

# A study on the benefits of eco-friendly packaging on sustainable supply chain management in fast moving consumer goods industry

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**Abstract.** The focal of this qualitative study is to identify the benefits of eco-friendly packaging in sustainable supply chain management among FMCG industry regarding the relationship between benefits (cost reduction, brand image, legal compliance, and environmental friendly) that direct relate to sustainable supply chain management. In this study, interview was conducted and data has been collected through face-to-face interview and e-mail among the respondent who have working experience and knowledge in particular FMCG industry. Four hypotheses were set to study those four variables whether has a significant relationship with the benefits of eco-friendly packaging and sustainable supply chain management in FMCG industry. The collected data was analyzed through exploratory analysis to find out whether it can identify or determine the main variables related to the implementation of eco-friendly packaging on sustainable supply chain management towards FMCG industry in this study. The finding shows there is a direct relationship in which the benefit of eco-friendly packaging brings the company in developing more sustainable supply chain management.

## 1 INTRODUCTION

Fast-moving consumer goods (FMCG) are the large quantity, lower priced products that are in a faster speed that leave the retailing store shelf, such as supermarket, hypermarket, convenience store and others store which perform retail activities. In FMCG industry, they found out packaging is a benefit which not only plays the role of package the products; it also carries an effective communication between consumers and the brand owners [1].

Because of the benefits of packaging, there are some of the FMCG industry considers using eco-friendly packaging where consumers always concern about environmental impact. Eco-friendly packaging is introduced to support the sustainable development of the consumer firm [2]. With the changes of global social, economic and the rise of environmental concern, these leads the manufacturing firms to consider using eco-friendly packaging while doing their business. If manufacturing firms do not consider using eco-friendly packaging, it will affect the consumer purchasing intention on competitor product that is using eco-friendly packaging. Besides that, it might unable to compete with their competitors on time since Malaysia government has introduced some new policy regarding environmental concern.

Due to the rise of environmental concerns, there are more than 40 industry leaders have endorsed a global

strategy plan on plastics production, use and recycling activities. The initiative is designed to ensure that 70% of plastic packaging is reused and recycled globally, up from today's recycling rate of 14%. The remaining 30% of plastic packaging, equivalent to 10 billion garbage bags per year needs fundamental redesign and innovation, according to the group [3]. The risks of serious environmental and social effects created by poor oversight of the supply chains can be avoided with improved practices that will also beneficial for the business [4].

At present, the Selangor government introduced the "No Plastics Bag" policy, it slowly boost the awareness of Eco-Friendly packaging in the customer's mind. Moreover, Malaysian consumers also concern about the changing trends and awareness of environment where Selangor government encourage all councils provide packaging ideas which include biodegradable packaging [5]. By using eco-friendly packaging, it helps to improve sales, develop sustainable supply chain and also reduce impacts towards the environment [6]. Furthermore, it also allows manufacturers to reduce its packaging cost, increase image of the company's brand, reduces impacts towards to the global environment, and transforming the human's consuming approaches for fast moving consumer goods [7]. Hence, it shows the benefits of using eco-friendly packaging on sustainability supply chain.

Although there are potential benefits of eco-friendly packaging, but some of the manufacturing firm still failed to develop eco-friendly packaging. According to

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Norani Nordin (2015), lack of awareness and understanding become the barrier in sustainable supply chain development for manufacturers [8]. Thus, the manufacturers need to be alert to the awareness on eco-friendly packaging development. There are also several studies in the area of supplier selection and evaluation of supplier performance that uses artificial intelligence and fuzzy computing methods [9, 10].

Given that, sustainable supply chain management can be achieved by developing eco-friendly packaging as the packaging material for the product. It is vital to implement sustainable supply chain to reduce the impacts towards to the environment. Therefore, this study identifies the awareness of FMCG industry about the sustainable transformation will depend on what are the benefits of using the eco-friendly packaging for their products.

## 2 METHODOLOGY

In this study, exploratory study will be used to identify the main variables which related to the implementation of eco-friendly packaging on sustainable supply chain management towards FMCG industry in this study. An exploratory research defined as a type of research describes the problem that has not been clearly determined in the research [11]. Besides that, exploratory research is used to investigate or limited information to be identified about an area of interest which similar problem and research matters have been clarified in the earlier.

