

Consumer Purchase Behavior of Eco-Fashion Clothes As a Trend to Reduce Clothing Waste

Marzie Hatef Jalil, Siti Shukhaila Shaharuddin



Abstract: *Eco-fashion clothes offer considerable promise to reduce clothing waste associated with improving consumer profits and the health of the community. The aim of this paper is to explore the consumer purchase behaviour toward Eco-fashion clothes made of recycled materials. The clothing waste is increasing each year and there is a lack of landfill sites for disposing of them. This resulted in governments encourage industries markets to recycle more. However, it is necessary to support the clothing recycling technology program, and the achievement of those markets depends on consumer demand for these products. Hence, understanding consumer behaviour toward Eco-fashion clothes made of recycled materials can provide a basis to develop effective guidelines for disposal and purchase recycled clothes. This study applied the Theory of Planned Behaviour (TPB) as the foundation of the consumer's behaviour. A two-stage mixed-method approach was explored. Statistical analysis was commenced through direct logistic regression. The model was tested via structural equation modelling (PLS-SEM). Overall, findings reveal that the most significant factor on purchase intention of Eco-fashion clothes is the positive attitude which was followed by the perceived behavioural control and then subjective norms on the construct intention. Furthermore, there is a strong connection to sustainable disposal clothing behaviour and purchase behaviour toward Eco-fashion clothes. Hence, strengthening people attitude in order to purchase Eco-fashion clothes made of recycled contents as a sustainable trend is applicable to help reduction of clothing waste. This happens when people's need is along with these clothes. The implications of this study can be examined from an educational and managerial perspective to form an effective strategy to encourage an increased rate in the disposal of clothing toward recycling and development policies to improve recycling technology programs. Therefore, it can lead to produce clothes made of recycled materials based on the consumer's needs and distribute them in the fashion market.*

Keywords: *Clothing waste, Clothing disposal behaviour, Eco-fashion clothes, Purchase behaviour*

I. INTRODUCTION

Over the past years, the fashion industry has actively put in an effort to become more sustainable. The contradiction between fashion and sustainability is no longer in terms.

It was indicated fashion and environmental concerns lead to becoming the fashion industry a pioneer in sustainability and recycling products. The population is growing, which has increased production and resulted in a negative impact on the environment. One of the ways to achieve sustainability is using Eco-fashion materials in fashion design which has become very popular. Eco-fashion materials are made of organic, recyclable and renewable materials [1]. According to Joergens [2], the Eco-fashion clothes are defined as any type of clothes which are designed with Eco-fashion materials to reduce environmental impacts in the direction of improving consumer profits and the health of the community. A recent study about the investigation of the effects of sustainable issues illustrated that the practice of sustainable development is limited, specifically in developing countries [3]. Paul and Modi [4] suggested that consumers from developed countries are more concerned about the environment than those from developing countries. Moreover, Eco-fashion clothes have also drawn the attention of developing countries, including China [5], India [6], Indonesia [7], and Malaysia [8, 9]. In Malaysia, it was recorded that in 2013, clothing waste constitutes 4% of the total solid waste, which is approximately two million kilograms of clothing waste produced per day [10]. According to Lang and Armstrong [11], a positive connection between purchase clothes under ethical issues and clothing disposal behaviour toward sustainability can lead to having an Eco-fashion industry in the future. In the purchase behaviour of Eco-fashion clothes, the role of the intention-behaviour gap has been highlighted by a few scholars [12, 13]. Laitala [14] stated that there is no study that investigates factors can influence purchase behaviour toward Eco-fashion clothes. In addition, the results of the recent study by Rhee and Johnson [14] showed that there is a gap between consumer's attitudes toward the sustainable purchase and their clothing disposal behaviour, that can increase the clothing waste. Moreover, Hur and Cassidy [15] showed that sustainability issues are truly complicated. As well, attitudes and behaviour gaps in consumer purchase decisions are the biggest barriers to implement Eco-fashion design process. Indeed, to possess Eco-fashion clothes collections, the factors that affect the consumer's purchase toward Eco-fashion clothes need to be studied. This study focuses on Eco-fashion clothes made of recycled materials. The main research objective is to achieve knowledge regarding consumer's attitude toward clothing recycling behaviour and investigate the purchase intentions of Eco-fashion clothes made of recycled materials. The Theory of Planned Behaviour [16] was employed to prove hypotheses.

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II. LITERATURE REVIEW

The basic framework of the Theory of Planned Behaviour (TPB) [16] was used in this study to examine the purchase behaviour of Eco-fashion clothes. Several researchers have used TPB for understanding the purchase intention concerning environmental issues [17-19]. There are many factors which impact the motivation of the consumer to become involved in environmentalism behaviour [20]. A person needs to be aware of environmental threats which can help he/she to show intrinsic behaviour towards the preservation of the natural environment [21]. Moreover, it is also important to understand that the behaviour in a particular activity toward sustainability, e.g. clothing disposal, may help in shaping attitude and intentions toward other sustainable activity, e.g. purchase clothes [22]. Therefore, the study takes into consideration essential components of the TPB, namely, attitude (A), subjective norms (SN), perceived behavioural control (PBC) along with sustainable clothing disposal behaviour (SCD) and tests these in the context of purchase intention (PI) as well as purchase behaviour (PB) of Eco-fashion clothes. Fig. 1 outlines the framework of hypothesized relationships, which are discussed in detail below.

