

Examining the Impact of Green Innovation Management on the Brand Image of Contemporary Fashion Industries

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Abstract. This study investigates the impact of green innovation on contemporary fashion brands' brand image. It contends that integrating sustainability into innovation can yield positive outcomes beyond financial gains. The research employs quantitative methods, utilizing surveys to gather data from Zara customers. The findings highlight a positive correlation between consumer purchasing frequency and their willingness to pay for green products. By carrying out cross analysis, an ascending pattern was found between these two items. This pattern indicates a growing demand for sustainable options. The study emphasizes that addressing consumers' environmentally friendly needs can enhance brand image, especially once fundamental and competitive attributes are met. The study also finds the positive relationship between education and income level, and willingness to pay for green products. This research underscores the importance of integrating sustainable practices into innovation strategies, as a means to ensure brand resilience, consumer perception, and long-term success in an environmentally conscious era.

Keywords: Green innovation, brand image, sustainability, consumer perception.

1. Introduction

Innovation stands as an indispensable element for business sustainability, a notion extensively underscored within scholarly research. The commercialization of pioneering products and services holds the potential to augment sales performance significantly. Fashion industry is also not an exception for this. However, beyond the realm of novel designs, fashion brands bear the hallmark of being prodigious contributors to environmental degradation. Consequently, fashion industries focus more on green innovation in recent years, paralleling the escalating global consciousness towards the imperative of ecological preservation. This transformation aligns seamlessly with the triple bottom line framework, thereby an enterprise sustainability does not solely rely upon financial gains but requires the well-being of society and the environment as well.

Nonetheless, it is noteworthy that the advent of green innovation is often perceived as wielding deleterious ramifications for both corporate entities and their consumer base. The development and dissemination of eco-conscious products reliant on renewable resources invariably entail heightened manufacturing costs. Consequently, consumers are confronted with the prospect of bearing an augmented financial burden in the form of elevated product pricing. The concomitant outcome, it is posited, may precipitate an adverse impact upon a firm's bottom line. The ensuing discourse, however, adopts a contrarian stance to this prevailing perspective. Within this scholarly inquiry, it is contended that the integration of sustainable practices within innovation strategies could conceivably engender favorable outcomes for corporate entities, potentially transcending the realm of immediate financial considerations. Central to this contention is the conjecture that the cultivation of a robust brand image constitutes a plausible avenue through which green innovation could be leveraged to yield advantageous outcomes.

When talking about innovation in fashion brands, environmental-friendly related innovation is one of the crucial fields exploring by many companies. The fashion industry is faced with an urgent need

to rectify its public perception and adopt responsible practices promptly. The production of clothes and foot wares accounts for a substantial portion of global greenhouse gas emissions, ranging from 4 to 8.6 percent [1]. This carbon footprint even surpasses the combined emissions of major European countries such as Germany, France, and the United Kingdom. However, climate pollution is not the sole predicament for the fashion industry; it also contributes to water contamination, deforestation, the use of hazardous chemicals, landfill overcrowding, and the exploitation of laborers [1]. Addressing these multifaceted challenges is paramount for the industry's sustainable development and environmental stewardship.

2. Literature Review

The majority of large firms invest heavily in Research and Development (R&D) to innovate either new products, service, or new process of making things. These activities are named innovation. The term innovation means: the first commercial introduction of a new or improved product or process [2]. More importantly, its needs to be classified with another term "invention". An invention stands for the successful substantializing of a new idea. An invention will not become an innovation until it has been commercialized. Noticeably, the definition mentioned also accented "first commercial introduction". The concept of commercialization will be essential in this study for distinguishing between innovation and invention. Innovation is crucial for companies to achieve higher profits, reduce costs, and keep continuous growth.