This research is conduct by using hypothesis testing with qualitative approach. Qualitative approach refers as a source of well-grounded, detail descriptions and explanation of processes in recognize local contexts [12]. One of the qualitative research methods is qualitative research interview.

In order to do this approach, interview will be take place by creating few questions to collect data. The question will be design based on the information collected from the company to test the variables. During the interview, higher-level management of FMCG Company that implementing eco-friendly packaging effectively will be selected as interviewee of this study. It is because those companies that implemented will show that it is practicing in real life. Thus, data collected will be reliable, valid and creditable for this study.

### 2.1 Hypothesis

- H1: There is significant relationship between cost reduction and sustainable supply chain management in FMCG industry
- H2: There is significant relationship between brand image and sustainable supply chain management in FMCG industry
- H3: There is significant relationship between legal compliance and sustainable supply chain management in FMCG industry

- H4: There is significant relationship between environmental friendly and sustainable supply chain management in FMCG industry.

### 2.2 Data Collection Method

Interview will act as a functional tool in order to collecting data for the qualitative study. To design an interview questions, it can be structured, semi-structured or unstructured types which can be take place through phone, face-to-face, or online interview which is the computer-based interviews [13].

In this study, method that used to collecting qualitative data is conducting face to face interview by using semi-structured interview questions. The data collection methods are non-probability sampling (purposive sampling), face-to-face interview (semi-structured interviews) and data analysis procedures.

#### 2.2.1 Face-face interview

In this study, a self-administered question is used as the data collection method for collecting the information as primary data. First, the invitation letter is send to FMCG industry representative who are using eco-friendly packaging for the company. Once invitation accepted, the interview session will be scheduled and using the self-administered questions. In this self-administered question will mention about what are the benefits on implementing eco-friendly packaging and how well it's going based on the higher-level management of FMCG company knowledge and experience. During the interview, data collection will be done through voice recording and in a written transcript.

### 2.3 Sampling design

#### 2.3.1 Sampling location

The study location is FMCG industry in area of Klang Valley [14]. The samples will be focus on the FMCG industry who is implementing eco-friendly packaging effectively.

#### 2.3.2 Population

The population in this study is the FMCG Company in Klang Valley where applied or committed to apply sustainable supply chain management.

#### 2.3.3 Sampling size

The scope and nature are focus on eco-friendly packaging and benefit of sustainable supply chain in FMCG Company, at Klang Valley that the topic is direct and specific. The quality of data depends on the interviewee where they are the individuals who provide the usable information used for this study. Hence, this study consider to have (5) respondents that targeted the supply chain/ operations/ logistics manager and the

employees of fast moving consumer goods (FMCG) company in 3 categories: (1) Food and beverage (2) Personal care (3) House care.

### 2.3.4 Sampling technique

Non-probability sampling design is adopted in this study. The collected data will be used in analyzing the benefits of sustainable supply chain management and how it has relationship with eco-friendly packaging. Data collection is focus on the target groups who have specific experiences and knowledge in order to provide the specific data needed.

The purposive sampling is adopted in this research is because it consumes lesser time and cost compared to other sampling methods. Purposive sampling (Judgmental sampling) is used in this study where data will only be collected from the decided individuals who is master on the field which having the first-hand knowledge of the topic [13].

### 2.4 Interview

Semi-structured interview is used as the data collection method for this study. According to Bryman and Bell (2011), in order to defined the answers in details, it require a question list as a semi-structured interview guide that derived from the research question [15]. However, respondent from interview will still able to answering the question in a free condition and in a wide range.

### 2.5 Validity test

Validity play an important role in a research study that require the test, scale, instrument, and others to be valid

**Table 1.** Respondent's socio-demographic profile

Characteristics	Respondent 1	Respondent 2	Respondent 3
<b>Name</b>	Pratana Siriwannaporn	Ankit Singhai	Cheryl Tan
<b>Age</b>	35 years old	32 years old	32 years old
<b>Gender</b>	Female	Male	Female
<b>Nationality</b>	Thai	Indian	Malaysian
<b>Education level</b>	Undergraduate Degree	Undergraduate Master	Undergraduate Degree
<b>Job position</b>	Packaging Technologist	Regional Strategic Buyer-Packaging procurement	Foods Category Planner South East Asia Australia (SEAA) Supply Chain
<b>Attached department</b>	Research and Development	Procurement	
<b>Job role</b>	Packaging Development, Packaging issue, specification management	Buyer	Innovation planning for SEAA countries, main liaison for Supply Chain
<b>Working experience</b>	11 years	5 years	12 years

### 3.1 Understanding of sustainable supply chain management and eco-friendly packaging

Table 2 shows the respondents have a different understanding of sustainable supply chain management.

