Ushus-Journal of Business Management
2022, Vol. 21, No. 3, 45-59
ISSN 0975-3311 | https://doi: 10.12725/ujbm.60.4

The Impact of Knowledge of Sustainable Manufacturing Practices on Purchase Intention towards Fashion Apparel

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Abstract

Indian apparel manufacturers are promoting sustainable fashion and reducing carbon footprint. Despite these efforts, the acceptance of green apparel in India is low compared to developed countries. In the current study, the impact of sustainable manufacturing practices on consumers' purchase intention has been investigated while controlling for consumers' knowledge of sustainable manufacturing practices (SMPs). Data from 100 respondents analyzed using bivariate regression suggests that relationship between Consumers' Environmental Impact Consciousness, Consumers' Awareness of a brand's SMPs and their Purchase Intention toward the brand is differentially impacted by Consumers' own Knowledge of Sustainable Manufacturing Practices. The results carry implications for marketers who must craft messages to raise consumers' knowledge of sustainable practices, as well as the consumers' awareness of brands' use of SMPs.

Keywords: Sustainability, Green Knowledge, Fashion, Sustainable Consumption, Ecological Consciousness

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1. Introduction

Potential environmental and occupational hazards generated with each step of the clothing life cycle (Claudio & Luz, 2007) cannot be overlooked. The textile and apparel industry is responsible for 20% of industrial wastewater pollution worldwide and 8% of the world's greenhouse gas emissions (United Nations Alliance for Sustainable Fashion, 2020). Though industry groups have vowed to accelerate sustainable manufacturing, it is consumers' knowledge, perceptions, and values that have driven the shift toward sustainable apparel (O'Rourke, 2014). Consumers' increasing interest and awareness in sustainability have exerted pressure on the manufacturers in the apparel industry to incorporate sustainable practices (Yang & Dong, 2017). Sustainable manufacturing practices within the fashion industry refer to multifaceted activities throughout the product's manufacturing life-cycle that conserve natural and human resources and sustain quality in operations. These practices range from eco-designing, green sourcing, eco-friendly processing, clean energy, and green operations to waste minimisation, recycling and resource efficiency. However, for sustainability practices to exert an influence on consumers, they must be aware of them (Ko & Sun, 2016) which isn't always the case. Additionally, there might be gaps between a brand's actual sustainable manufacturing practices and consumers' overall perceptions of that sustainability performance (Otto et al., 2021) which they may look to bridge using brands' marketing communications. In such cases, consumers' objective knowledge of SMPs shall play a decisive role in how this marketing information is received.

Hence, it is important to investigate the role consumers' knowledge about SMPs play in influencing their purchase intention. Consumer level factors, such as their environmental impact consciousness, that are known to influence apparel acquisition (Hustvedt & Dickson, 2008) should also be factored in. Studies in this regard are scarce, although researcher interest in this area is increasing (Gazzola et al., 2020). In the current study, researchers explore how the relationship between Consumers' Environmental Impact Consciousness, Consumers' Awareness of a brand's SMPs and their Purchase Intention toward fashion apparel is differentially

impacted by Consumers' own Knowledge of Sustainable Manufacturing Practices.