Extending to Green innovation, or in other words eco innovation, this type of innovation is a popular contemporary topic to study. Nearly all human behaviors would produce more of less pollution. Creature respiratory generates carbon dioxide, a greenhouse gas that contribute to climate change. Factories also produce a large amount of wastewater and gases during production. Especially, as mentioned, fashion industries produce an even significant pollution such as plastic wastes. However, most human activities are unavoidable or indispensable. It is not pragmatic to ban all the factories or the whole fashion industry. Climate change will therefore become a corollary. Green innovation is a concept which can help to ameliorate this circumstance. A green innovation can be defined as: a new or enhanced product or method from a specific entity that produces reduced environmental effects compared to the entity's former products or methods. More importantly the innovation has been introduced for potential users or implemented by the entity, in other words, commercialized [3]. There are also some other research provide multifarious definitions each foreground different notions. These definitions are then summarized into six important aspects [4]. The first one is innovation object, that if the innovation is a product or process. The second is market orientation, that if the innovation is for satisfying the needs or to hone firms' competitiveness. The third is about the impact on environments. The fourth aspect is called phase, that innovation aims to reduce the production cycle resource consumption [5]. The fifth aspect is the intention for reduction, which may be economical or ecological, and the sixth, level, which sets a new innovation or green standard to the firm.

There are three types of green innovation, classified according to the degree of innovativeness and impact on the environment. Green component innovation, green sub-system and modular innovation, and green system innovation. Figure 1 graphically compares these three types of green innovation, in terms of economic and environmental sustainability of the system, novelty, and its impact on environment [6].

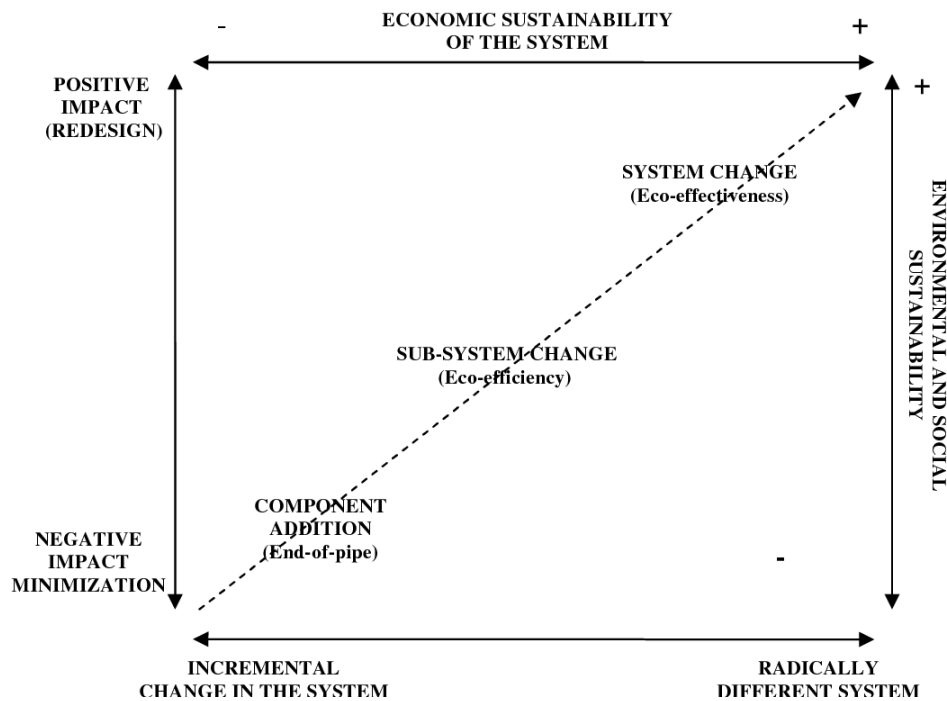


Fig. 1 Different types of green innovation (Source: Exploring Innovation [6])

