The life-cycle models include cradle to cradle, take

back management, GSC management, and industrial symbiosis. Many of the business organizations that have employed different types of green business model and innovation to support a more overall and general green business model. Their green business model innovations thus overlap and/or support each other by building on business approaches that derived from a focus on restorative value and materials' streams (Seidel & Recker, 2012).

Few have so far focused their green business model innovation on both their input side (pre-production and production) and on their output side- use and after-use/reuse (Henriksen et al., 2012). In addition, a study performed by Chiou et al. (2011) in Taiwan found out that other form of green business models could be executed are; (i) green manufacturing and packaging, (ii) environmental participation, (iii) green marketing, (iv) green marketing, (v) green suppliers, and (vii) green eco-design. Moreover, a study by Nawrocka et al. (2009) found that ISO certifications such as ISO 9001 and ISO14001 also can be drivers. There are three keys operational elements of implementing the GBMP such as; (i) to communicate the (GBMP) to the suppliers, (ii) to motivate and enable the suppliers, and (iii) to verify that respective suppliers follow the ISO requirements.

The characteristic of Green Business Management Practices

Green business management practices are often characterized by the following:

- i. They include environmental criteria in all major business decisions;
- ii. Whenever possible they supply environmentally friendly products or services;
- iii. The business is clearly concerned about its environmental impact; and
- iv. The business has made a long-term commitment to applying environmental criteria in its daily operations.

As well as considering the impacts of its own business operations, a green business organization also considers the environmental impact made by its supply-chain members such as suppliers, manufacturers, warehouses, distributors, trades and employees as well as consumers. The organizations environmental furthermore could be influenced by strong internal training of employees to increase its involvement in the GBMP (Liu et al. (2011). In addition to that, Lee (2008) has identified two elements that drove business organization to adopt the GBMP which are their stakeholders and the government.

An extensive study done by Diabat and Govindan (2011) had found 11 drivers that could be adopted into GBMP such as; (i) environmental collaboration with suppliers, (ii) collaboration between product designers and suppliers, (iii) government regulation and legislation, (iv) green design, (v) ISO 14001 certifications, (vi) integrating quality environmental management, (vii) reducing energy consumption, (viii) reusing and recycling materials and packaging, (ix) environmental collaboration with customers, (x) reverse logistics, and (xi) certification of supplier's environmental management system. Meanwhile, Eltayeb and Zailani (2011) have identified other four drivers for business organizations to implement the GBMP such as; (i) regulations – government procedures and policies, (ii) customer requirements, (iii) expected business gains – in terms of reputation, high sales, and (iv) social responsibility – via corporate social responsibility (CSR).

Benefits of Green Business Management Practices (GBMP)

The GBMP brings tremendous benefits to the business organizations, and its surrounding environment. Kumar and McDonough (2011) believed that the GBMP can reduce business expenditures such as quality improvement and respectable organization reputation. By the same time, it also can increase customer awareness of the environment which helps increase and retain customers by increasing company's profits. Lynam (2014) agreed with recycling is started from the necessity to efficiently use hard-to-find resources. She encouraged human have developed a certain level of personal accountability to do their own part in being green and respecting those that are green. Every business organization can benefit from minimising its environmental impact. While complying with environmental laws and doing a bit to help the planet, it is important to keep going green that also delivers direct benefits to business organizations.

Impact of Green Business Management Practices (GBMP)

Environmental issues have become a crucial concern on a global level. In today's rapidly growing economy, business organizations are expected to fully understand the impact that they have on the resources that will be available to future generations (Marcus & Fremeth, 2009). All of this increased attention to environmental responsibility has brought up questions as to what the financial implications are for business organizations that chose to operate in an environmentally-friendly manner (Simpson et al., 2007). Business organizations that have invested in environmental improvements deliver cost savings through efficiency and innovation in products and processes. This era brought about changes to legislation and the development of a "check and balance" system to monitor how different business organizations treat the environment.