2. Literature Review

The term sustainable manufacturing practice (SMP) has been used to denote attaining balance between social, economic and environmental conditions, which foster the sustainability of human existence (Hu et al., 2011). Knowledge about SMPs in a particular product category has emerged as an important factor in promoting green consumption (Van Birgelen, Semeijn & Keicher, 2009). In context of fashion apparel, Conell & Hiller (2010) shows that there is a lack of knowledge among consumers about sustainability which is a significant barrier to green consumption. It is known that knowledge of the environmental impacts of textile and apparel production lead to concern for the environment, which in turn lead to sustainable consumption behavior (Brosdahl & Carpenter, 2010). However, investigations studying the impacts of both consumer knowledge of SMPs in apparel production as well as, awareness regarding fashion brands' SMPs on purchase intention are scarce. Researchers (Ketelsen, Janssen & Hamm, 2020) have analyzed that although a large group of consumers hold positive attitude toward sustainable products, consumers truly engaging in sustainable consumption are rather few. There is therefore a need to investigate additional factors that may be contributing to this attitude-intention gap. In a recent study, researchers (Otto et al., 2021) contrasted consumer perception and scientific facts to conclude that consumers' buying behaviour is often less sustainably oriented than intended since they lack knowledge of the sustainability related practices. They suggested that scientific awareness trainings that enhance consumer knowledge regarding sustainability could promote green consumption. Their findings suggest that consumers' knowledge of sustainability related aspects may be as, if not more important, than consumers' attitudes toward sustainable products. However, very few studies, if any, have incorporated consumers' knowledge about SMPs into the study of sustainable buying behaviour in the context of fashion apparel. Since product specific attitudes are linked to purchase from socially responsible businesses (Dickson & Marsha, 2000), specific

investigations into highly polluting product categories such as fashion are of specific interest and importance.

Existing studies (Strähle & Köksal, 2015) explore consumers' perception of sustainability in context of fashion business and their perceived image of a brand. However, the impact of sustainable manufacturing practices in the fashion industry on consumers' purchase intention has not been extensively explored. There is also some evidence (Noh & Johnson, 2019) to suggest that consumers' perception of an apparel brand's sustainability efforts has a positive effect on brand loyalty, however its linkage with purchase intention has not been examined extensively, especially in the Indian context. Khare & Kautish (2020) have identified awareness about environmental problems and knowledge about green manufacturing as the key factors impacting Indian consumers' perception and purchase behavior towards sustainable apparel products. The current study examines these factors in the context of young consumers and incorporates consumers' environmental consciousness while studying the impact of the said key factors on purchase intention toward fashion apparel.

3. Material & Methods

3.1. Sampling and Data Collection

The study targeted young consumers in the age of 18-30. 26% of Indian fashion apparel consumers are in the under 30 age group (Indian Fashion Report, 2020) and research on the environmental issues among young consumers has received little attention (Adnan et al., 2017). Convenience Sampling was used to collect responses from 100 respondents, which was considered sufficient for studying an infinite population (Cochran, 1977). The respondents were asked to fill in a survey distributed to them electronically.

3.2. Variables and Measures

Consumers' Knowledge about Brands' Sustainable Manufacturing Practices was measured using a set of nine 'True' or 'False' statements (Kim & Damhorst, 1998); out of which five items were true (1, 4, 7, 8 & 9) and four items were false (2, 3, 5 & 6). Each correct answer was scored as 1 and a score of 0 was given for each incorrect answer. Reliability of the scale was calculated using Kuder-Richardson Formula 2.0 which is recommended for binary

scales. The reliability value was 0.62 (greater than 0.50) indicating moderate- high internal consistency (Tan, 2009). The summation of all scores reflected the respondents' level of knowledge about sustainable manufacturing practices. A cutoff score of 5 was used to divide respondents into 2 groups i.e. High Knowledge of SMP and Low Knowledge of SMP which were analysed separately.

The other independent variables (Awareness of Brands' Sustainable Manufacturing Practices; Consumers' Environmental Impact Consciousness; Consumers' Perception about Brands' Sustainable Manufacturing Practices) and the dependant variable (Purchase Intention) were measured using self report scales as described in the following paragraphs.

Consumers' Awareness of Brands' Sustainable Manufacturing Practices was operationalised as Consumers' awareness about the control and reduction of hazardous substances in the design and manufacturing of sustainable apparel (Saxena & Khare, 2019). Items to measure the construct were generated using UNFCCC decarbonizing fashion milestones document (2021). The final scale had seven items (e.g. I am aware of some apparel brands that engage in waste reduction, recycling and reuse), and the scores were added to arrive at a composite score for use in the analysis. The scale showed acceptable reliability and validity (alpha=.78, CR=.91, AVE=.59). Environmental impact consciousness was defined as knowledge about green issues, attitudes towards environmental quality, and levels of environmentally sensitive behavior (Diamantopoulos et al., 2003) while buying fashion apparel (e.g. When I buy apparel, I try to consider how my use of them will affect the environment). The construct was measured using 4 items adapted from the works of Lee (2011) and Ki Park & Ha-Brookshire (2021). Respondent scores on items were added to arrive at a composite score for use in the analysis. The scale showed acceptable reliability and validity (alpha=.89, CR=.90, AVE=.69).