The significance of brand image for corporations, especially in the fashion industry, cannot be overstated. Fashion brands rely heavily on strong brand equity to sustain their success. Developing and enhancing brand image, therefore, remains a crucial task for companies operating in the fashion sector. Previous research has indicated that innovation plays a pivotal role in influencing consumers' perceived value and perceived novelty, ultimately impacting their final purchase decisions [7]. Noticeably, the research opined that product quality is a major result brought by innovation, which then improves the brand image. However, this study focus on green innovation which are usually not carried out with the aim to improve the quality. Hence, the study will alter the past interview questions and focus more on people's perception towards green innovation and discover if it will contribute to stronger brand image. Based on past literatures, the study made a hypothesis that green Innovation on products and process generates and strengthens the brand image of contemporary fashion companies.

There is a past research focused specifically on the relationship between brand image of fast fashion industry and customers' loyalty and proposed a model (Figure 2) [8]. Brand image can be divided into intrinsic cultural image and external display image. The study suggests that consumers' recognition of clothing brands is a continuous process, including actual visual perception and psychological evaluation. Based on this research, it is believed that the two aspects complement each other; customers are generally initially attracted by the brand's external image, such as product image, designer image, spokesperson, and storefront image [8]. Subsequently, they become aware of certain intrinsic cultural characteristics of the brand, which in this study is presumed to be environmentally friendly characteristics of the product/service offered. This promotes customer brand loyalty. This also explains the positive correlation between customers' consumption frequency and their willingness to pay for environmentally friendly materials.

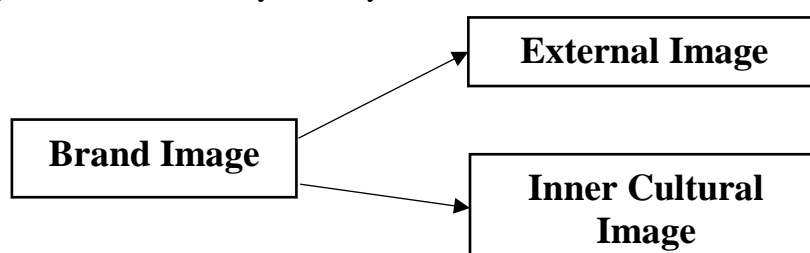


Fig. 2 Brand image classification

In the research of brand image, previous scholars from various focuses and industries have proposed numerous relevant models and conclusions. However, there is a relative scarcity of studies in the field of fast fashion clothing. Especially perceiving fashion industry as a heavy pollution sector, fast fashion industry with an even higher sales than the others is expected to generate more pollution. While this question is not neglected by most companies in this sector. For instance, Zara exemplifies the green innovation in fashion industry.

The economy develops and people's sense of aesthetics advances, the realm of fashion has transcended mere functionality, embracing self-expression and individuality. The emergence of the new middle class has democratized fashion [8], ushering in an era of swift clothing retail – a trend epitomized by the Spanish fast fashion brand, Zara, which operates under the Inditex Group. Globally ranked third and first in Spain, Zara boasts a staggering 7,500 stores spread across 84 countries.

Three highly effective competitive strategies: total cost leadership, differentiation leadership, and specialization strategy [9]. Typically, these strategies do not coexist harmoniously. However, Zara defies convention by ingeniously melding these models into a seamless fast fashion policy.

Zara's success is underpinned by three pillars of core competitiveness: cost leadership, fast fashion agility, and production versatility. Despite being categorized as a fashion brand, Zara's prices remain competitive, besting those of traditional fashion counterparts. This achievement is credited to astute cost management through an efficient operational system, robust supply chain control, minimal inventory, and reduced advertising expenditures.

Distinguishing itself, Zara's unique approach lies in its ability to conceive, craft, and distribute new products every fortnight, thereby nimbly synchronizing with prevailing fashion trends. Further, Zara thrives on the philosophy of leaner production and broader product variations, ensuring both product quality and turnover. Consequently, Zara boasts a notably lower new product failure rate compared to the fashion industry average [10].