A study of Indian manufacturing industries which conducted by Vesna et al. (2012), found that the remuneration of GBMP are; (i) straightforward cost reduction, (ii) improve of collaboration with suppliers, and (iii) encouraging of the life-cycle. They also found that GBMP can improve the environmental awareness among the subordinates, including their suppliers' employees and customers. Furthermore, the GBMP also encourages organizations to efficiently managing their products' returns, and utilized average life cycle of product data to improve R&D for product innovation. Lutra et al. (2011) did mention in their discovery, the government legislation, policy and rules were major contributor for GBMP implementation by many business organizations. They have proven that there is a significant relationship between the adopters of GBMP and government legislation such as enhancing business organization's reputation and brand image.

Green Business Management Practices (GBMP) Strategy

According to Shang et al. (2010), as environmental awareness continues to increase, corporations are beginning to view the benefits that can be achieved through strong environmental performance. Many large business organizations are forming an environment function in their corporate structure that no longer simply monitors regulations, but has a strategic role in the company. These business organizations are

realizing that there are many opportunities to apply the concepts of sustainability and the three R's which are reduced, reuse, and recycle in the business world.

In many cases, these types of actions lead to increased efficiency and cost reductions, and entrepreneurial opportunities for new-product introductions to solve environmental problems. Information, communication and technology (ICT) tools can speed up the business organization to adopt and implement the GBMP and GSC. The ICT can support the business operations and provide systematic ways to measure, contain, mitigate and solve environmental problems. This is a key to the business organization's survival in the sustainable future. The element of ICT focuses area in GBMP and GSC that enable a smooth transition to a green organization such as; (i) Product Life Cycle Management, (ii) Supply Chain Network and Logistics Optimization, (iii) Process Optimization, and (iv) Green Reporting System (Gupta et al., 2010).

Benefits of Green Supply Chain (GSC)

GSC can be defined as an assimilating the environmental thinking into supply chain (management) including product design, material sourcing and selection, manufacturing processes, delivery of the final product in the consumers as well as end-of-life controlling of the product after its useful life (Srivastava, 2007). A few studies conducted by Chein and Shih (2007) and Bhateja et al. (2011) have recognized a few parts of the green supply chain that implemented in manufacturing industries such as; (i) green distribution, (ii) green procurement, (iii) green manufacturing, (iv) reverse logistics, and (v) measurement of green supply chain performance. Their study also found that the GSC becomes high awareness among the manufacturing and their suppliers.

The GSC also has influenced the top management in the manufacturing industry to decide it as a part of their CSR programs now and for future implementation. Other benefits of GSC are; (i) increase competitiveness, (ii) differentiate the green image of business organization from non-adopters, (iii) enhance organization's reputation and image brand, (iv) increase financial remunerations, (v) improve organization's responsibility towards environmental conservation, and (vi) develop organization's accountability with green regulation compliance. On the other hand, the GSC must include the green logistics. Among the green logistics, initiatives can be adopted by the business organization are; (i) the adoption of fuel-efficient vehicles (ii) electricity management systems and (iii). Solar-energy systems.

According to Lin and Ho (2010), there are three elements that can be moderated to apply the green logistics such as; (i) technological factors – implementation of ICT tools to gain the relative benefits such as Hybrid technology, Global Positioning System (GPS), Radio-Frequency Identification (RFID) and E-Procurement system, (ii) Organizational factors – using flat or network organization structure, hire the knowledge workers, install the Decision Support System (DIS) and Business Intelligent (BI), and (iii) Environmental factors – must follow the government's green procedures and policies, customer's right on green products and services.

Problem Statement

Nowadays, our surrounding environment is seriously polluted and everyone is encouraged to participate in green activities or any other programs that could save the earth. As an example “Go Green” activities are implemented by many individuals or in a group (*i.e.*, nonprofit organizations). However, presently, many of the business organizations are realized that green programs (*i.e.*, green products, green innovations, green supply, etc.) could contribute numerous benefits for them as well as other parties. The consequences from business organization’s operations resulted in waste and emissions, which can be found in every stage in the supply chain (*See* Figure 1). Thus the adoption process to change from old-style day-to-day operations to fresh approach requires multiple green elements to change especially the stakeholders and top management behaviour. Only then, climate information, modern technologies or other adoption strategies can be considered. At the end, the process of adoption is always constrained by the institutional, social, economic and political environment in which people must deal with.