Consumers' Perception about Brands' Sustainable Manufacturing Practices was operationalised as Consumers' beliefs towards sustainable apparel manufacturing brands being environmentally sound, which could be a function of previous experiences, habits, attitudes and beliefs, preferences and feelings (Dixit, Alvi & Ahuja, 2020). The construct was initially measured using a 10 item scale

adapted from Noh and Johnson (2019). However, only 5 items with factor loadings (>.7) were retained for the final analysis. The modified scale showed acceptable reliability and validity. (alpha=.96, CR=90, AVE=.65). Purchase Intention was measured using a 5 item scale which showed acceptable reliability and validity (alpha=.93, CR=.95, AVE=.79).

Validity of the constructs was further evaluated using the *Fornell-Larcker Criterion.* The square root of AVE for each construct (Table 1) was greater than interconstruct correlations, revealing acceptable discriminant validity (Nunnally & Bernstein, 1994).

Table 1: Discriminant Validity of constructs used in the study

	Awareness of Brands' Sustainable Manufacturing Practices	Consumers' Perception about Brands' Sustainable Manufacturing Practices	Environmental Impact Consciousness	Purchase Intention
Awareness of Brands' Sustainable Manufacturing Practices	.771			
Consumers' Perception about Brands' Sustainable Manufacturing Practices	.485	0.806		
Environmental Impact Consciousness	.590	0.416	0.827	
Purchase Intention	.634	0.420	0.531	0.889

3.3. Common Method Variance

Prior to data analysis, Harman's one-factor test was employed to rule out common method variance. At a value of 31%, CMV wasn't found to be of concern in the study (Podsakoff et al., 2003).

3.4. Sample Description

Participant ages ranged from 18 to 30 years with the highest percentage (73%) in the 18-24 age categories. 35% of male respondents and 65% of female respondents responded to the survey. The participants predominantly belonged to urban locations. The majority of participants were students while 20% of the respondents were employed.

4. Analysis & Results

4.1. Preliminary Analysis

Kaiser-Meyer-Olkin (KMO) test was used to determine the sampling adequacy. The current sample showed an acceptable KMO value > 0.7 as seen in Table 2.

Table 2: Sampling Adequacy determined through KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy		.78
Bartlett's Test of Sphericity	Approx. Chi-Square	123.48
	Df	6
	Sig.	.000

The Mean, SD and significant correlations between variables are given in Table

Table 3: Correlations between studied variables

	Mean	SD	Awareness of Brands' Sustainable Manufacturing Practices	Consumers' Perception about Brands' Sustainable Manufacturing Practices	Environmental Impact Consciousness	Purchase Intention
Awareness of Brands' SMPs	23.61	7.17	1.000	.578*	.465*	.634*
Consumers' Perception about Brands' SMPs	20.42	4.26	.	1.000	.418*	.506*
Environmental Impact Consciousness	12.47	4.22			1.000	.410*
Purchase Intention	19.97	5.02				1.000

Respondents who reported higher environmental impact consciousness had higher awareness of apparel brands' sustainable manufacturing practices *(r=.571, p <.05)*. Respondents who had higher awareness of apparel brands' sustainable manufacturing practices also reported a positive perception about apparel brands' sustainable manufacturing practices (*r=.465, p<.05*). Respondents who had higher awareness of apparel brands' sustainable manufacturing practices also reported a stronger purchase intention (*r=.634, p <.05*) towards sustainably manufactured fashion apparel.