A. Attitude toward Eco-Fashion Clothes and Purchase Intention

Attitude is defined as a mental state of enthusiasm, which has an impact on the response to all purposes and conditions [23] and strengthening the intention to perform a behaviour. Mainly, the concept of sustainability focuses on the usage of Eco-materials for reduction the environmental issue; nevertheless, according to Wagner and Curteza [24], the lack of understanding about quality and design of Eco-fashion clothes needs to be improved. Eco-fashion clothes are made of recycled or reused materials that have not been coloured with harmful chemicals [1]. In addition, Saricam and Okur [25] and Wai Yee and Hassan [3] investigated that the consumers actually have positive feelings and beliefs about the Eco-fashion products but the reason why they avoid purchase them are related to the attitude of the poor quality, high prices and unfashionable. Maloney and Lee [26] showed that there is a strong relationship between attitude toward Eco-fashion clothes and behavioural purchase intentions. Reiley and DeLong [27] found that participants who sought and wore clothing from recycled sources perceived their appearance as unique more than those who acquired their clothing from only new sources, therefore this attitude makes them interested in buying these types of clothes. Furthermore, an economic attitude for saving money is a powerful motivation which influences purchase behaviour [28]. Moreover, a recent study to investigate the factors of an Eco-fashion design [29] suggested that price is considered as an indicator of quality for the majority of Eco-fashion products. Indeed, consumers have this attitude that Eco-fashion clothes have less quality compared with clothing made of virgin materials [30]. Therefore, consumers are only willing to purchase them when the price was equal to or lower than the virgin products. Likewise, the appearance of Eco-fashion product is an important factor in consumer attitude [31]. The design is the primary element that determines whether clothes is worth purchase [32]. Thus, a positive attitude can ensure the

success of purchase Eco-fashion products [31, 33]. Based on the literature, the following hypothesis is proposed for the current study's context:

H1. Consumer's attitude towards Eco-fashion clothes made of recycled materials influences the direct and positive on purchase intention for such clothes.

B. Subjective Norms toward Eco-Fashion Clothes and Purchase Intention

Subjective norm is defined as the perceived social force to show a particular behaviour [16]. The subjective norm can be introduced as a kind of opinion that people approve or disapprove about certain behaviour which is undertaken and performed. People not only behave under social force, but the subjective norm also offers them facts about the correctness of behaviour under consideration [34]. Wiriapinit [35] discovered that the family norm instructed by parents can influence purchase intentions of products in Thailand. The literature on this aspect also indicates that subjective norm as a perceived social demand for executing a particular behaviour has a positive influence on behavioural purchase intention of Eco-fashion products [17, 36]. In line with the discussion in the literature on this subject, we hypothesize that:

H2. A Subjective norm towards Eco-fashion clothes made of recycled materials influences the direct and positive on purchase intention for such clothes.

C. Perceived Behavioural Control toward Eco-Fashion Clothes and Purchase Intention

According to Fishbein and Ajzen [16], people's attitude of their capacity to adopt a behaviour is named perceived behavioural control. Perceived behavioural control includes features toward the availability of resources such as money and time for representing behaviour and consumer's confidence in carrying out the behaviour [16]. Consumers perform a particular behaviour if they have both the ability and confidence. Maloney and Lee [26] and Zhang and Chen [18] showed perceived behavioural control is positively associated with purchase intention for Eco-fashion clothes made of organic materials, though it has less influential factor on the purchase intention. In addition, Paul and Modi [4] found out that the attitude and perceived behavioural control influence purchase intention, while subjective norms do not have any effect. In line with the discussion in the literature on this subject, we hypothesize that:

H3. Perceived Behavioural Control towards Eco-fashion clothes made of recycled materials influences the direct and positive on purchase intention for such clothes.

D. Sustainable Clothing Disposal Behaviour, Purchase Intention, and Purchase Behaviour

Sustainable disposal behaviour is a new subject in the consumer behaviour literature. This behaviour involves reusing clothes, recycling clothes, donating to charities, giving them away to the second-hand store, put unwearable clothes in the recycling bin, etc [37]. Brosdahl and Carpenter [38] claimed that the knowledge of the environmental impacts leads to concern for the environment which influences the behaviour toward disposal, consumption, and purchase.

Moreover, the result of effective factors on Eco-fashion clothes [39] concluded that the intention of purchase organic products is influenced by environmental activities.

Lang and Armstrong [11] stated that there is a strong relationship between clothing purchase and dispose of clothing. Likewise, Young Lee and Halter [22] and Dahlbo and Aalto [40] showed clothes disposal toward sustainability can lead to purchase intention of Eco-fashion products. In a survey conducted by Kloth Cares Malaysia (2018) has been shown that 81% of Malaysian have sustainable behaviour toward clothing disposal, however, no study has been executed about the purchase of Eco-fashion clothes in Malaysia. Hence, in the current research, this issue was tested. Thus, the following hypotheses are proposed:

H4. Sustainable clothing disposal behaviour influences the direct and positive on purchase intention of Eco-fashion clothes made of recycled materials.

H5. Sustainable clothing disposal behaviour influences the direct and positive on purchase behaviour for Eco-fashion clothes made of recycled materials.