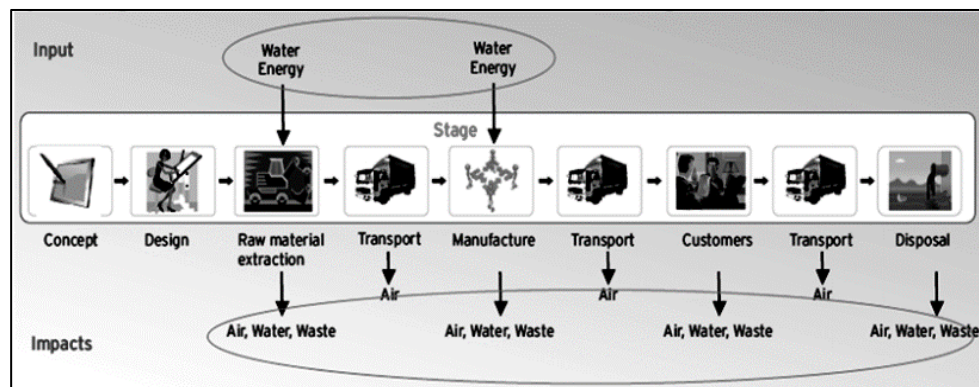


Figure 1
Environmental Impact at Every Stage of Supply Chain

Therefore, it (*i.e.*, CO² from factories, CO from transportation) has become one of the main sources of serious environmental problems, including global warming, heavy air pollution, and acid rain (Kim & Min, 2011). Thus, by implementing the GBMP and GSC in their organization, they are more responsible for sustainable environment, especially for next-generation survival. In another word, the practices of GBMP and GSC within the manufacturing industry could be balanced the economic growth and environmental sustainability.

Research Objectives

- i. To explore and understand the GBMP and GSC initiatives implemented within the business organization.
- ii. To identify perceived benefits from the implementation of GBMP and GSC.

Research Questions

- i. What are GBMP and GSC initiatives that been implemented throughout the business organization?
- ii. What are the perceived benefits from the GBMP and GSC implementation?

Research Scope

The scope of the research is exploring and understanding the GBMP and GSC at a business organization that located in Section 25, Shah Alam, Selangor. The organization is involved in manufacturing of paper businesses. They produced papers, tissues, barcode tapes, medical charts, fax papers and other related paper products.

METHODOLOGY

Qualitative

This research is applying a qualitative method. The method allows researchers to collect data via interviews in which can capture comprehensively within a narrative segmentation. It also allows researchers to go insight into the interest for the research. According to Guion et al. (2013), in-depth interview is the qualitative interviews that are tools to use in planning and evaluating. In-depth interview also can describe as qualitative research technique includes carrying intensive individual interviews with a small number of informants to investigate their thinking. All questions during the interviews were validated by some experts in the green business management areas. They are two senior lecturers from Universiti Utara Malaysia and two public officers from Ministry of Energy, Green Technology and Water (www.kettha.gov.my). A set of interview guide is passed to each of informant a week before the interview that place. The document of data confidentiality also signed by researchers and informants in order to protect both parties from data manipulation, sensitive issues and confidential substances. The research is carried out as a cross-sectional type within six months of period (February – July 2013). In this period a selected informants from various departments selected informants be involved in the semi-structured interviews. All together are six informants (*i.e.*, senior managers, executive officers and supervisors) and each session of interview is not less than 45-minute. Each interview is recorded by a digital recorder.

Then after the transcriptions were made from each of the interviews, each informant has validated the information, and they are agreed that information can be published for academic purposes. In addition, the researchers also make use the observation technique. An observation is a fundamental way of finding out about the phenomenon around us. Therefore, observation can provide rich qualitative data, and sometimes described as 'thick description'. Geertz (1973), has explained that some matters can be explained by carefully observed and detailed field notes also can enhance the subject matter. Observation also is a social research technique that involves the direct observation of phenomena in their natural setting. According to Nick (1998), he believed that 'observation' does not just involve vision: it includes all our senses, although in practice sight and sound. Therefore, in this research, we are exploring the condition of the organization from time to time, these including attends to green business meetings, involved in green programs and participating in green teamwork. We also took some photographs as additional evidence for our data collection.

