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# Environmental Factors That Affect the Implementation of Green Supply Chain Management in Construction Industry: A Review Paper

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## Abstract

**Purpose:** Green supply chain management (GSCM) has important purposes related to environmental performance, such as risk control, meeting marketplace expectations, achieving good commercial enterprise performance and complying with regulations. Since green supply chain management (GSCM) has been rapidly evolved since the first introduction in 1980 era. Most of the published papers are focusing on the performance measurement and evaluation of stakeholders but there are more areas that can be discussed. This paper is intended to investigate the factors that affecting the awareness level of GSCM implementation.

**Design/methodology/approach:** A systematic literature review has been made on several selected journal papers related to GSCM practices. These articles are mainly discussing the factors that affecting the adoption and implementation of GSCM in an organization.

**Findings:** From literature review, a total of twelve factors have been identified that will affect the implementation of GSCM and these factors can be categorised into four main categories which are the internal motivating, external motivating, internal demotivating and external demotivating.

**Research limitations/implications:** This study is filling the gap in the literature about the adoption and implementation of GSCM in construction industry.

**Practical implications:** Findings from this study will assist GSCM practitioners, authorities and stakeholders in the supply chain in construction industry to insight into key factors of GSCM.

**Originality/value:** A systematic literature review which assessing the factors that affecting the implementation and adoption of GSCM in Malaysia's construction industry which is not attempted previously.

**Keywords:** green supply chain management, awareness, construction industry, foster factors, environmental factors

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## INTRODUCTION

In recent years, environmental issues have severely affected human being daily life and practicing green practices has been seen as one of the approach to mitigate these problems. Green supply chain management (GSCM) is the contemporary approach in this era that should be started to be embraced by every industry as the performance of firm will improve drastically after the implementation of this practice (Friso & Kai, 2014). In Minhaj et al. (2016) study, the environmental performance, economic performance, social performance and operational performance are proved to be improved due to the implementation of

green practices. Several studies have been carried out to prove the performance improvement after adopting GSCM (Taticchi et al. 2013). Therefore, this study is conducted to investigate the motivation factors that encourage the practice of GSCM in construction industry that significantly contribute to the pollution of environment.

Besides the improvement of performances in firms, the society has begun to concern about the environmental issue which leads those companies that have good brand and reputation in green practices able to rule the market share and beat their competitors with high competitiveness in green technology and

knowledge (Wafaa and Ayman 2018). Green practices like GSCM has been long introduced and practiced in development foreign countries like America, Germany and Japan but this green practice is still new to developing country like Malaysia, especially in construction industry that really needs to implement this practice in order to maintain the sustainable environment. Golicic and Smith (2013) has said that the culture in different countries will give impact toward the implementation of GSCM and it is crucial that the implementation GSCM is tested in different country to obtain the most accurate data and outcome of the implementation. Therefore, there is necessity to carry out research in Malaysia construction industry as different culture and boundary will give different impacts and outcomes.

As mentioned by Chavez et al. (2015), to attract potential consumers and customers that concern about the importance of green practices and environmental friendly products and services, many corporations across the globe has started to adopt these environmental friendly practices to have a competitive edge in their markets. Being greener than their competitors might bring the meaning of having more customers to gain higher profit and the development of their corporations can be reached sooner than other similar companies in the same market. Furthermore, by implementing GSCM, corporations not only manage to attract more potential customer's sources but fulfilling the government regulations that requiring each corporation to achieve a standard of environmental protection approaches to ensure the environmental issues are not compromised by the authority while rapid development is ongoing. Organizations which cooperation with the authority might tend to obtain more opportunities in business aspect and survival chances when facing challenge (Vijayvargy et al. 2017).

Due to the awareness level in foreign countries has started to arise, their governments have taken many approaches like strengthen the regulations, giving incentives, reduce the income tax to lessen the burden of firms and provide training and education to those who are interested in practicing GSCM (Luthra et al. 2016). From the statement above, government is significantly become the most crucial party in encouraging and enforcing green practices related regulations and policies. According to Dubey et al. (2015) to ensure each organization in the country is obeying the green standards regulated by government and increase the number of participants in green practices. Therefore, Malaysia's construction industry

should commerce to adopt these practices as it is proven that the practices bring better performances in various aspects including fulfilling an organization main goal which is achieve higher profits.

