

## **The Effect of Product Quality towards the Relationship between Green Purchasing Behavior and Firm Performance**

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### **Abstract**

This study analyzes the relationship between the green purchasing behaviours, product quality and financial performance of plastic industry. A company's green purchasing behaviours can be measured by four independence variables; i) identified as environmental concern, ii) environmental attitudes, iii) social influence and iv) company image. A product quality functions as moderator in this study. The objectives of this study are: 1) to determine the relationship between green purchasing behaviours and company financial performance, 2) to investigate the relationship between green purchasing behaviours, product quality and company financial performance and 3) to describe the relationship between green purchasing behaviours, product quality and company financial performance. Three relationships posited and tested. A survey design and correlation research investigation was conducted and carried out through clustered sampling on plastic company serving one of the plastic moulding companies. Seven plastic manufacturing companies were selected as respondents. The data were analyzed by utilizing Rasch measurement model. The analysis process starts by goodness of measures followed by descriptive analysis on the variables that have been understudied. It has resulted that the plastic companies' green purchasing behaviours and its product quality significantly correlated with their financial performances. In order to continue to excel, plastic industries should re-strategize to improve their solutions coverage and to invest in green products research and development.

**Keywords:** *Product Quality, Purchasing Behaviour, Green Products, Firm Performance*

## 1. Introduction

Businesses today are forced to change the way they normally behave to a more environmental conscious orient. Products developed, marketed, and disposed by having influenced by the concerns on environment. The solid changes in consumer lifestyle, tastes and preferences, the standard of living along with higher purchasing power have led to an increase in the demand of green products. Such events have shown an increasing number of consumers start to seek and buy environmentally friendly products and are willing to pay more for the products (Laroche, Bergeron & Barbaro-Forleo, 2001). Green purchasing intention refers to a state of product preference contributes less environmental impact during the goods purchasing process.

A study by Ogilvy and Mather's (2011) stated 82 percent of consumers have good green intentions, however only 16 percent is dedicated to fulfil these intentions. This puts 66 percent in what is called the "Middle Green," a group neither active environment crusaders nor anti-greens and these are the massive middle, the everyday mainstream consumers (Wong, 2011). Further, Wong summarized 12 key points that can help middle-of-the-road mainstream consumers turn their green intentions into green actions. As discussed by the author, the key points listed as: the 1) make green normal, 2) make it personal, 3) make green choice the default, 4) remove price premium, 5) bribe shamelessly, 6) punish wisely, 7) do not stop innovating, 8) lose the crunch, 9) turn eco-friendly into ego-friendly, 10) make it tangible, 11) make it easy to navigate and 12) tap into hedonism over altruism.

Consumers are willing buy products and services which can perform according to their expectations or even higher than their expectations. Having the environmental attributes will give a plus during their selection process. However, not all consumers are willing to pay a higher price for green products and this is the implication that consumers want to take greater utility from the price and quality attributes rather than focusing only on environmental attributes alone. The consumers may purchase the environmentally friendly products within certain constraints for example; huge price differentials and inconveniences associated with environmental friendly products may deter consumers in purchasing those items (Gan, Wee, Ozanne and Kao, 2008).

According to Massachusetts Department of Environmental Protection (2002), consumers may perceive green products as inferior in quality since some green products are manufactured from used or recycled materials, while others, such as green detergents, provide a lower level of technical performance compared to conventional brands. Assael (1987) discovered that brand conscious consumers tend to purchase branded products based on loyalty, quality, and satisfactory performance of the products. Johri and Sahasakmontri (1998) explained that consumers are undecided on their purchasing decision based on environmental concern alone. This proposition also applied toward other independence variables such as environmental attitude, social influence and the concern of company image. Product characteristic such as convenience, availability, price, and quality take up a more important position in the consumers' purchasing decision process. Therefore, product quality had turned up became the moderating variable of this study.