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5. Results

Once correlation analysis established significant relationships between the variables in the study, the proposed relationships were

examined using Bivariate Regression. Results showed that Awareness of Brands' SMPs predicts Purchase Intention [R^2=.34, F(1, 98)=65.8, p<.01]. Consumers' Perception of these SMPs also significantly impacted their Purchase Intention [R^2=.16, F(1, 98)=19.8, p<.01]. Finally, Consumers' Environmental Impact Consciousness also predicted Purchase Intention [R^2=.25, F(1, 98)=33.8, p<.01]. Among the three variables, Consumers' environmental impact consciousness had the strongest influence on purchase intention toward fashion apparel among the respondents, when the data is observed as a whole. However, in order to account for difference in consumers' knowledge of SMPs, the data was divided into two groups i.e. respondents with high and low knowledge about SMPs and the proposed relationships in the study were studied separately for the two groups. The analysis help uncover how the impact of independent variables on the dependant variable varied according to consumer knowledge about SMPs. Results are summarized in Table 4 to facilitate comparison.

Table 4: Bivariate Regression Analysis

	High Knowledge about SMPs		Low Knowledge about SMPs	
	Beta	R^2	Beta	R^2
Awareness of Brands' Sustainable Manufacturing Practices ----→ Purchase Intention (H1)	.44	.40**	.50	.42*
Consumers' Environmental Impact Consciousness--→ Purchase Intention (H2)	.60	.26*	.73	.32
Consumers' Perception about Brands' Sustainable Manufacturing Practices---→ Purchase Intention (H3)	.48	.17**	.78	0.07

* : Significance at p <.05.
** : Significance at P <.001

6. Discussion

Accounting for consumers' knowledge of Sustainable Manufacturing Practices allows for a fine grained understanding of interrelationships between the studied variables.

It is evident that Awareness of a brand's SMPs has a significant impact on Purchase intention across the two groups and hence marketers should actively inform the consumers about the SMP initiatives undertaken by the brand. In contrast, Consumers Environmental Impact Consciousness which appears to have a strong relationship with Purchase Intention, acts differently among the two group of consumers. Its influence remains significant only for consumers with Low Knowledge of SMPs. The most important implication of this result is that the Environmental Consciousness among consumer, in itself, is not sufficient to induce sustainable consumption. It is the Awareness of Brands' sustainable manufacturing practices that influences consumers to purchase sustainable fashion brands.

The results of the study have provided evidence to suggest that consumers' knowledge of SMPs is an important factor affecting purchase of sustainable fashion brands. Marketers must then disseminate information about green practices in general as well as SMPs of their respective fashion brands to enhance purchase among target consumers. It is also important to note that consumers' perception of the utility of SMPs followed by fashion brands does not significantly impact Purchase Intention after the knowledge of SMPs is considered, though by itself, it appears to be a significant factor.

7. Conclusion

A comparison of high and low knowledge groups with regard to SMPs Environmental Impact Consciousness, though an important factor, is not a sufficient driver of sustainable consumption. The intent to consume sustainable fashion apparel is aided by appropriate marketing efforts that enhance consumers' awareness about brands' Sustainable Manufacturing Practices. Apparel brands can therefore take efforts to increase awareness among their

consumers about the brand's activities and obtain greater returns by marketing their sustainability efforts. Additionally, the findings indicate that having a standardized marketing strategy may not work in the best interest of fashion brands, given the difference in knowledge level between the two distinct groups that exist within the target audience.

8. Limitations & Directions for Future Research

In this study, apparel brand type (e.g., luxury, fast fashion, & moderate) has not been taken into consideration to moderate the relationship between sustainable manufacturing practices and consumers' purchase intention towards fashion apparel. Additionally, this research is limited to the fashion apparel industry and further research needs to be undertaken to study consumers' motivation to purchase green alternatives in other product categories. And finally, limitations of a small sample size should be kept in view while interpreting the findings. Future studies could use Structural Equation Modeling to examine interrelationships between the studied variables.

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