Market insights and customer preferences fuel Zara's direction, facilitated by an adept information gathering system. Unlike mainstream active marketing via advertisements, Zara opts to tailor its customer base – an unconventional approach that results in mere 0.3 percent of revenue being allocated to advertising expenses, a fraction of the typical 3 percent spent by peers [11]. This decentralized decision-making strategy facilitates prompt market responsiveness, while centralized operations ensure efficient product delivery and cost control.

Zara's strategic advantage not only fuels innovation in the realm of sustainable fashion but also streamlines green product development. Recognizing the accelerated call for carbon neutrality, Zara proactively partakes in the green textile movement. With textile dyeing ranking as the second-largest contributor to water pollution and the fashion industry accounting for a staggering 10 percent of global carbon emissions, the impetus for change is undeniable. It is estimated that if there are no restrictions, the pollution made will increase to 26 percent by 2050 [12]. To this end, Zara's parent company has established the Sustainability Innovation Hub, an open platform fostering collaborative innovation in new materials, technologies, and processes. Recently, they launched the INFINITED FIBER*ZARA eco-friendly capsule series as a testament to their commitment [13].

In essence, Zara's strategic prowess not only drives operational efficiency and cost-effectiveness but also positions them as vanguards in sustainable textile innovation. Through their remarkable fusion of dynamic strategies, Zara epitomizes the essence of modern fashion, transcending trends to shape an industry narrative of responsiveness and responsibility.

3. Research Design

The fundamental research method is based on the positivist philosophy. The study employs a quantitative research design to systematically investigate the proposed correlation between green innovation and brand image. Case study method is also selected to complement the data analysis and interpretation, and Zara is the case selected in this study.

The researchers maintain an unbiased position, staying detached from the individuals being studied. The study employs a deductive approach, which entails gathering and examining data to scientifically evaluate theoretical ideas. Using a single quantitative approach, the study utilizes only one data collection method, survey method. Survey method is utilized to investigate the link between environmentally friendly innovation and the perception of a brand. This choice helps efficiently gather consistent data from a large group of participants [14].

The data collection process for this study involves utilizing close-ended questionnaires, which offer predetermined response options for participants. These questionnaires are designed with the intent of adhering to established standards. The assessment of question validity: content and construct are tested [14]. Content validity evaluation seeks to ascertain whether the questionnaire comprehensively covers the research inquiries. A comprehensive review of pertinent literature, coupled with discussions among our research group, is conducted prior to the survey. Meanwhile, construct validity assessment aims to determine if the questions effectively gauge the intended constructs. A preliminary test is conducted before the main survey to empirically verify whether the responses to the questions accurately reflect the targeted constructs.

The questionnaire is composed of three major sections namely, participants portfolios, perceived brand image towards Zara, and attitudes towards green innovation. The first section surveys the basic information of participants, such as age, genders, and income level. This section aims to divide the participants into different groups, which generates higher accuracy when analyzing data. The second section is to test whether the participant perceive Zara having a decent brand image or not. One major question surveyed the net promoter score (NPS) of Zara. This index measures the probability of consumers to recommend Zara products to others they known [15], and it reflects the consumer satisfaction which is closely related to perceived brand image. The third section is to test if respondents are aware of green innovation developed by Zara and if they support this.

4. Data Analysis

Based on the cross-analysis of consumer consumption frequency and willingness to pay for environmentally friendly materials, the results indicate that when customers' purchase frequency is occasional, the average willingness to pay for environmentally friendly materials or better labor conditions is 5.5. When customers make purchases 1 to 2 times per quarter, their willingness to pay for environmentally friendly materials or better labor conditions is 5.52. For the sample group that purchases 1 to 2 times per month or even more frequently, their willingness to pay reaches 5.58 (see Figure 3).