E. Purchase Intention and Purchase Behaviour

Behaviour can be determined from the intention with considerable accuracy. Indeed, the behavioural intention has been considered to be a powerful impact on actual behaviour but it is not always true. Moreover, Sheppard and Hartwick [41] mentioned a high degree of connection between intention and behaviour. Research on purchase behaviour for Eco-fashion clothes made of cotton contents has indicated a significantly positive relationship between purchase intention and purchase behaviour [17]. Although very well established in the literature, we wanted to ascertain this relationship in the context of Eco-fashion clothes made of recycled materials. In line with the discussion in the literature on this subject, we hypothesize that:

H6. Purchase intention of Eco-fashion clothes made of recycled materials has direct and a positive relationship with the purchase behaviour for such clothes.

Based on literature reviews and the concept of TPB about the purchase behaviour of Eco-fashion clothes made of recycled material, a conceptual framework is developed as shown in Fig. 1.

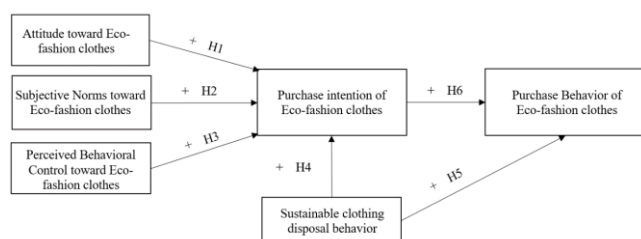


Fig. 1. Proposed conceptual framework

III. RESEARCH METHODOLOGY

Due to the goals of this project and a large number of research themes, different types of data are needed including quantitative survey and qualitative interviews.

A. Instrument Development

The instrument used in this study was first investigated by previous researchers. Based on two classifications of consumer behaviour, sets of the close-ended questionnaire were designed. The questionnaire was formed into two

categories: clothing disposal behaviour and purchase behaviour. Each category was included multi-choice questions with Likert scale questions from one means 'strongly disagree' and five means 'strongly agree'. Sustainable clothing disposal behaviour questions were adapted from [37] and measurement items for purchase behaviour were referred from [18, 42, 43]. Finally, demographic information of respondents was collected in terms of gender, age, income, and the occupation. As mentioned previously, the concept of Fishbein and Ajzen's theory of planned behaviour is used. Prior to the survey questions about Eco-fashion clothes made of recycled materials, a definition was provided to inform participants about the term's meaning to allow them to respond more precisely. Table 3 establishes the measurement scales in the formal questionnaire for data collection.

B. Data Collection

The inquiry was carried out as a hard-copy survey in November 2018 in Malaysia. Likewise, the questionnaire was programmed with Google Forms and the link to the questionnaire was disseminated among east and west of Malaysia. It was based on a "snowball sampling" method, i.e. a type of convenience sampling method where the respondents recommend new respondents to the researcher. The respondents completed the written questionnaires after they agreed to participate in this research. Subsequently, completed responses numbered 583. The respondents were classified as a student (had a diverse major, including arts, design, materials science, linguistics, museum curation, engineering, and finance), non-professional (employee or whoever with lower academic qualification) and professional (educator, accountants, lawyers, doctors, professors, engineers). Empirical research using survey was carried out to investigate the people behaviour.

C. Data Analysis

Descriptive statistics, reliabilities, and correlations using SPSS 23 were computed for each variable to obtain the results and to identify the relationships. A significance level of 95% was set. Structural equation modelling (SEM) using the analysis of structures software (SmartPLS 3.0) was employed to analyse the collected data. For model assessment, this study accepted the evaluation of outer measurement and inner structural model [44, 45]. The outer measurement model is aimed to calculate the reliability, internal consistency, and validity of the observed variables with confirmatory factor analysis (CFA). The next step was to measure the inner structural model that includes; path coefficient (β -value), t-statistic value and effect size (f^2). This study was conducted a single source data (Eco-fashion clothes survey) as variables. Therefore, According to Podsakoff and MacKenzie [46], the Common Method Bias (CMB) does not affect data if the total variance for a single factor is less than 50%. In this study, total variance obtained from SPSS is 38 %, therefore, CMB does not effect on data.

D. In-depth Study

Kennedy and Vargus [47] suggested an in-depth interview study to improve the information obtained from the questionnaire.

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Multiple modes are also useful when a research task requires measurements from both the specific group and the general public.

In order to strengthen the findings of this study, we conducted a follow-up semi-structured interview study with 19 people who have had the experience of buying Eco-fashion clothes made of recycled contents. However, only 16 of them accepted the invitation that was 14 women and 2 men. Researchers believe that people in-depth interview has more knowledge about Eco-fashion clothes. Their opinions and attitudes may yield valuable insights into our study. Prior to the interviews, we designed an interview protocol, outlining all the major questions that were developed using the literature reviews on factors which influence on purchase behaviour of sustainable clothes [26, 42, 43]. Each thirty-minute interview was audio recorded with the interviewee's permission. These interviews were transcribed. For consistency, interview transcriptions were reviewed by the researcher periodically during analysis to ensure validity.

IV. RESULTS

A. Descriptive Statistics and Analysis

A total of 583 respondents participated in the survey. A convenience sample of 294 people from east of Malaysia and 289 people from the west of Malaysia attended this study. Table 1 provides a demographic profile of respondents. 66.7% of respondents were female and 33.3% male. The largest percentage (63%) was under 21 to 30. The employment status of the respondents was "student" (62.8%) and salaried employee (17%). The most (64.7 %) monthly family income of the respondents was reported between RM 500 and RM 2,000. (64.5%) of respondents were not familiar with Eco-fashion clothes that the majority of them were students and less than 30 years old. Moreover, when it was asked about the purchase behaviour of clothing which helps to protect the environment, the majority of respondents did not purchase them. The reasons were that they have not heard about this kind of clothes and not available (48.4%, and 27.9%, respectively). Whilst, 35.5 % of participants had purchase experience related to Eco-fashion clothes which among them, 14.4% used second-hand clothes as a type of Eco-fashion clothes and only 3.3% of them purchased clothes made of recycled material. The measurement scales for two different groups are shown in Table 3. There was not much different result between the two groups of "familiar" and "not familiar" with Eco-fashion clothes. The most common way to dispose of unwanted clothing among Malaysian respondents is "give away to family or friends" and "donation to the charity" (M= 4.89, M=4.87, respectively). They were able to give their unwanted clothing to non-government organizations (NGO) who provide awareness about the collection service and clothing recycling bin (M=4.49) or reuse unwearable clothes for other purposes (M=4.77).