However, there are numerous of factors that have the potential to impact the implementation of GSCM and these factors do not accurately suitable for every different organization in Malaysia construction industry due to the difference in culture, regulations and sources (Sreejith and Vinaya 2017). As highlighted by Runala and Zaffar (2015), Agrawal (2015) and Sreejith and Vinaya (2017), the lacking of knowledge and awareness toward green practices in organization and construction industry will obstruct the adoption of GSCM, hence, the present study is aimed to identified the factors that are potential to affect the awareness level in implementation of GSCM in Malaysia construction industry which are different from other studies that focus of various industries at the same time and cause confusion to the practitioners in construction industry (Brandenburg et al. 2014, Dyachuk et al, 2018).

Recently, Fahimnia et al. (2015) said that there are many published journal papers which discussed about GSCM where many areas are discussed such as study by Varsei et al. (2014), Benjaafar et al. (2013) and Christopher and Sean (2012). These studied have shown the growing in the concern, interest in the researches and practices and more research gaps are found from the researches done. From these published journal papers, many factors that are potential to affect the awareness level of implementing GSCM have been identified and those factors that are considered as factors that are related in Malaysia construction industry are picked up to be elaborated more to ease the understanding of readers, practitioners and interested parties.

In order to raise the adoption of GSCM in Malaysia construction industry, the factors that affecting the organizations decision making should be identified. Therefore, the remainder of the paper begins with the general definition of GSCM in Section 2 which describing how GSCM is understood. In section 3, the methodology to conduct this study is introduced where the extensive literature review analysis method is used. Section 4 and 5 will show the results and discussion from the literature review while Section 6 will summarize all the results and make a conclusion about GSCM in Malaysia construction industry.

### DEFINITION OF GSCM

Before the integration of green concept into supply chain management, the traditional approach has been long practiced since late 1980s (Fahimnia et al. 2015). However, after the long evolution of about thirty years, the environmental issues have enormously affected the globe and it is vital to solve and mitigate the problem as soon as possible. Hence, the green concept is added into the conventional supply chain management and form GSCM that concern about the environmental issue while promising the economic and social performance after implementation.

GSCM does not have a consensus definition that can be used globally and the available definitions are diversified due to the difference in industry and scale of the companies. From literature reviews, a total of 22 definitions for green and 12 definitions for sustainable supply chain management can be found which mean the existence definitions might confusing the practitioners and to those who are interested in GSCM (Ahi and Searcy 2013, Akoz et al, 2018). However, from various literature reviews that have been made in this review, a general definition that able to be accepted by the globe is formed. Therefore, after referring to multi definitions from Ahi and Searcy (2013), GSCM in construction industry can be defined as a multiple step of actions start from the design stage to the end of the building life that integrated into the conventional supply chain network which concern about the environmental protection, economic benefits and social improvement which eventually can minimize and eliminate the negative impacts of the supply chain on the environment. These steps mentioned in the definition are green design, green manufacturing, green purchasing, green transportation and reverse logistic that implemented into the traditional approach of supply chain network.

### Overview of GSCM

GSCM is contemporary knowledge and approach that will lead the current practice a huge step forward to protect the environment that has been slowly faded out due to vigorous human activities (Vijay et al., 2017). In order to protect the environment for future generations, many firms and researchers around the globe have worked work to adopt various green practices which including GSCM. From the previous studies that has been carried out on the tittle such as green design, green manufacturing, green purchase, green transportation and reverse logistic, it is found that the barriers of GSCM, low awareness level of GSCM, performance indicators in GSCM and cooperation and collaboration

of upstream and downstream in GSCM are widely discussed in Luthra et al. (2016), Chavez et al. (2016) and Gandhi et al. (2015) but there is less research that focus on the factors that are potential to impact the implementation of GSCM in construction industry, especially in construction industry that crucially affect the environmental around human being.