**Table 2.** Describe your understanding on sustainable supply chain management.

Respondents	Answers
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and reliable [16-19]. Validity, it refers to whether the respondents' research outcome present their knowledge with their job position and forms their perceptions on the skills and understandings on the research questions.

A list of qualitative interview questions has been designed as an interview guide for the selected three respondents from the same industry but different they are in different company, departments and job titles. Qualitative interview questions which were prepared for the interviewees whom are the packaging technologist from Dutch Lady Sdn. Bhd. and regional strategic buyer in packaging procurement from Nestle Group which associated with this study title, benefit of eco-friendly packaging towards sustainable supply chain management in fast moving consumer goods industry.

The semi-structured interview guide focused on the implements and benefits of eco-friendly packaging in fast moving consumer goods industry. The qualitative questionnaire will be separate into three sections, which include the interview guide; Section A, respondents' demographic profile; Section B, understanding on sustainable supply chain management and eco-friendly packaging and; Section C, benefit of eco-friendly packaging in sustainable supply chain management to the organization. Among the type of interview, this interview session carried out as semi-structured interview used as data collection method to validate the test.

## 3 RESULT AND DISCUSSION

In this study, the appointments and schedule with the respondent were made through e-mail address, LinkedIn, social media platform and text messages. Table 1 shows the background of the respondents of this study.

This is because they are from different perspective. Respondent 1 is from the research & development perspective, Respondent 2 is from the procurement perspective, and Respondent 3 is from the supply chain planning perspective.

Respondent 1:	Manage and know about the whole process of supply chain management to achieve sustainability
Respondent 2:	Supply chain will be the support function to meet business objective and helps to achieve triple bottom line
Respondent 3:	Focus on raw and pack material sustainable sourcing and sustainable utilization of resources throughout supply chain

Table 3 shows the companies of all respondents are having the similar sustainable supply chain practices.

**Table 3.** Describe how your company develops sustainability in the current supply chain.

Respondents	Answers
Respondent 1:	Supplier selection, vendor selection, safety compliance
Respondent 2:	Value chain mapping, supplier selection, vendor selection, responsible sourcing, and specification
Respondent 3:	Supplier self-assessment and verification, sustainable agriculture program

Table 4 shows all respondents have similar understanding of eco-friendly packaging.

**Table 4.** Describe your understanding of eco-friendly packaging.

Respondents	Answers
Respondent 1:	Talk about packaging material, recyclable, renewable and biodegradable
Respondent 2:	Relates to packaging material, recyclable, renewable, biodegradable, and waste collection
Respondent 3:	Made with recyclable materials, sustainably sourced materials, and produced with renewable energy

Table 5 shows the respondent 1 and 2 have the similar input about how their companies start to apply eco-friendly packaging, but respondent 3 did not have similar input with respondent 1 and 2.

**Table 5.** How your company starts to apply eco-friendly packaging?

Respondents	Answers
Respondent 1:	Environment surrounding raise with awareness and concern about environmental issue.
Respondent 2:	Figure out the environment awareness and issue
Respondent 3:	Working with their packaging suppliers to use more recyclable material in producing the packaging material

Table 6 shows all respondents have difference answer for “when your company starts to apply eco-friendly packaging”. This is because different companies have different practices.

**Table 6.** When your company start to apply eco-friendly packaging?

Respondents	Answers
Respondent 1:	4 or 5 years
Respondent 2:	7 years
Respondent 3:	N/A (few years back)

Table 7 shows there is no any similarity between all respondents, because this is asking their own perception on eco-friendly packaging and sustainable supply chain management.

**Table 7.** How do you perceive eco-friendly packaging and sustainable supply chain management?

Respondents	Answers
Respondent 1:	Require collaboration for each other to work together in terms of shelf-life, production, workers and planning
Respondent 2:	Importance between each other in terms of cost effectiveness
Respondent 3:	Ensure the sustainability of environment and people

Table 8 shows respondent 1 and 3 have similar input where stated that eco-friendly packaging helps the company towards sustainable supply chain management, but respondent 3 stated that eco-friendly packaging help to generate supply chain efficiency.