Anderson and Hansen (2004) have claimed that price was the most important

attribute in American consumers purchase decisions for wood furniture and their study found that typical respondent is willing to sacrifice environmental certification for the sake of lower price. Although consumers are generally concerned about the environment, the previous literature found that consumers are extremely price sensitive towards green products (Massachusetts Department of Environmental Protection, 2002). Gan et al. (2008) found that most of them were unwilling to purchase higher prices for green products. This study intends to examine whether product quality moderates the significant relationships of proactive green purchasing behaviours and company's financial performance.

## **2. Problem Statement**

The major contributor to environmental issue is the change of climate. The environmental awareness protection is truly important to industries especially in the plastic manufacturing industry. The Institute for Zero Waste in Africa (2012) has reported that plastic resources caused damage to the environment through activities such as mining, transportation as well plastic based productions. The report by the Institute also stated that plastic has been categorized into "recyclable", but it is not "sustainably recyclable". Plastics contain the following toxic substances: Benzene (which causes cancer), Styrene (ranked in the US as "extremely toxic"), Sulphur Oxides (which harm the respiratory system), Nitrous Oxides (which adversely affect the nervous system and child behavioural development), and Ethylene Oxides (harms male and female reproductive capacity).

Therefore, by considering into the issues as mentioned above, the sustainable environment is extremely important industries that should explore the opportunities in supporting green environment and the initiatives of corporate social responsibilities programme respectively. As reported by International Institute for Sustainable Development (2012) that businesses are encouraged to change their waste management practices. Initiatives toward green environment namely; i) reduction, ii) reuse, iii) recycling and iv) replacing or the 4R were introduced and innovatively utilized by manufacturers as their industrial benchmark or technological breakthrough. In relation to this, there are studies related to green purchasing intention. For instance, a study by Teng, Rezai, Mohamed and Shamsudin (2011) found that the demographic characteristics and attitudes have influenced on the consumers' intention to purchase green foods in Malaysia especially since emerging global of issues concerned with the environment, food safety as well as animal welfare. Their results indicated that educational level, income and other factors such as food safety and environmental friendliness significantly influence Malaysian consumers' green foods purchasing intention.

Wahid, Rahbar and Shyan (2011) investigated on the factors influencing the green purchase behaviour among Penang's green volunteers participating in various environmental programmes. As reported in their studies, components of social influence, environmental concern, green product knowledge, environment labelling and income level are significantly related toward green purchase behaviour. The environmental concern is a strong attitude towards preserving the environment (Cheah, 2009). It refers to the attitude towards facts of which one's own behaviour or other's behaviour with consequences toward the environment (Weigel, 1983; Pradeep, 2012).

The environmental concern is known as “ecological concern”, referring to the degree of emotionality, specific knowledge, willingness and actual behaviour towards pollution-environmental issues (Maloney and Ward, 1973; Cheah, 2009). Ottman (1993) highlighted in a 1992 study of 16 countries, more than 50 percent of consumers in each country, other than Singapore, indicated they concerned about the environment. A 1994 study in Australia found that 84.6 percent of the sample believed all individuals had a responsibility to care for the environment (Gan et al., 2008). The increased awareness on environment sustainability has changed individuals’ attitude toward the environment. Attitudes toward buying decisions are strongly influenced by their social environments such as families, friends, and peers. Interaction among individuals could influence behaviours and decisions. Social influences and physical structures within the environment contribute in developing and modifying human expectations, beliefs, and cognitive competencies (Cheah, 2009; Lee, 2008).