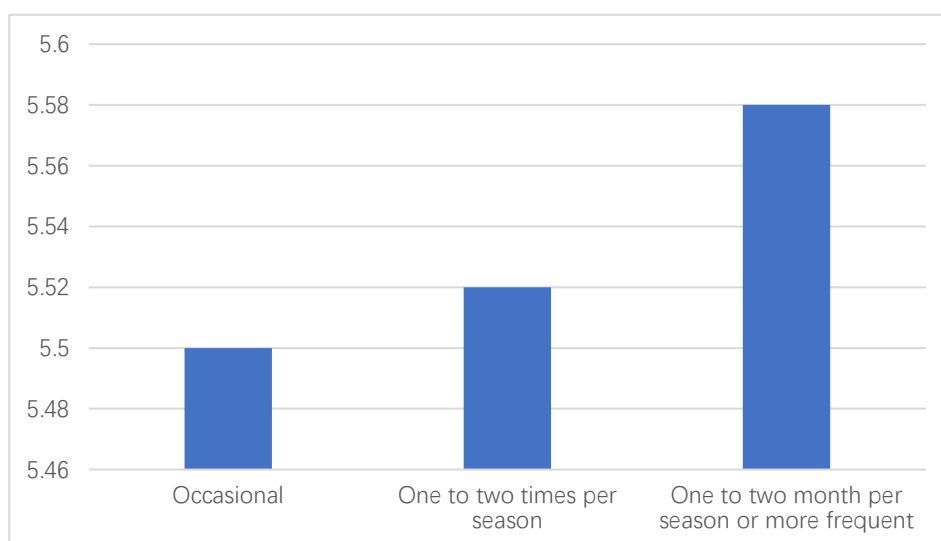


Fig. 3 Average score of willingness to pay for environmentally friendly materials by customers with different frequency of shopping in Zara.

From the survey results, it can be generally observed that as customers' purchase frequency at Zara increases, their willingness to pay for environmentally friendly materials also increases, indicating a greater focus on the brand's green image. This suggests that there is the need of green products by the consumers of Zara. It is highly likely that the success of meeting this need will be perceived by the consumers as a cultivation in inner cultural image, which will improve the brand loyalty, referencing the brand image classification model (Figure 2). In a more micro level analysis, Kano model is applicable in this case (Figure 4).

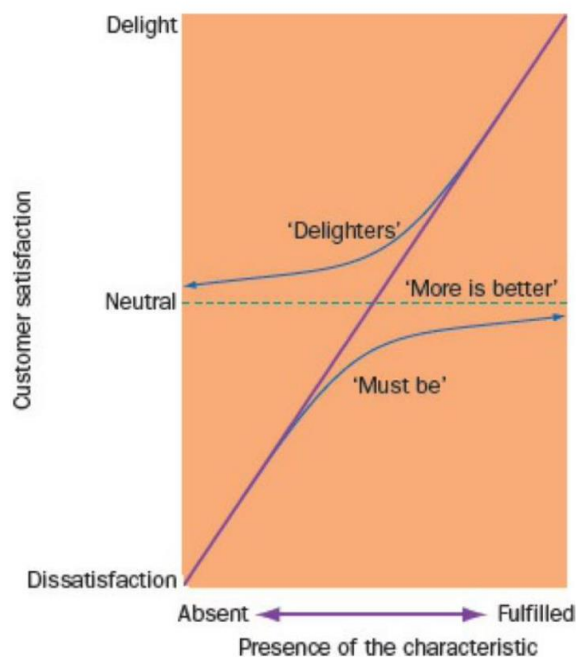


Fig. 4 Kano Model (Source: Principles and Practice of Marketing [16])