Table- I: The demographic profile of respondents (N=583)

Construct	Items	Frequency	Valid Percent
Gender	Female	389	66.7
	Male	194	33.3
Age	-20	59	10.1

	21 - 30	367	63
	31 - 40	111	19
	+41	46	7.9
Employment status	Currently unemployed	6	1
	Government servant	92	15.8
	Homemaker/Housewife	3	0.5
	Retired	2	0.3
	Salaried employee	99	17
	Self-employed	15	2.6
	Student	366	62.8
Monthly income	RM500 - RM2,000	377	64.7
	RM2, 001 – RM5,000	116	19.8
	RM5,001 – RM10,000	79	13.6
	RM10,001–RM20, 000	11	1.9
Purchase new clothing?	Once a week	12	2.1
	Once a month	141	24.2
	Once every 3-4 months	220	37.7
	Once every 6-7 months	108	18.5
	Once or twice a year	102	17.5
	Less than RM50	88	15.1
How much spend on clothing	RM51 - RM200	393	67.4
	RM201 - RM500	90	15.4
	RM501 – RM1, 000	8	1.4
	More than RM 1001	4	0.7

B. Reliability and Validity

Through confirmatory factor analysis (CFA), the study aims to identify whether the proposed model meets the standards of reliability and validity. The reliability was tested by composite reliability (CR) and Cronbach alpha (α) with both more than 0.70. According to George and Mallery [48], we found support to combine the items under each measure into the intended multi-item scale, with high reliability ($\alpha \geq 0.7$) for all variables. Reliability coefficients indicated appropriate internal consistency for A ($\alpha=0.78$), PBC ($\alpha=0.74$), SN ($\alpha=0.71$), SCD ($\alpha=0.80$), PI ($\alpha=0.75$), and PB ($\alpha=0.87$) that significant at the level 0.001. The validity of the scale items was assessed with factor loadings and Average Variance Extracted (AVE) which both greater than 0.50 and Heterotrait-Monotrait (HTMT) ratio test showed that construct variables are below than 0.85 [48]. It was found that the values of factor loading were high on their respective variables. In general, factor loading over 0.50 is classified as a "strong" item loading [45]. Second, the AVE for the six measures is higher than 0.5, showing convergent validity at the variable level. The bolded elements in Table 2 represent the square roots of the AVE and the non bolded values represent the intercorrelation value between the variables and the AVE values are within 0.613 and 0.885. Finally, discriminant validity can be accepted for this measurement model and supports the discriminant validity between all variables [49]. The constructs in the study satisfy the discriminant validity assessment on the basis of HTMT. The output is summarized as in Table 2.

Table- II: The empirical results of outer structural model outcomes (N=583)

	α^a (≥ 0.7)	CR ^b (≥ 0.7)	AVE ^c (≥ 0.5)	Latent Variables				
				1	2	3	4	5
A	0.78	0.79	0.61					
PBC	0.74	0.81	0.74	0.67				
SN	0.71	0.85	0.65	0.28	0.46			
SCD	0.80	0.88	0.66	0.63	0.27	0.63		
PI	0.75	0.75	0.62	0.10	0.17	0.27	0.57	
PB	0.87	0.93	0.88	0.49	0.21	0.14	0.44	0.43

a. α = Chronbach alpha, b. CR= Composite Reliability, c. AVE= Average Variance Extracted



Table- III: Informational factors rated significantly different by ‘not familiar with eco-fashion clothes’ respondents and ‘familiar with eco-fashion clothes’ respondents $p < 0.001$ (N=583)