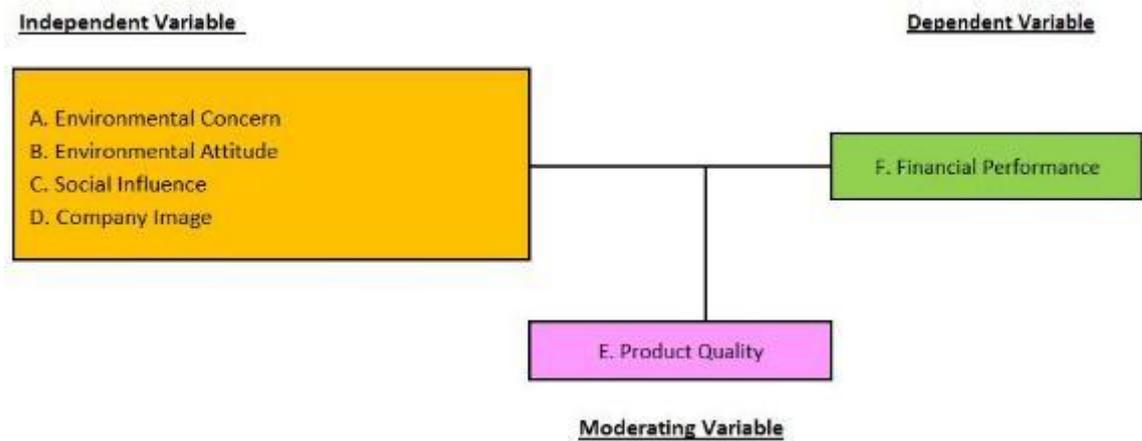
In addition, consumers are more likely to purchase products when they believe their actions are resolving the environmental issues (Webb, Mohr and Lois, 2008). Due to this, businesses are converting into green environmental management concept in their manufacturing processes. Such actions are not only fulfilling on the consumers’ needs but also build up a corporate image of the company toward cooperate social responsibilities as well as to produce a good quality products and services. Past studies have largely focussed on consumer purchasing behaviours toward products and services; however there is still lack of study focussing on green purchasing behaviours by manufacturers on their products which inspire this current research in the perspective of Malaysia.

### **3. Methodology**

Quantitative analysis served the purpose of this study. A survey questionnaire used to obtain the needed information. Isaac and Michael (1990) explained that surveys are the most widely used technique in the behavioural sciences for acquiring data in measuring attitude as well as obtaining personal and social information including beliefs of group of individuals or organizations. The variables are anchored by six (6) point Likert scale and were measured through the application of the current instruments by Lee (2008) for environmental concern (4 items), environmental attitude (7 items) and social influence (6 items) and company image (3 items); Chang and Fong (2010) for product quality (4 items) and Powell (1994) on financial performances (5 items) which are reliable and valid due to the cronbach alpha values ranged between 0.71 to 0.88.

Population is represented by a group of people or organization in which interest the researchers on specific study (Sekaran, 2009). The samplings in this study are seven (7) plastic manufacturers in the Northern region of Malaysia. The Rasch Measurement Model was used to analyse the data. It was a measurement tool originated from Item Response Theory (IRT) that has been successfully utilized in various domains of social science to measure abilities, attitudes and personality traits (Burgos, 2010). It evaluates the difficulty level of each question in parallel with the ability of each respondent to answer each question. Besides, the probability of a person succeeding on a given item is dependent upon the ability of the person and the difficulty of the item (Clark, 2004).

### **4. Theoretical Framework**



#### 4.1 Data Analysis

The consolidated data transferred into the Rasch measurement analysis software. The Cronbach’s alpha value given at 0.89 is considerably higher than the acceptance level of 0.60. It is also provided that the reliability is at 0.83, which yielded a ‘GOOD’ reliability. The item reliability in **Table 1** yield in the summary statistics is at 0.6 considered exactly at acceptance level of 0.60. The item reliability indicates that the probability that the difficulty of each item would remain unchanged if the test given into different group of respondents and the instrument has adequate items to assess the expected range of person spectrum.