In this matter, Lee et al. (2014) strongly recommend that a special department can be formed to handle all these activities instead of letting these activities separated into several different departments which will eventually cause confusion and greatly reduce the efficiency and potential outcome due to overlapping of works, avoidance of responsibility and efforts are not arranged in sequence. This thought can be practiced in construction industry as well. Specialists in green practices should be gathered and form a special team to handle all these activities as the members are formed from those who have intensive experiences and knowledge, problems can be mitigated and solved quicker compare to letting the problems flow in multiple procedures that will slow down the decision-making process and ultimately show worse performance due to the lack of efficiency but not from the GSCM practice itself (Sreejith and Vinaya 2017).

### Main Activities in GSCM

Based on previous studies, there are four main activities in GSCM that play their roles in construction industry. Sreejith and Vinaya (2017), Rameshwar et al. (2015) and Rakesh and Ravi (2015) have mentioned that these activities are green design, green transportation, green construction and reverse logistic.

As highlighted by Ng et al. (2012), the green design is an effort by including the green concept into the design stage where the final outcome is energy efficient, environmentally friendly and can be reused and recycled from the correct procedures such as reverse logistic. The green design should emphasize on reducing the potential harmful materials use in the final end products as well.

Green transportation can be understood as an action where maximizing the maximum load or space that a single trip of transportation of materials nor end products can be delivered to its next destination (Ng et al. 2012). Transportation of materials and end products cannot be avoided in every industry and this is significant in construction industry as there might be million tonnes of concretes, glasses, bricks and woods needed to be delivered to construction sites in order to complete a single project (Kazancoglu et al. 2018). The

exhaust fumes that contain greenhouse gases released by transportation sector has contributed the highest greenhouse gases emission in the world.

Green manufacturing and construction are adopting green methods in producing and constructing the raw materials and buildings while lessening the environmental impacts (Sreejith and Vinaya 2017). Practitioners will practice recycling, reusing and reducing the usage of materials while pay effort in decrease the wastage created from the construction and manufacturing activities (Allen and Chia 2010). The utilization of energy usage and materials use can also ensure the achievement in green manufacturing and construction.

Reverse logistic is defined as process of planning, implementing and controlling the efficient of a finished and used to recover its value or send for proper disposal by manufacturer (Kuan et al. 2016). This action will eventually achieve higher financial performance and it is crucial in GSCM practices (Rameshwar et al. 2015). The reusable materials and products will be returned from the final end users to the producer for recrafting to ensure the materials and products can be used again. This theory applied differently from other industries as building might sustain for more than hundred years. Therefore, the design of building must consider the matter after the demolition of building in the green design aspect. The building materials like walls that have been demolished might can be used as light weight blocks manufacturing raw materials or window glasses that can be recycled to produce new window glasses as it is important to maximize the recovery and recyclability of used and disposed materials in building (Ng et al. 2012). The reverse logistic does not apply only after the completion of construction works but it can be happened during the construction works such as remanufacture the used steel system formworks.

#### **Factors that Affecting the Implementation of GSCM**

There are multiple factors that have potential in influencing the adoption of GSCM in an organization and the identified factors are basically divided into four main categories which are constructed from internal motivating factors, external motivating factors, internal demotivating factors and external demotivating factors. The introduction of these factors will essentially improve the awareness level in implementing GSCM in Malaysia construction industry which will eventually improve the product design, procurement method in

construction and the reprocessing operation on construction sites.

#### ***Internal motivating factors***

Internal motivating factors are easy to be understood as issues that happened within an organization and these factors are controllable by the management of the organization (Kirchoff et al. 2016). Upper management in an organization should fully utilize these internal motivating factors in order to obtain the best outcome after practicing GSCM as they have highest controlling power on these factors (Joseph 2012).

It has pointed that enhancement in reputation and customer satisfaction due to the improvement in the environmental performance will eventually drag to a bigger market share and better economic performance (Tang et al. 2012). In construction field, a construction organization will adopt GSCM into their construction project to assure that they are recognized in term of green achievement and become famous from the award that they might obtain later due to the outstanding and excellent performant in their projects from the high efficiency in green performance.

As it is proven that adopting GSCM will significantly increase economic performance and gaining more profit for the organization (Luthra et al. 2013), many organizations that are capable in the green expertise and have intensive knowledge will participate in green practices to ensure that organizations can perform better and earn higher profit which are the ultimate goal of every commercial organization across the globe.