The model visualizes the relationship of customer satisfaction and presence of characteristics. The characteristics are categorized into three parts: “must be” representing the basic characteristic of a product/service (such as, a drivable car with four wheels), “more is better” standing for the characteristics that are not required to presence in a product/service but the consumers perceives it as essential, and this type of characteristics is usually due to the competition in the market (such as, a fuel-efficient car), and “delighters” representing the characteristics that actually brings an extended customer satisfaction, things that the competitors are lack of and can contribute to the user experience of the product/service (such as appearance design and decorations of a car) [16]. The model suggests that only if the “must be” and “more is better” characteristics are satisfied, the consumer satisfaction will move to delight level. Green innovation of clothing here can be classified as a delighter characteristic, which when other two types of characteristics are satisfied, the presence of green innovation will improve the brand image to “delight”. It is possible that in the future, as the awareness towards environment protection further augmenting, green innovation may be considered as a “more is better” or even “must be” characteristic, meaning that the presence of this characteristic will be gradually more important and finally become indispensable. Based on this discussion, the study believes that satisfaction of environmentally friendly needs will buttress the brand image of fashion brands.

One thing the study failed to prove is the positive relationship between NPS and willingness to purchase green product. In this case, the study contents that this is due to the large sample size of the research, as well as Zara is not a luxury brand where consumers of Zara do not usually have unlimited budgets. Hence, it may explain why the respondents rated a high NPS score while demonstrates a low willingness to pay for environmentally friendly product with a higher price. The study also two evidence that support this assumption. Firstly, the income levels of respondents illustrate a positive

relationship with the willingness to pay for green products. Secondly, the level of education is positively correspondent with the willingness to pay for green products as well.

This questionnaire first investigated the income level of the buyers of the Zara, on the premise of a price increase of 100 yuan, the purchasing power of the masses for green environmental protection is investigated. Groups of people with different incomes are divided into different numbers, and their willingness to buy is ranked from 1 to 10. Throughout the questionnaire the study uses the cross-cut analysis method, this method often compares the two variables, analyzes the relationship between the two variables, the introduces its own adjustment abject.

It is obvious from the Figure 5 that the higher the income, the higher the willingness of people to support the purchase of green products. For example, people whose income below 3000 are generally not willing to spend more money on green product. However, the higher income group is different, they are more inclined to spend more on green products. This survey shows that most people with an income higher than 8000 also demonstrated a higher willingness to pay, more than 7 on the scale.

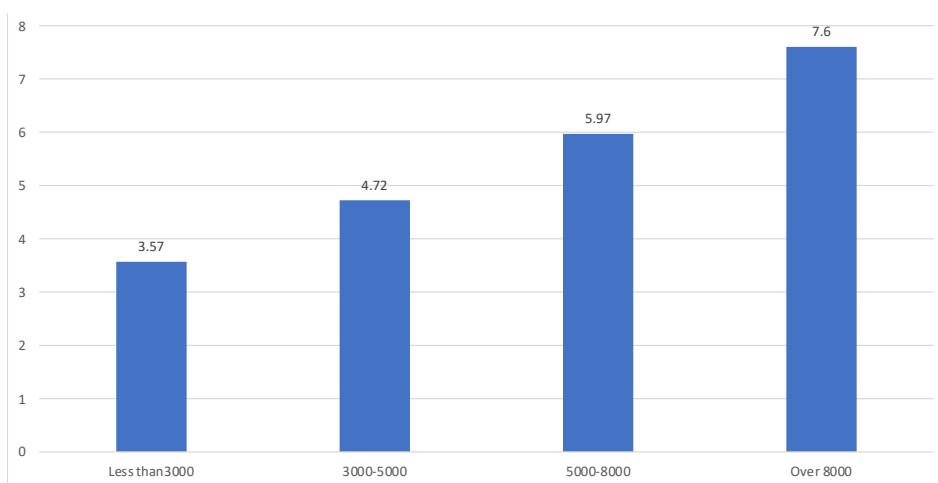


Fig. 5 The average score of willingness to pay for environmentally friendly materials by customers with different income levels.

Similar phenomenon still occurred when the context shifts to the levels of education. Different educational groups exhibit significant differences in their willingness to purchase. The average willingness to purchase for individuals with a high school education or lower is 3.86, which is relatively low; for those with an associate degree or bachelor's degree, it is 5.97, which is higher; and for individuals with a master's degree or higher, it is the highest at 6.31.