Items	Not familiar (N=376)		Familiar (N=207)		Factor loading (≥ 0.7)
	M	S.D	M	S.D	
A ($\alpha=0.78$)					
I believe that Eco-fashion clothes have similar price with the other products.	4.57	0.69	4.70	0.51	0.70
I believe that Eco-fashion clothes have been made of good quality.	4.61	0.71	4.64	0.75	0.73
I believe that Eco-fashion clothes can help to protect the environment.	4.74	0.38	4.84	0.37	0.74
I believe that Eco-fashion clothes are easy to use, nice and chic.	4.56	0.65	4.72	0.40	0.71
PBC ($\alpha=0.74$)					
I have the resources, time, and willingness to purchase Eco-fashion clothes.	4.77	0.45	4.79	0.42	0.73
Purchase Eco-fashion clothes is a decision that is only up to me.	4.84	0.38	4.80	0.37	0.76
I am confident, I can purchase Eco-fashion clothes when I want.	4.50	0.70	4.60	0.60	0.72
To me, purchase Eco-fashion clothes is easy.	4.51	0.76	4.55	0.58	0.72
SN ($\alpha=0.71$)					
My family expect me to engage in Eco-fashion clothes when buying clothes.	4.52	0.81	4.34	0.75	0.73
People who influence my behaviour might think that I use Eco-fashion clothes.	4.67	0.67	4.60	0.63	0.72
My society expect me to engage in Eco-fashion clothes when buying clothes	4.34	0.59	4.41	0.44	0.70
Most of the people who are important to me think that purchase Eco-fashion clothes in my shopping is a good thing.	4.40	0.69	4.48	0.38	0.71
SCD ($\alpha=0.80$)					
I donate unwanted clothes to the charity or people who need them.	4.86	0.24	4.88	0.29	0.98
I give away unwanted clothes to my family or friends.	4.82	0.31	4.98	0.16	0.94
I always make an effort to put unwearable clothes in recycling bins.	4.50	0.70	4.48	0.60	0.78
I always try to make a new design for a purpose with unwearable clothes.	4.77	0.33	4.78	0.38	0.76
PI ($\alpha=0.75$)					
I would patronize and recommend the use of Eco-fashion clothes.	4.53	0.77	4.60	0.60	0.71
I would actively seek out Eco-fashion clothes in a store in order to purchase it.	4.51	0.76	4.58	0.63	0.73
I would buy Eco-fashion clothes if I happen to see them in a store.	4.67	0.34	4.78	0.43	0.77
I would like to use Eco-fashion clothes.	4.34	0.88	4.52	0.54	0.70
PB ($\alpha=0.87$)					
If I understand the potential damage to the environment that non-Eco-fashion clothes can cause, I do not purchase those products.	4.53	0.77	4.70	0.60	0.94
I choose the Eco-fashion clothes alternative in shopping if one with a similar price is available.	4.51	0.76	4.58	0.63	0.93

C. Data Analysis

Given the analysis developed in the qualitative phase and construct hypotheses, the authors decided to compute a multiple regression model. As shown in Table 4, the assumption of independence of errors was met with Durbin Watson statistic of 1.95, which is between the two critical values of $1.5 < d < 2.5$. Therefore, there is a positive autocorrelation between the purchase behaviour and variables and no correlations between model errors [48]. In Table 4, the p-value for each component is $p < 0.00$ which indicates that all the criteria have a significant relationship with consumer's purchase behaviour. Multiple regression analysis resulted in $R=0.93^a$, $R^2= 0.91$, and an adjusted $R^2=0.91$. R-Squared is the correlation between the observed and predicted values. According to Henseler and Ringle [49], an R^2 value of 0.75 is considered valuable. Hence, the R^2 values in this study were substantial. It means 91% of the variance in purchase behaviour is affected by the sustainable clothing disposal behaviour and purchase intentions of Eco-fashion clothes. The finding of the regression in SPSS was similar to the results of structural model outcomes in SmartPLS which will be discussed later (see Table 5). Since $p\text{-value} \leq 0.05$, therefore, we shall reject the null hypothesis. The model was significant, $F(4,36)= 828.35$, $P=0.00$, meaning that the attitude, subjective norm, perceived control behaviour and sustainable clothing disposal behaviour significantly predict the intentions of purchase Eco-fashion clothes. Additionally, disposal behaviour and purchase intentions can predict purchase behaviour, due to the $F(2,58)= 575.03$, $P=0.00$. Consequently, we can assume that there is a linear relationship between the variables in our

model. As can be seen from Table 4, the attitude and sustainable clothing disposal behaviour are strong predictors toward purchase intentions in comparison to other variables ($\beta=0.71$, $\beta=0.54$, respectively). Therefore, based on regression analysis, all variables are significantly different from each other in the purchase intention and can predict the intentions for Eco-fashion clothes.

Table- IV: Results of regression analysis $p < 0.001$

		B	S.E	β	t-value	p-value
Influncing factors on PI	A	1.14	0.04	1.09	23.82	.000
	PBC	0.34	0.01	0.29	7.99	.000
	SN	-0.15	0.03	-0.10	-4.91	.000
	SCD	0.56	0.04	0.42	12.11	.000
$R^2=0.96$, $F(4,36)= 828.35$, $P=0.00$, Durbin-Watson = 1.75						
Influncing factors on PB	SCD	0.39	0.06	0.31	4.22	.000
	PI	0.91	0.09	0.54	9.58	.000
$R^2=0.91$, $F(2,58)= 575.03$, $P=0.00$, Durbin-Watson = 1.95						

D. Structural Model and Hypothesis Testing

The following subsections discuss the tests used to assess the validity of the structural model for this study. We tested our proposed hypotheses through structural equation modelling (SEM) technique. The results of the structural model obtained from SmartPLS are presented in Fig. 2. The validity of the structural model is assessed using effect size, path coefficients (β -value) and t-statistic value. The coefficient of determination measures the overall effect size explained in the endogenous variable for the structural model and is thus a measure of the model's predictive accuracy.