**Table 8.** How would the eco-friendly packaging used to influence the company's operations?

Respondents	Answers
Respondent 1:	Eco-friendly packaging help to achieve sustainable supply chain management
Respondent 2:	Unilever's operations are directed affect towards the sustainable living goals
Respondent 3:	Generate supply chain efficiency

Table 9 shows respondent 1 and 2 have a similar opinion on the differences before and after implementation of eco-friendly packaging, but respondent 3 has different opinion.

**Table 9.** What are the differences between before and after implement the eco-friendly packaging?

Respondents	Answers
Respondent 1:	Corporate social responsibility
Respondent 2:	Nestle are doing an effort for the society and environment
Respondent 3:	Amount of waste or material that is used will be significantly reduced

### 3.2 Benefit of eco-friendly packaging in sustainable supply chain management to the organization.

reduction for conversion process. Respondent 2 mentioned eco-friendly packaging can contribute cost-reduction for logistics activities.

Table 10 shows all respondents agree eco-friendly packaging contribute to cost-reduction, respondent 1 and 3 mentioned eco-friendly packaging can contribute cost-

**Table 10.** How does eco-friendly packaging contribute to cost reduction in sustainable supply chain management?

Respondents	Answers
Respondent 1:	Reduce the conversion cost by using a light packaging material. In logistics, it can utilize the space and capacity. For shipment can contribute to cost reduction
Respondent 2:	Contribute fewer inventories, utilize warehouse space and generate cost reduction
Respondent 3:	Eco-friendly packaging contribute low cost for the packaging were used with less material

Table 11 shows all respondents agree eco-friendly packaging contribute to brand image. Respondent 1 and 2 mentioned eco-friendly packaging could attract more

customers to buy. Respondent 1 and 3 mentioned eco-friendly packaging could generate positive image to the brand.

**Table 11.** How does eco-friendly packaging contribute to brand image in sustainable supply chain management?

Respondents	Answers
Respondent 1:	Attract more customers to buy. Positive image that have contribute efforts to the society and environment
Respondent 2:	Attract the consumer approach to purchase. Shows an effort and responsibility to the society and environment
Respondent 3:	Generate a positive impact on the brand image

Table 12 show the respondent 1 and 2 agree eco-friendly packaging can contribute to legal compliance, but respondent 3 did not have comments on legal compliance.

**Table 12.** How does eco-friendly packaging contribute to legal compliance in sustainable supply chain management?

Respondents	Answers
Respondent 1:	Allow company do not spend any effort on making changes or adjustment anymore when the company started to follow the legal compliances
Respondent 2:	Prevent time waste on making adjustment with the legal compliance in the future
Respondent 3:	No comments on legal compliance

Table 13 shows all respondents agree eco-friendly packaging contribute to environmental friendly.

**Table 13.** How does eco-friendly packaging contribute to environmental friendly in sustainable supply chain management?

Respondents	Answers
Respondent 1:	Contribute to environmental friendly through recyclable material that can be

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	disposing
Respondent 2:	Contribute environmental friendly from reducing the number of trips
Respondent 3:	Reducing environmental impact by doing waste reduction, reusing and recycling

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The implication of this study will be that FMCG industry will be able to identify and aware the benefits of eco-friendly packaging on sustainable supply chain management. This would mean that FMCG industry should consider implement eco-friendly packaging which bring the benefits to the company business itself and environment. The reason being, all benefits have a strong relationship in between sustainable supply chain management based on conducted analysis making the benefits of eco-friendly packaging that respondents' answer as a valid parameter to be used in FMCG industry. Subsequently, FMCG industry should also carry out more types of eco-friendly packaging to develop more successful sustainable supply chain management. This would enable them to achieve successful sustainable supply chain management as the benefits have a strong relationship with the benefits of eco-friendly packaging based on the respondent's answer.

#### 4 CONCLUSION

The purpose of this study is to identify the benefits of eco-friendly packaging on sustainable supply chain management among FMCG industry. There are minor dissimilarities which is different perspective but in the same point of view. There are four benefits such as cost reduction, brand image, legal compliance, and environmental friendly that bring benefit to FMCG industry effectively. There is a direct relationship in which the benefit of eco-friendly packaging brings the company in developing more sustainable supply chain management. In this respect, FMCG industry are strongly consider implementing eco-friendly packaging in believe that the benefits will achieve sustainable supply chain management.

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