TOE Framework

The study is applying TOE framework to explore the implementation of the GBMP and GSC at business organization – a manufacturing of papers-related product. Originally, the TOE is developed by Tornatzky and Fleischer (1990), as a model to study the business organization in adopting and implementing technological innovations (See Figure 2). There are three main elements influencing the processes such as; (i) the technological context, (ii) the organizational context, and (iii) the environmental context. The technological context contains the internal and external technologies that are applicable to the organization (*i.e.*, Management Information System, Lean Six Sigma System). The organizational context may discuss to the characteristics and resources within the organization, including the organization's size, the degree of control, and degree of formalization, managerial arrangement, human resources, and relationships among employees. The environmental context comprises the size and structure of the organization's industry, the organization's competitors, the macroeconomic setting, and the governing environment (*i.e.*, Small, Medium Enterprises, large organizations, monopoly and homogenous market, etc.)

Tornatzky and Fleischer (1990) also stated that those three elements could be “both constraints and opportunities for technological innovation.” Thus, these three elements will be an inspiration for the organization to search, to suit, to adopt and to implement any kind of innovative approach throughout the organization.

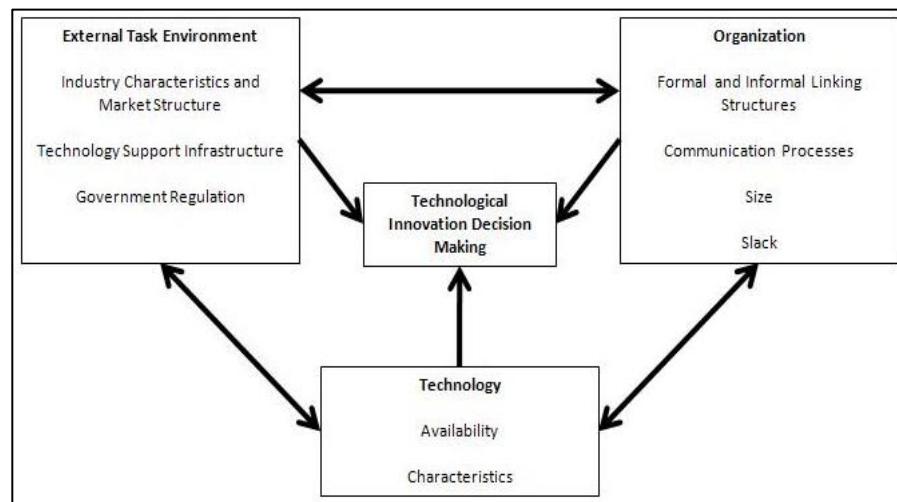


Figure 2
Technological, Organizational, Environmental Framework

From the literatures described above, we found about 14 elements or drivers (to adopt and implement the GBMP and GSC) that suited into TOE framework, which displayed in the following table (See Table 1).

Table 1
TOE Elements That Drive the Adoption Process

Technological Context	Organizational Context	Environmental Context
Adoption of ICT Systems (<i>i.e.</i> , EProcurement)	Organizational Capabilities and Awareness	Environmental Concern and Legislation
Availability of ICT Systems	Demand for Environmentally Products and Services	Social and Environmental Responsibility
Know-How Employees (<i>i.e.</i> , Highly ICT Skills)	Scarcity of Resources	Government Policies and Procedures
Extensive ICT Tools Training/Workshops	Higher Waste, Pollution and Disposal Generation	Global Climate and Ecological Pressures
-	Investor and Shareholders Pressures and Support	Supplier Awareness and Willingness

Based on TOE framework from Figure 2 and 14 elements as displayed in Table 1, we are trying to explore possibility that the GBMP and GSC have been adopted and implemented throughout the manufacturing organization. The data collection processes are coming from face-to-face semi-structured interviews with six informants. Each of them is given a set of the interview guide where the conversation will be much guided and narrowed to research objectives. However, open-ended questionnaires were also conducted during the interview process taken place. In addition, a set of questionnaire containing four sections is equally important to be fulfilled by them. To strengthen the data collection, we are also performed snapshot (*i.e.*, picture's taken) sessions towards the activities that related to GBMP and GSC.