As Buyukozkan and Cifci (2012) mentioned in their study, measurement should be emphasized not only on environmental performance but other performances like economic and social. Therefore, after an organization has achieve a certain achievement in all performances in local market and industry, it is possible that the organization that have larger business goals will enlarge its business to foreign markets in order to search for blue ocean which has the possibility of new opportunities and customers. However, Runala and Zaffar (2015) have pointed out that to enter new foreign market, these organizations will need to make sure that they are specifically unique to be able to attract the investors, consumers and partners that will ensure their survival in the foreign market.

Certain countries' customers have special requirement and standard related to green practices on the products and services of foreign companies (Yu et

al. 2014). Therefore, practicing GSCM and emphasize on the environmental protection is one of the unique approaches that can be considered by organization that has intention to go further. Moreover, certain foreign markets have regulations to practice green practices and to enter these markets, it is compulsory to adopt GSCM in their organization before they are qualified to fit into the market. Lasevoli and Massi (2012) pointed out that sustainable management culture in an organization will drive to better economic competitiveness and give more confidence to the organization to enter foreign market. Hence, this has driven the adoption of GSCM in an organization which is solely on their preferences and choices.

#### ***External motivating factors***

External motivating factors referring to the factors that happened outside the organization and these factors are barely manipulate-able by the upper management. In Sreejith and Vinaya (2017) point of view, these external factors are obstacles that beyond the control of the organization and it is believe that upper management can only try their best to cope these factors in order to achieve better corporate performances.

Enforcement of government regulations in green practices will ensure that most of the companies obey and achieve the minimum standard required by the authority (Hsu et al. 2013). Few departments are established to supervise, guide and monitor the construction activities on site. For example, Construction Industry Development Board (CIDB) (2018) is acting the role of controlling the construction firms, projects and activities in the country. Those who cannot meet the minimum requirement will be punished such as imposing fines, stop works until related issues are solved and unable to extend their company licenses. To avoid these problems, most of the companies will choose to cooperate and accomplish the required requirements such as obeying the environmental standards for materials and technologies set by government (Shi et al. 2013).

Furthermore, Dubey et al. (2015) mentioned that the stakeholder pressure in the supply chain will force the linked organization to adopt GSCM, especially when the related stakeholders in the supply chain are their upstream stakeholders who are the one who will eventually pay for their service and product. From the statement above, it is obvious that upstream stakeholder has higher power in deciding the implementation of GSCM toward the whole supply chain system. This phenomenon is even more significant when the

developer is requiring all their downstream stakeholders to practice green to ensure their building is recognized as a green building to attract potential customers that concern about green issues. However, the willingness of the downstream stakeholders to collaborate and cooperate with upstream stakeholders will make the GSCM success (Hollo et al. 2012). This is believed to be contagious as more and more organizations will be part of the green supply chain cycle when the number of practitioners is outnumbering those who does not practice green in their organizations.

Since the upstream stakeholders are affected by the preferences of customers in their final end products and services, thus is it vital for an organization to put consideration on this factor. Nowadays, consumers have started to concern about the environmental issues and they hope they can contribute some to the green aspects based on their capabilities (Jayaram and Avittathur 2015). Hence, they will avoid from choosing products and services that are not environmentally friendly and prefer on organizations that produce, provide and include green concepts in their organizations. To attract these potential customers, organization will have to adapt themselves into green practices such as GSCM to improve the customer satisfaction level and ultimately selected by customers and obtain higher profit in their final year company performance (Tang et al. 2012).

#### ***Internal demotivating factors***

Internal demotivating factors act the same as the internal factors mentioned by Kirchoff et al. (2016) as these factors can be manipulated and changed to mitigate and solve the problems that reduce the awareness level in implementing GSCM in organization. Controlling these factors and figure out solution to solve these demotivating factors will increase the success rate and performance of the green practices quickly compared to external factors (Joseph 2012). These factors are high initial cost to implement GSCM and lack of related knowledge, skills and experiences in green practices.