The criteria suggested by Cohen [50] for interpreting the effect size is given as follows: small effect < 0.02 , $0.02 < \text{medium effect} < 0.15$ and the large effect > 0.35 ($p < 0.05$). Therefore, in this study four factors had a large effect. According to Ringle and Wende [45], the higher β -value shows the stronger impact of a predictor independent variable on the dependent variable. The results present in Fig. 2 shows that the β value of A has the highest co-efficient value of 0.459 on PI. However, SN is having the smallest co-efficient value of -0.105 which indicates that SN is giving the least impact to the PI. With accordance to Hair Jr and Hult [51], β -value whether it is positive or negative is not a concern because the impact of the path is related to the absolute value of the β . All hypotheses were supported. Therefore, the following variables had a positive association with the consumer's purchase intention toward Eco-fashion clothes: attitude (H_1), subjective norm (H_2), perceived control behaviour (H_3) and sustainable clothing disposal behaviour (H_4). The results of the SEM modelling indicated that attitude and sustainable clothing disposal behaviour has a strong effect on the purchase intention toward Eco-fashion clothes more than other factors. Finally, behavioural purchase intention and sustainable clothing disposal behaviour play important roles as predictors variable for purchase behaviour toward Eco-fashion clothes which supports H_5 and H_6 , respectively. According to Hair Jr and Hult [51], evaluation of the correlations and regressions is significance with t-value ≥ 1.96 . Results of hypotheses testing are summarized in table 5.

Table-V: Results of hypotheses testing $p < 0.05^*$, $p < 0.01^{}$, $p < 0.000^{***}$**

Hypothesis	f^2	Effect	β	S.E	t value	Decision
$H_1: A \rightarrow PI$	0.63	large	0.45	0.09	4.98	✓ ***
$H_2: SN \rightarrow PI$	0.07	small	-0.10	0.04	2.29	✓ *
$H_3: PCB \rightarrow PI$	0.22	medium	0.27	0.09	3.02	✓ **
$H_4: SCD \rightarrow PI$	0.56	large	0.39	0.15	2.61	✓ **
$H_5: SCD \rightarrow PB$	0.35	large	0.38	0.04	7.93	✓ ***
$H_6: PI \rightarrow PB$	0.80	large	0.59	0.15	3.85	✓ ***

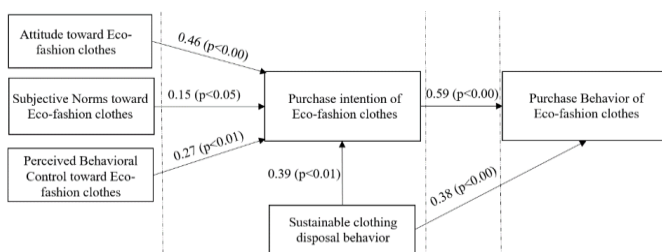


Fig. 2. Measurement model

E. Qualitative Results

The results of the in-depth interview show to promote sustainable issues, both society and industry must have sufficient knowledge in this area [33]. Additionally, the quality features were valued by many of the women interviewed. Best quality, in general, was often commented

based on better material strength and quality sewing in Eco-fashion clothes. In addition, economic concerns predicted both the disposal and purchasing clothes behaviours [37]. All of the interviewees would see the fair price along with good quality in Eco-fashion clothes. Most of them stated that if products made from recycled materials cost more than other products, they refuse to purchase. Unless the quality and design are stunning and worth for higher value. The interviewees believed Eco-fashion clothes should be easy to use (functional), simple design, fashionable and attractive colours. Therefore, based on the finding of the in-depth interview, the most important factors that had influence consumer's attitude in buying Eco-fashion clothes are good quality, fair price, environmental knowledge, design features and multipurpose style. The summary of the results is reported in Table 6.

Table- VI: Influencing factors on attitude in actual behaviour

Environmental Knowledge and Concern	$P1_3$	we are as a consumer need to learn about sustainability and be notified by clear information about Eco-fashion clothes, as well as materials. I was interested to see the Eco-cloth's label in the clothes store, it fascinated me to buy, a cycle of clothing production from waste to a renew fabric.
	$P5$	In 2014, I saw an advertisement that was about putting in unwanted clothes to the recycling bin and receive a coupon to purchase new clothes. I went there, they gave me a new viewpoint of fabric recycling after we put our clothes in the recycling box. I never heard about it before.
	$P3$	I like to purchase recycled clothing, of course, they are very limited. I bought a dress was made of recycled materials for my daughter, the price was the same as the other, but the design was colourful, it attracted me to purchase.
Quality and Price	$P2$	I had a good experience, the quality of my polyester skirt made of recycled materials was good, so, why I don't collaborate to preserve environment?! all should be invited to this movement
	$P8$	I would prefer to spend a much higher price for recycled clothes rather than other clothes if I can wear them for a long time.
Design features	$P1_0$	I like boutiques that have random things that are really unique and one-of-a-kind. I purchased an Eco-fashion dress made of recycled materials. It is able to wear both size; short and long. It was interesting. I was fascinated by the multipurpose feature.
	$P1_6$	I like clothing that is designed for multipurpose. that's this coat, I could wear this for a waistcoat one day and then a dress the next day.
	$P1_1$	Fashionable clothes which I know they are not trending the next year. I'm not going to waste my money on. I bought plain shawls made of recycled materials in a six-colour package. They help me to set with my wardrobe, the price and quality did not much difference with the other shawls in the market.
	$P4$	Most of the sustainable fashion designers still focus on the use of environmentally friendly materials, such as cotton, hemp and/or other natural fibers; not much attention is put on the styles or aesthetic value of the product, designers should improve creativity in Eco-fashion clothes.