FINDINGS

Business Organization Background

The business organization has established since 1989. Currently, the organization has adopted and implemented the green programs and holds the certifications of ISO 9001 and ISO 13485. It has a certified direct thermal and thermal transfer products' manufacturer in South-East Asia. Presently, they have 25 years of experience in the thermal paper industry, and it has grown into a full fledge thermal products' manufacturer, operating from two factory sites spanning across 40,000 square meters, with over 20 printing presses and over 40 high tech slitting. The organization has FSC certified and CE approved products, it also has further strengthened global brand presence, in more than 94 countries world-wide which they currently serve. Their operational capabilities and sound technical know-how have garnered the organization via OEM partnerships with several great brands and continued preferred supplier contracts with outstanding and prestigious companies in worldwide. As overall, they are success lies in their commitment towards quality and service, which have upheld for the last 25 years. They have the capabilities to meet even the most

stringent quality requirements to help their customers improve their sales, and protect their margins' competition. Their financial strength gives them bulk purchase capabilities to ensure their products are cost competitive.

Green Business Management Practices

3R – Recycle, Reuse and Reduce

Recycling is a process to change the waste materials into new products or construct potentially useful materials and to prevent waste be thrown away. Recycle is a key component of 3R green programs, which are containing of three components; (i) Reduce, (ii) Reuse and (iii) Recycle. The respective business organization has implemented the 3R programs since a decade ago. Due to that, the organization is awarded one of the best manufacturers in Shah Alam district in implementing 3R green program. The organization has followed some of the ISO standards, which related to recycling such as ISO 15270:2008 for plastics waste and ISO 14001:2004 for environment management to control of recycling practice. They have managed the 3R green programme consistently which located in the office administration buildings and factory buildings. There are three types of recycling bins that have been provided by the government to dispose of recyclable items (*See Figure 3*). They make use recycling bins, which come in two sizes such as 360 litres and 660 litres. These recycle bins are categorized into different colour; (i) Blue – for all coloured and non-coloured paper such as newspapers, magazines, books, catalogue sheets, and cardboard boxes, (ii) Brown – for all coloured and non-coloured glass such as drink bottles, food containers, and cosmetic bottles, and (iii) Orange – for aluminium tins, steel tins, and plastic. All kinds of aluminium and steel tins such as soft drink tins and food product tins. All coloured and non-coloured tins such as shopping bags, bottle drinks, mineral water bottles, food containers, and detergent bottles. Based from the results in data analysis, we can conclude that business organization is proactive in executing the 3R program. Each of their employees understood about the regulations executed by the organization on the 3R implementation.

One of them said. *“Indeed, we are noticed about the green program, especially the 3R. Since they (top management) consistently talk about it, we can see some improvements See the bins regularly full with the scarps.... And many of us are seemed dedicated to do it...we are also glad to do that...since we are rewarded with some incentives ... I meanto the win department.”*



Figure 3
3R Recycle Bins

Digital Storage and E-mail Management

Based on the observation and interview sessions, employees within the business organization usually use e-mails for their internal and external communications. It is compulsory rules for them to state a statement such as *"Please consider the environment before printing this email"* at the bottom of e-mail signature. Moreover, anything related to reports, charts, writings and others, they should be stored in computers or external storage hard-disk. Its mean the filing system is more organized in digital storage, and it has reduced the usage of printing papers. One of the informants declared that the papers' consumption had reduced approximately 20% in each month. Transferring, searching and retrieving of information needed are also easy to manage and has reduced in terms of time and digital format. He also mentioned that office technology implementation makes his job more meaningful and satisfy.

Green Poster Display as Reminder

There are a large number of green posters or art works displayed at every important place in the business organization (See Figure 4). For example, meeting rooms, waiting rooms, halls, pantry, and cafeterias, etc. Employees are insisted individually to report anything that went wrong to be corrected, replaced or repaired immediately.



Figure 4
Green Posters

Saving Energy Appliances

From the observation, we noticed that they have replaced customary bulbs with LED type. It uses 70% less energy than customary bulbs, emit 75% less heat and long lasting (*i.e.*, energy smart LED bulb lasts for 22.8 years). The management encourages their employees to turn off the lights when unused. They also make use solar power street lamps for surrounding areas. A lot of long-standing air-conditioners have been replaced with inverter technology. A report from the informant said that the electricity consumption had been reduced about 10% - 15% each month since 5-year ago. Meanwhile, employees are enforced to unplug their electrical appliances each time before going home. Push taps water (*e.g.*; water stopped running after approximately 15 seconds) installed in each sink has resulted the organization saved the consumption of water bill by 5% each month (See Figure 5).