High initial cost is always an issue when green practices are discussed (Lindemann et al. 2012). New equipment and machineries need to be purchased to practice the green practices in an organization. Training must be given to staffs to assure every staff is able to operate the new machineries and equipment. Besides that, training is needed to ensure staffs in the organization acknowledge and understand the concepts,

procedures and issues of GSCM before they be qualified to start the practice. The training cost and time spend on training given will surely further burden organization financial. Baumers et al. (2016) also said that the productivity of the new equipment and machineries will impact the cost as low productivity will lessen the profit of the organization. These will increase the operational cost of an organization which cannot be afforded by most of the small and medium enterprises that earn only sufficient profit to keep survive in the industry.

Lack of related knowledge and experiences in green practices will increase the difficulties in doing GSCM as the organization has no idea on what they should do to be considered as green or even do not know how to start the green practices (Akman and Mishra 2015). When the level of knowledge is low, people do not even know the existence of green practices which cause the incompetent of organization in the green practices aspect. Bag and Anand (2014) said this will drive the conventional approach to continuing taking over the construction industry and no innovation and no breakthrough and quantum leap in construction industry can be created to achieve greener future.

#### ***External demotivating factors***

External demotivating factors act the same as the external factors mentioned by Sreejith and Vinaya (2017) as these factors cannot be manipulated and changed to mitigate and solve the problems that reduce the awareness level in implementing GSCM in organization. These factors are insufficient of green professional and insufficient of green suppliers and practitioners in the industry which are beyond the control of the players.

Currently Malaysia is lack of green professionals who can guide and supervise the process of green practices in construction industry but government has tried their best to train more green professionals like conducting MyCrest and GBI through Construction Industry Development Board (CIDB 2018). Less number of green professionals will cause low awareness level of green practices among the construction industry stakeholders due to lack of collaboration and cooperation in adopting green practices in construction industry (DBIS 2013). Besides that, the inconvenient in finding available green expertise will also stop organization from practicing green as they cannot simply start implementing green practices without guidance of professional or consultant. Eventually, this

will slow down the development of green trend in Malaysia construction industry.

Another reason is the insufficient of green suppliers and practitioners in the industry that can provide materials, service and end products to the cycle of GSCM in Malaysia construction industry. To complete this cycle, suppliers and practitioners must present and the absence of any party will not complete the cycle. In Sreejith and Vinaya (2017) word, without the suppliers of green materials and products, the potential practitioners will feel reluctant to commerce green practices as the difficulties to obtain the service and materials will increase the cost and time consume which will ultimately affect the quality of the building. Carris et al. (2012) thinks that this is mostly caused by low initiative to do green related research on their products and service in suppliers' companies. Shi et al. (2013) also said that a construction stakeholder is facing tough time when considering to employ a new supplier who supply green technology instead of continue to cooperate with existing supplier who does not provide green technology in their services and products. This is due to there are many uncertainties in new supplier which cause the hesitation in practitioner to decide which supplier to choose. However, if there are more and more suppliers who provide green technology in their services and products, this issue can be solved easily and the green practices will be normal practice in construction industry.

#### **DESIGN/RESEARCH METHOD**

Extensive literature review on GSCM has been done in this research to identify the most potential related factors that will impact the awareness level in implementing GSCM in Malaysia construction industry. Extensive literature review method used in this study is referring to Dubey et al. (2017) and Vijayvargy et al. (2017) works. 24 Journal papers from various sources have been selected to identify the most relevant factors in green practices. The collected information from various literature review are then classified into several categories which are the internal motivating factors, external motivating factors, internal demotivating factors and external demotivating factor.

**Table 1.** Influencing Factor to Implementation of Green Supply Chain Management Practices

Factors	(Sreejith and Vinaya 2017)	(Luthra et al. 2016)	(Chavez et al. 2016)	(Gandhi et al. 2015)	(Mathiyazhan et al. 2015)	(Huang et al. 2015)	(Kuei et al. 2015)	(Dubey et al. 2015)
Financial and Cost	/	/	/	/	/	/	/	/
Market Opportunities and Competitor	/	/	/	/	/	/	/	/
Company Reputation	/	/	/	/	/	/	/	/
Time Consuming and complexity	/			/			/	/
Public Awareness	/		/			/		/
Customer Satisfaction and Pressure	/	/	/	/		/	/	/
Government Regulations on Environmental	/	/		/	/	/	/	/
Incentive and Aid from Third Parties	/					/	/	
Green Knowledge and Technology	/		/	/	/		/	/
Stakeholders Pressure	/	/	/	/		/	/	/
Top Management Intention and Pressure	/	/	/	/		/	/	/
Corporate Social Responsibility								