V. DISCUSSION

This study has discovered the role of attitude, subjective norm, perceived behavioural control and purchase intention for Eco-fashion clothes especially those made of recycled materials. The study also explored the role of sustainable clothing disposal behaviour toward purchase intention. Our model uncovered the factors that affected on the intention to purchase Eco-fashion clothes with 0.96 of its variance explained by the four identified variables (i.e. attitude, subjective norm, perceived behavioural control and sustainable clothing disposal behaviour). A unique contribution of this study is the structural equation modelling of the TPB model predicting both purchase intention and purchase behaviour. The pattern of results in this study is generally consistent with Kumar and Manrai [17] of TPB research and its measures were fit for the Eco-fashion studies. As expected, attitudes favourable toward purchase Eco-fashion clothes, norms supportive of purchase Eco-fashion clothes, and perceived behaviour control were positively associated with purchase intention. Furthermore, a unique contribution of our research is to identify clothing disposal behaviour as one important predictor of a consumer's purchase intention towards Eco-fashion clothes. Our results offer insights into practical decisions related to clothing disposal toward sustainability. A notable finding of the current study was support for attitudes and perceived behavioural control. In both quantitative and qualitative findings, the best predictor for purchase intention of clothes is the positive attitude toward quality, price, design, multipurpose style and design in other words psychological shopping. People are not interested to purchase clothes made of recycled materials if the price of products exceeds more than similar clothes in the market. This suggests that Eco-fashion clothes made of recycled materials should have a reasonable price. This finding is in line with earlier research Vehmas and Raudaskoski [52] that showed consumers are more interested in finding their own personal fashion needs and then focus on the ethical issues. It was consistent with Maloney and Lee [26] and Tu and Hu [36] that showed the most significant factor on purchase intention is an attitude which was followed by the perceived behavioural control and then subjective norms on the construct intention. Moreover, according to qualitative results, touching the clothes is the most important factor, particularly for women, which agrees well with the findings in extant studies [3, 18, 53]. Subjective knowledge was affirmed to have direct influence on the purchase intention of Eco-fashion clothes. However, it was found that they have low effect on purchase intention in this study. Probably it is caused by psychological concerns of Eco-fashion clothes made of recycled materials in the community. Kumar and Manrai [17] have shown the same result that subjective norm has a low effect rather than other factors in the theory of planned behaviour. However, this is contradictory to Ramayah and Lee [54] findings that subjective norm was the most important predictor of sustainable behaviour. Our research also indicated that 91% of the variation in purchase behaviour was due to sustainable clothing disposal behaviour and purchase intention. It was a logical finding of this study that sustainable clothing disposal behaviour is a significant factor in the purchase behaviour of Eco-fashion clothes. In the in-depth interview, people who were

interested in purchase these products talked about donating their unwanted clothes to the community and putting in recycling boxes. Generally, sustainable clothing disposal behaviour shows a satisfactory image in Malaysia. This result is consistent with the previous research by Joung and Park-Poaps [28] and Lang and Armstrong [11] that showed a strong connection between purchase and disposal in the field of clothing. This could be the result of when consumers perceive that their recycling efforts have been effective in preserving the environment, they are more likely to engage in sustainability behaviours such as a purchase. Interviewees stated that environmental knowledge and concern have affected to purchase Eco-fashion clothes. Hence, conscious consumers are not willing to pollute the environment intentionally. This was in contradiction with Harris and Roby [55] previous research that showed during purchase, sustainability is considered as a factor but has a lower grade in comparison to other criteria such as price, quality, and design. Furthermore, if the amount of sustainable clothing disposal is positively associated with purchase Eco-fashion clothes made of recycled materials, businesses should become more involved in this consumer behaviour, for instance, Hennes & Mauritz (H&M), a Swedish clothing brand. In 2017, this company launched a campaign as named "Bring It" that it was a universal garment collecting program [56]. In this program, consumers bring packages of unused clothing of any brand and put them in the recycling box in an H&M store. Therefore, the consumers take a discount coupon for their H&M purchases at next time. H&M sells some of the unused clothing as second-hand and the rest is recycled for new production. Therefore, to make a behaviour pattern toward the purchase of Eco-fashion clothes, it must promote a positive attitude toward clothing disposal and the steps in which unwearable clothes become new fabrics/new design.

VI. IMPLICATION AND RECOMMENDATIONS

The implications of this study can be examined from a managerial perspective to form an effective strategy to encourage an increased recycling rate in clothing disposal and produce Eco-fashion clothes.

Theoretical Implications: This research provides some significant insights into the fashion industry, government, and non-government organizations concerning the influential factors of purchase intention. The Theory of Planned Behaviour was developed with a new variable as 'sustainable clothing disposal behaviour' next to the three existing variables; attitude, subjective norms and perceived behavioural control. The most respondents of this research were women 21-30 ages with moderate family income. Through this study, we can conclude that the positive attitude toward Eco-fashion clothes is the most significant factor of purchase intention (H_1). In addition, the intention can affect real behaviour completely toward purchasing Eco-fashion clothes (H_6), in order to contribute to the economy and embrace modern environmentalism. Increasing the positive consumer's attitude toward clothes made of recycled materials may help the industry focus on the consumer's need, personal cost,

and emotional benefits of Eco-fashion clothes rather than a green-only strategy. Additionally, for increasing the purchase behaviour of Eco-fashion clothes, we need to improve consumer's clothing disposal behaviour toward sustainability (H_5). As the results of the proposed model, this factor can persuade the actual purchase behaviour (H_5) rather than the intention to purchase of such clothes (H_4). Therefore, a real clothing recycling disposal program and effective Eco-fashion clothes design based on the recycled materials should be established to promote a high purchase clothes rate. It is suggested that the government, private sector, entrepreneur, and marketers should develop public involvements showcasing on how clothing disposal behaviour could help in reducing adverse impacts on the environment.