Figure 5
Green Appliances

Plantation of Trees

We found that the surrounding organization's administration and factory buildings are covered by organized trees plantation (See Figure 6). According to one of the informants, as she said, *"Indeed, we have planted so many trees around our place since past 15 years. Even now, we are keeping our trees in proper care...we make sure each empty space if possible to plant some more trees. We have noticed that our air-conditioning can work efficiently, and surprisingly our electricity bills have reducedI think...about 10% to 20% max!"*



Figure 6
Trees Planted Around Buildings

Indirectly, the trees plantation could have some benefits such as; (i) trees absorb CO² while removing and storing carbon while releasing the O² into the air, (ii) trees absorb odors and pollutant gases (*i.e.*, nitrogen oxides, ammonia, sulfur dioxide, etc.), (iii) in average an acre of mature trees can provide fresh oxygen for 18-people, and (iv) trees can absorb heat from surrounding and approximately reduce about 10°F in temperature, and cut air conditioning needs by up to 50% (Tree People, 2015).

Telecommuting

The business organization has applied a telecommuting as one of the GBMP. The management allows to do outstation duties to officers or salespersons to work from their respective areas (*i.e.*, Shah Alam, Malacca, Johore Bharu, etc.). From the interviews, we are cleared that telecommuting has saved the organization's travel

expenses, and minimizes air pollution in terms of vehicles' consumption (*i.e.*, fuel savings, toll payment, and parking area). Figure 7 shows some benefits derived from telecommuting as impact upon the organization within a year.

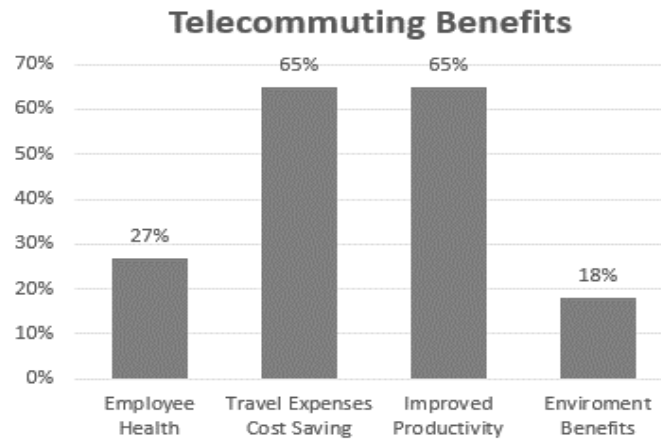


Figure 7
Telecommuting Benefits

Green Supply Chain

We were told by informants that their business organization has executed GSC programs since May, 2007. We presented the findings from the data collection process in Table 2 as shown below.

Table 2
GSC Elements, Output and Impacts

Elements	Output
Process innovation	Short processes; speed up delivery; reduce processing time; reduce human errors; maximum space-load;
Product innovation	Vary product; high quality; increase brand image; positive reputation; increase competitiveness; efficient packaging
Clean production	Waste minimization; reusing waste products; reducing pollution at the source and logistics
Reverse logistics	Recollecting customer's feedbacks; improve products; improve quality; reduce defect inputs and outputs
Closed-loop manufacturing	Create product using renewable energy; reduce electric and water consumption
E-Procurement	Buying and selling products with less impact on the environment; involve in E-Tender and E-Bidding

Green Team

To keep continuing the green programs that are tailored to the organization, top management had created a team called "Green Team." There are 15 members coming from various departments within the business organization. In order to get a clear picture about green programs, they have to link up with some of the active green NGOs in Malaysia. They are responsible for seeking new ways to lighten the

organization's footprint and also to make reports on it. The team uses their findings to customize future efforts to the needs of organization presently and the future.

Green Logistics

At this time, the organization has engaged with a few logistics providers in order to implement GSC initiatives. This approach is crucial as to make sure each other understand the importance of their environmental performance. Meanwhile, top management conjointly with middle managers have attended workshops for enlighten their works to implement the GSC in the organization. During the interviews, we were told by informants that they had a clear mind to do in cooperation with logistics providers.