  

Factors	(Jayaram and Avittathur 2015)	(Bag and Anand 2014)	(Mathiyazhan et al. 2014)	(Mohanty and Prakash 2014)	(Hoejmose et al. 2014)	(Luthra et al. 2013)	(Mosgaard et al. 2013)	(Xu et al. 2013)
Financial and Cost		/	/	/	/	/	/	
Market Opportunities and Competitor	/	/	/		/		/	/
Company Reputation		/			/		/	/
Time Consuming and complexity		/	/	/			/	
Public Awareness		/	/		/		/	/
Customer Satisfaction and Pressure	/	/	/	/	/		/	/
Government Regulations on Environmental	/	/	/	/	/		/	/
Incentive and Aid from Third Parties			/	/	/			
Green Knowledge and Technology	/	/	/	/	/	/	/	
Stakeholders Pressure	/	/	/	/	/	/	/	/
Top Management Intention and Pressure	/	/	/		/		/	/
Corporate Social Responsibility		/	/					

  

Factors	(Hsu et al. 2013)	(Shi et al. 2013)	(Joseph 2012)	(Hitchcock 2012)	(Tang et al. 2012)	(Buyukozkan and Cifci 2012)	(Hollos et al. 2012)	(Kim and Rhee 2012)
Financial and Cost	/	/	/		/	/	/	/
Market Opportunities and Competitor	/			/		/		
Company Reputation	/		/	/	/		/	
Time Consuming and complexity	/	/	/					/
Public Awareness	/			/		/	/	
Customer Satisfaction and Pressure	/		/	/	/		/	/
Government Regulations on Environmental	/	/	/	/		/	/	/
Incentive and Aid from Third Parties	/	/						
Green Knowledge and Technology	/	/	/	/			/	/
Stakeholders Pressure	/	/	/	/			/	/
Top Management Intention and Pressure	/		/				/	/
Corporate Social Responsibility	/		/					

**Table 2.** Ranking of The Weightage of Every Identified Internal Factors

Selected Factors	Articles	Rank
Financial and Cost	21	1
Stakeholders Pressure	21	1
Green Knowledge and Technology	19	2
Company Reputation	17	3
Time Consuming and complexity	12	4
Corporate Social Responsibility	4	5

## DISCUSSION AND FINDINGS

Twelve critical factors have been identified from the selected 24 journal papers that picked from various countries and field. These studies are picked based on the latest available option so that only updated information is recorded and high relativeness between those factors and the practice of GSCM in a corporate. From the identified factors, these factors can be categorized into internal motivating factors, external motivating factors, internal demotivating factors and external demotivating factors. Bag and Anand (2014) has mentioned the factors that affecting the implementation of GSCM can be understood as coercive, normative and mimetic pressures and these pressures will lead to organizational homogeneity.

Besides that, from the selected literature, several theories are introduced by academicians regarding the type of organization when facing the decision to implement GSCM. These theories are institutional theory, knowledge-based theory, resource-based view theory, ecological modernization theory, information theory and stakeholder theory (Sarkis 2012).

### Internal Factors

The internal factors are shown in **Table 2** and the impact of the factors are ranked in sequence based on the frequency of selected factors being mentioned in previous studies.

From the analysis, the financial and cost factor and stakeholders pressure factor have the highest weightage among the seven identified internal factors. Gandhi et al. (2015) has explained this phenomenon by stating that the main goal of an organization is to keep survive by achieving profit, getting license from authority to continue operating and get orders and requests in business aspect from their upstream stakeholders.

It is significant that the financial and cost factor of an organization is playing vital role in affecting the management to consider GSCM. This is obvious as the main goal of an organization is to achieve profit earning (Chavez et al. 2016). An organization cannot simply do

welfare without expanding their scale through obtaining sufficient profits. Therefore, every decision they make must be able to ensure the profitability of their operation in short and long term.

Next, the stakeholder pressure is also ranked most influenza factors on the adoption of GSCM in an organization. This is obvious when the upstream stakeholder has the intention to implement GSCM in the whole supply chain (Hsu et al. 2013). Sreejith and Vinaya (2017) has highlighted that developer or client in a construction project will have the final word on the construction project and they will only award the construction project to those main contractors, subcontractors and consultants who are qualified and have intensive experience and knowledge in practicing green practices in previous construction works.