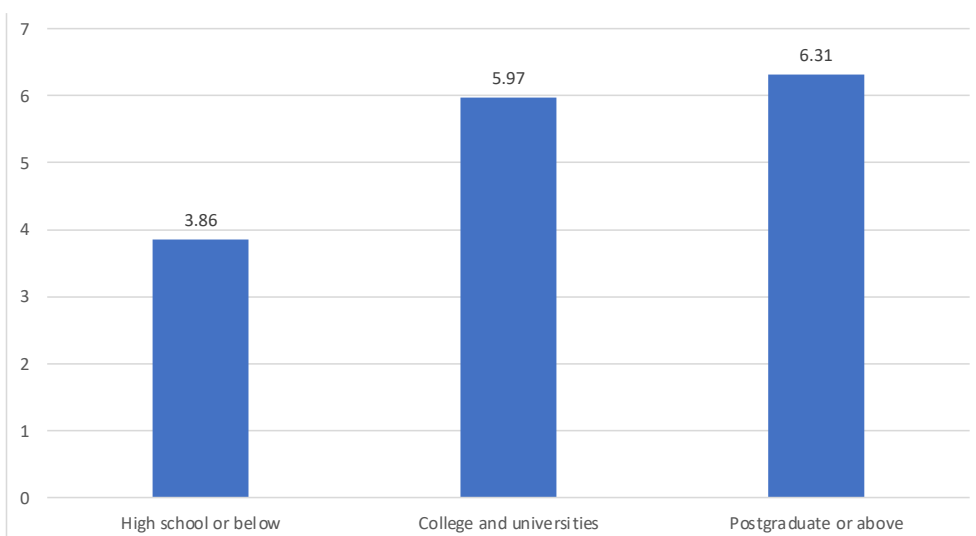


Fig. 6 The average score of willingness to pay for environmentally friendly materials by customers with different education levels.

Cross-analysis reveals further details. The willingness to purchase for individuals with a high school education or lower mostly falls within the range of 3-6, while those with an associate degree/bachelor's degree and master's degree or higher tend to fall within the range of 5-9, further confirming that individuals with higher education levels are more concerned about environmental protection (see Figure 6).

The survey demonstrates the relationship between education level, income level and the concern of purchasers for brand's environmentally friendly materials and labor conditions. As education and income level increases, the concern of purchasers for green environmental practices.

Consequently, the dissonance between NPS and willingness to pay for green innovation products or services may be resulted by the incompatibility between the income and education level and the profiles of core consumers of Zara. At the meantime, one implication is brought by these findings. As the income and education level positively relates with willingness to pay for green products or services, green innovation should hence be more important for luxury fashion brands, given that their high pricing makes those in high income groups the brands' target customers.

5. Conclusion and Implications

This study adopted quantitative survey method aiming to discover the relationship between enterprises' green innovation activities and its perceived brand image among different groups of customers. The data analysis between the frequency of shopping and the willingness to pay for green products demonstrated a positive relationship, evidencing that the need of green products does exist among Zara's customers. The past model indicates the high likelihood of improvement in brand image if this particular need is satisfied. Despite its diligent efforts, the study was unable to establish a conclusive positive correlation between Net Promoter Score (NPS) and the willingness to pay for green products. This outcome emerged due to the expansive nature of the sample size, leading to a diverse array of participant backgrounds, which unfortunately was not adequately considered during the analysis phase. Though being unsuccessful at revealing a positive relationship between NPS and willingness to pay for green products, the study provides two possible explanations – income and education level of customers will affect the willingness to pay, illustrating that the possibility of luxury brands to have a higher need in dedicating in green innovation activities. It is reckoned that the future research may explore in this notion to delve more significant relationship of these elements, under the context of luxury brands.

Authors Contribution

All the authors contributed equally, and their names were listed in alphabetical order.

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