Practical Implications: From a practical point of view, attitude plays an important role rather than social norms. Therefore, fashion markets should research on consumer's attitude since this could help to influence purchase Eco-fashion products. There are some barriers that stop people from recycling their unwanted clothing which is the lack of awareness and non-availability of the fabric recycling bin, misconceptions about Eco-fashion clothes and the limitations of the availability of this clothing style in the fashion market. However, these obstacles can be overcome by; First, showing a positive image to consumers by the fashion industry, such as clarifying the purposes of Eco-fashion clothes which is environmentally friendly and profitable. If the fashion industry starts training and improving the clothing manufacturer's knowledge about recyclable fabrics, thus, it can make clothing disposal and purchase easier and more effective. Second, promoting the advantages of clothing disposal toward sustainability such as recycling, which results in producing Eco-fashion clothes made of recycled materials. Third, setting up specific bins for collecting clothes in the poor physical condition such as home collection services, fabric recycle bin in the universities and schools, drop-off and pick-up services which this encourages people to dispose of their unused clothes and increases the clothing recycling rate. In addition, this attempt would not be successful unless there is cooperation between government, NGO, fashion industries, fashion designers and society. Therefore, the government can invest in fabric and textile recycling technology programs related to sustainable practices for the implementation of this kind of product to prevent waste pollution, boosting the nation's economy and enhancing the people's knowledge about clothing waste. Additionally, it is worthwhile to note that thinking about preserving the environment as a citizen significantly influences on people's attitude towards sustainable clothing disposal behaviour. Hence, the government should strengthen people's attitude by focusing on awareness of environmental threats. Finally, educating fashion designers toward Eco-fashion programs should be performed by training and holding workshops. This serves as an indication that the fashion designer who desires to design with Eco-fashion materials, needs to pay considerable attention to ensure that the Eco-fashion clothes are designed based on the acceptable quality, fair price, and stylish design. In addition, based on findings in the interview study, the fashion industry should focus on improving

functional, aesthetic and quality factors to encourage consumers to purchase Eco-fashion clothes made of recycled materials. The findings confirm that it may be challenging to design Eco-fashion clothes for mass-market that meets the aesthetic, function and economic demands, as there are so many personal variations in preferences. In regard to this matter, focus on user-oriented design is suggested. This study does have some limitations and suggestions that need to be acknowledged in future studies. In addition, to understanding consumer and fashion industry acceptance based on academic study results, discussions will be further conducted on operation modes of different countries to promote the development of Eco-fashion clothes. This study currently conducts Eco-fashion clothes made of recycled materials. However, the factors that influence consumer purchase behaviour toward other types of clothes can be further explored by future studies. Moreover, the research can be extended by getting responses from a wider range population. Although there are only a few consumers who have had experience in Eco-fashion clothes, these clothes will definitely become a trend. Therefore, it is suggested that future studies can investigate deeply other factors which affect the consumer's attitude. Moreover, in academic studies, we need comprehensive research about design and style which were shown that have a significant effect.

VII. CONCLUSIONS

In the present study, the consumer behaviour toward sustainable decisions during the purchase of clothes as well as disposing of them was investigated as a trend to reduce clothing waste. One of the ways to achieve sustainability in the fashion industry is using Eco-fashion materials in fashion design which has become very popular. Therefore, this study focused on Eco-fashion clothes made of recycled contents. In the purchase behaviour of Eco-fashion clothes, the role of the intention-behaviour gap has been highlighted by a few scholars. Therefore, a growing number of companies or designers are looking for consumer's attitude concerning clothes made of recycled materials. In addition, a number of studies have presented gaps between disposal behaviour and purchase behaviour, especially in Eco-fashion clothes subject. Hence, the aim of this research is to achieve knowledge regarding consumer's clothing recycling behaviour and investigate the purchase behaviour of Eco-fashion clothes made of recycled materials. In social psychology, the Theory of Planned Behaviour (TPB) is usually used to explain the attitude and behavioural influence of consumers. This research developed TPB to prove the hypotheses and verify more constructs of consumer's intention and understand consumer's behaviour in details toward sustainable decisions. Due to the goals of this research and a large number of research themes, different types of data are needed, therefore, a two-stage mixed-method approach was explored. Overall, the major finding of this study is that the consumer's attitude and their clothing disposal behaviour are significant factors in consumer's purchase intention of Eco-fashion clothes. Likewise, the purchase intention affects purchase behaviour, logically.

Additionally, it indicates that consumers choose clothes made of recycled materials by touching the quality, price, and design, initially. Thus, it is valuable that Eco-fashion clothes should be produced in great features based on consumer's attitude and their needs since they can save the environment from pollution. This issue must be considered by designers and manufacturers as a guarantee that consumers would like to see Eco-fashion clothes in the market. As a side note, the quantitative and qualitative results of this paper signifies that to achieve higher rates of clothing disposal behaviour toward sustainability, it is necessary to improve knowledge and easy access to charities or donation centres and recycling bins. There are some scenarios that would encourage wider usage of recycled materials based on the new technology program in the clothing industry by increasing attitude toward Eco-fashion clothes. Although the TPB has proved to have considerable utility for identifying the factors which are likely to encourage purchase behaviour toward Eco-fashion clothes, there are several areas that require further study, specifically adding further factors. Finally, this study's framework may assist as a guideline for future research by being tested quantitatively with the large sample size.

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Technique, 3D Design, Sustainable Design, Creativity and Innovation, Art and Humanity and Deep Learning.



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