One of the informants said, *"Yes, as we concern about green logistics, we must have our internal and external transportation with fuel-efficient vehicles ... with that technology. We can release a minimum impact of CO² to the environment ... also now we are engaging with green consultants to help us ... to design and implement an efficient packaging for our products ... together with a loading optimisation system yes, to maximize our products loads into the lorry or trucks ... I also involved in the green team ... and now we are trying to get ICT consultants to work with us in developing route and journey optimisation ... maybe using GPS!"* The benefits obtained from the green logistics programme are consistent with some research's findings (Hazen, et al., 2011; Kahn & Kobayashi, 2007).

Impact and Benefits Analysis

From the findings, we conclude our research objectives; (i) to explore and understand the GBMP and GSC initiatives implemented throughout the business organization and (ii) to identify perceived benefits from the implementation of GBMP and GSC, which has been carried out as a case study in the business organization (manufacturer of paper-related products) at Shah Alam, Selangor as presented in Table 3 below.

Table 3
Results from Impact and Benefits Analysis

Context	Impact			Benefits		
	High	Medium	Low	High	Medium	Low
Technological Context						
Adoption of ICT Systems (<i>i.e.</i> , EProcurement)	✓			✓		
Availability of ICT Systems (<i>i.e.</i> , GPS, RFID, etc.)		✓			✓	
Know-How Employees (<i>i.e.</i> , Highly ICT Skills)	✓			✓		
Extensive ICT Tools Training/Workshops		✓			✓	
Organizational Context						
Organizational Capabilities and Awareness	✓				✓	
Demand for Environmentally		✓		✓		

Products and Services			
Scarcity of Resources (<i>i.e.</i> , Replanting of trees)		✓	✓
Higher Waste, Pollution and Disposal Generation		✓	✓
Investor and Shareholders Pressures and Support	✓		✓
Environmental Context			
Environmental Concern and Legislation	✓		✓
Social and Environmental Responsibility	✓		✓
Government Policies and Procedures		✓	✓
Global Climate and Ecological Pressures	✓		✓
Supplier Awareness and Willingness	✓		✓

From the technology context, we found all ICT tools and system implemented by the organization have big impact as well as the perceived benefits. For example, EProcurement system has reduced transaction costs by 30% to 50% depending on product costs. The system also has speed-up the processing time and delivery time as much as 30%. On the other hand, overall stakeholders, top management and employees have fully aware and understand on their green program's objectives. They have done so much efforts (*i.e.*, 3R, Green Appliances, GPS, RFID, etc.) to minimize their business operations impact on the surrounding environment, by supplying environmental friendly products.

From environmental context, the organization has strong supports from government's policies and suppliers have positive impact to the organization in order to keep continuing on green programs implementation. It is clearly understood that the impact and benefits of implementing GBMP and GSC are massive towards the organization itself, and the entire supply chain members, including the consumers. Moreover, such green programs have been increasingly accepted and practices by forward-thinking business organization. As overall it is important to everyone either inside or outside the organization to realise and aware the importance of green program's implementation to ensure the sustainable environment can be prolonged for next-generation survival.

CONCLUSION

Fundamentally, the purpose of the research is to explore and to understand the implementation of GBMP and GSC in a manufacturing organization at Shah Alam, Selangor. The research has carried out as a case study with qualitative approach, and the data collection is obtained from three methods; (i) face-to-face semi-structured interviews with six informants, (ii) a set of questionnaire containing four sections, and (iii) some pictures taken from related locations subjected to research objectives. From the findings, we noticed that business organization has implemented GBMP and GSC.

As a consequence from the implementation of those green programs, the organization is now having some of the benefits. Some of the examples are; (i) reusable of materials, (ii) savings on utility bills, (iii) healthy air and improve employee health, (iv) storage and space optimisation, (v) reduce processing time, increase productivity and improve organization's reputation as well as brand image, and (vi) enhance overall employees' awareness towards sustainable environmental and survival of next generation. On the other hand, the engagement with other parties such as green NGOs, green logistics providers, IT specialist and consultants, make the business organization a step ahead from their competitors. It can be understood that the organization is doing a holistic approach for implementing the GBMP and GSC to be successful. At the same time, it has created a green dimension of business management and supply chain, which ultimately enhances the employee awareness and morale, customer satisfaction and market share for the organization. Therefore, optimistically by doing all this, the organization will gain a sustained competitive advantage and lasts well into the future.

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