**Table 1:** Summarized statistic resulted from the survey.

INPUT: 7 Person 29 Item REPORTED: 7 Person 25 Item 6 CATS MINISTEP 3.74.0

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**SUMMARY OF 7 MEASURED Organizations**  
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TOTAL	MODEL	INFIT	OUTFIT
MEASUR	ERROR	MNS	MNSQ
SCORE	E	Q	ZSTD
COUNT		ZSTD	ZSTD
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| MEAN    96.9   25.0           .24 .20           .94 -.8    1.35  -.2 |
| S.D.    15.0     .0           .57 .01           .77 2.8    1.63  3.8 |
| MAX.    114.0  25.0           .96 .22           2.23 3.8    5.16  7.8 |
| MIN.    62.0   25.0        -1.07 .19           .19 -4.4   .19  -4.3 |
|-----
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|          REAL
| RMSE          .23 TRUE SD          .52 SEPARATION 2.23 Person RELIABILITY .83 |
| MODEL
| RMSE          .20 TRUE SD          .54 SEPARATION 2.62 Person RELIABILITY .87 |
| S.E. OF Person MEAN = .23
    
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Person RAW SCORE-TO-MEASURE CORRELATION = 1.00

**CRONBACH ALPHA (KR-20) Person RAW SCORE "TEST" RELIABILITY = .89**

**SUMMARY OF 29 MEASURED Item**

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|          TOTAL          MODEL          INFIT          OUTFIT          |
|          SCORE COUNT    MEASUR          MNS          ZSTD MNSQ ZSTD |
|-----
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| MEAN    27.1   7.0           .00 .39           .91 -.2    1.35  .1 |
| S.D.    5.0    .0           .67 .02           .71 1.3    1.80  2.0 |
| MAX.    34.0   7.0           1.45 .44           2.67 2.8    6.91  5.3 |
| MIN.    16.0   7.0        -1.08 .35           .16 -2.3   .16  -2.3 |
|-----
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|          REAL
| RMSE          .42 TRUE SD          .52 SEPARATION 1.22 Item RELIABILITY .60 |
| MODEL          .39 TRUE SD          .55 SEPARATION 1.42 Item RELIABILITY .67 |
    
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RMSE  
| S.E. OF Item MEAN = .14

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UMEAN=.0000 USCALE=1.0000

Item RAW SCORE-TO-MEASURE CORRELATION = -1.00

**175 DATA POINTS.** LOG-LIKELIHOOD CHI-SQUARE: 470.09 with 140 d.f.  
p=.0000Global Root-Mean-Square Residual (excluding extreme scores): .9558

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The result of perfect fit or mean-square from the relationship between green purchasing behaviours and company’s financial performance are in **Table 2**. It indicates that the measurement between green purchasing behaviours and company’s financial performance at Mean-square value = 1.35, Z-Standard = -0.20. The result shows that the Z-Standard = -0.20, the level of significance for this study considered as very significance seeing that the data tabulated within the Z-Standard range and close to 0.

**Table 2:** Perfect fit or Mean-square result on relationship between independent and dependent variables (2 tailed significant tests).

Variables	Company Financial Performance
Green Purchasing Behaviours	1.35**

\*\* *Perfect fit or Mean-square* is productive for measurement at Z-Standard = -0.20

**Table 3** represents the result of perfect fit or mean-square from the relationship between green purchasing behaviours, product quality and company’s financial performance at Mean-square value = 1.49, Z-Standard = -0.20. The result of the study shows that the Z-Standard = -0.20, the level of significance for this study considered as very significance seeing that the data tabulated within the Z-Standard range and close to 0.

**Table 3**

Variables	Company Financial Performance
Product quality - Moderating	1.49**

\*\* *Perfect fit or Mean-square* is productive for measurement at Z-Standard = -0.20

## 5. Conclusion

The result shows by having product quality as moderating variable in the model of study, these effect on the green purchasing behaviours (independent variable) and financial performance (dependent variable) correlations. The variation of individual respondent's person measure mean strength with causal relationship effect varied with the involvement of moderating and intervening variables as compared to direct correlation between independent and dependent variables. The causal relationship strength is distinctive between one causal to another. The moderating and intervening variables influences the relationship strength positively and negatively as appropriate compared to direct independent and dependent variables correlation.

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