The corporate social responsibility ranked the last among the identified factors from all selected journal papers. This shows that not everyone main concern is the environmental problem itself but they are concerning the issue due to several pressures such as reducing cost, complying government laws and regulations and achieving minimum standard requirement of upstream stakeholders and customers' satisfaction. Bag and Anand (2014) said that in order to contribute to the society, an organization must be large in size and strong in financial aspect before they are capable to start the green practices without considering the consequences and risks that might occur after the implementation of GSCM practices. Therefore, it is believed that corporate social responsibility will only exist when the scale of firm is large while the condition of financial is strong to support the intention of upper management in organization to consider their responsibility as a corporate towards the society (Mathiyazhagan et al. 2014).

The rest of the identified factors are mostly related to the financial aspect of an organization where green knowledge and technology are giving hard impact on the adoption of GSCM practices in the organization due to their nature in providing opportunities for organization to obtain more profit earning and award of new construction projects (Hoejmose et al. 2014). Top management intention and pressure to implement GSCM in existing and new projects will also drive an organization to adopt green practices as they have the responsibility to ensure the competitiveness of their organization in order to keep enlarging their company's scale (Mosgaard et al. 2013).



**Table 3.** Ranking of The Weightage of Every Identified External Factors

Selected Factors	Articles	Rank
Government Regulations on Environmental	21	1
Customer Satisfaction and Pressure	20	2
Market Opportunities and Competitor	17	3
Public Awareness	13	4
Incentive and Aid from Third Parties	8	5

### External Factors

The external factors are shown in **Table 3** and the impact of the factors are ranked in sequence based on the frequency of selected factors being mentioned in previous studies.

The most important external factor come to the government regulations and policies on environmental issues as government is acting as the moderator to control and supervise the environmental performance of organization while producing products and giving service to their customers (Huang et al. 2015). Based on information from Construction Industry Development Board (2017), there are several departments in Malaysia construction industry which are playing roles in controlling and supervising the environmental regulations and activities done by construction project such as CIDB and Department of Environment (DoE). Fines and penalties will be imposed to those who cannot meet the minimum requirement of the regulations made while training and incentive will be given to those who are interest in practicing green practices in construction industry in order to lessen the burden in the aspect of financial and expertise (Kuei et al. 2015).

Furthermore, in identified external factor, company customer satisfaction which ranked at second place and the market new opportunities and competitor pressure at the third place are essential to be attended in order to keep surviving in this tough competitive environment. Jayaram and Avittathur (2015) has highlighted that good attractive point must be equipped to drag more customers who are interested in green practices. Sumeet et al. (2015) has said that lacking of green expertise is obvious in the industry and as green has become the current trend and more and more organizations will

look for green expertise in order to cope with government regulations and standard when construction new buildings, the organizations which have experiences will have more privilege and priority in choosing project stakeholder stage.

In a nutshell, the findings have shown us the most influencing factors are the company's financial performance as internal factor while government regulations on environmental as external factor. As internal factor, the corporate social responsibility is the weakest motivating factor while without sufficient incentive and aid from third parties acts as the most powerless external factor.

### CONCLUSION

Implementation of each phase in the PLC should consider environmental factors regarding construction waste reduction and energy savings. Construction industry is unique from other industry as every construction project is different and it is causing large number of pollution especially in high rise building that consume huge amount of resources, time and money. This shows the difficulties in practicing GSCM in construction industry. Furthermore, it is shown that various factors from different perspective and area will affect the implementation of GSCM practices in construction industry. Therefore, understanding the vital factors that are highly related to the organization itself will increase the success rate in implementing GSCM. However, every organization is different from the aspect of scale, financial capability, aims and previous experiences where these differences will differ the category of the organization which will surely separate each other in different manner and differentiate the organizations into different categories which need different solution in GSCM adoption. Hence, in conjunction with the implementation of green practices in construction industry, every member in the supply chain must be equipped with sufficient green knowledge and financial expertise where both aspects can achieve a balance point to figure out the best GSCM practices for the organizations.

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