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Exploring the sustainable effect of mediational role of brand commitment and brand trust on brand loyalty: an empirical study

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ABSTRACT

The study focus on the role of self-expressive branding, brand love, brand trust and brand commitment on brand loyalty. It also identifies the strength of mediating effect of variable brand commitment between brand love and brand trust. Also measures the strength of mediating effect of variable brand commitment between brand trust and brand loyalty. The data is gathered by using a structured questionnaire and a sample size of 101 respondents in a cross-sectional study. Statistical analysis has been done through SMART PLS 3.0 software. In the analysis part, PLS algorithms, bootstrapping, blindfolding, Importance performance matrix, FIMIX, Multi-Group analysis have been undertaken. A reflective model has been developed. The path coefficient value and empirical t-values of all direct relationships of variables above 0.2 and 1.96 respectively and substantiate the hypothesis. The results have shown that brand commitment is partially mediates the association between brand love and brand trust and also between brand trust and brand loyalty. The four-segment solution's FIMIX-PLS path coefficient shows that brand love and brand trust are more relevant in segment 3, followed by segment 2, segment 1 and segment 4, respectively. Companies should focus on improving their brand trust displayed by consumers followed by brand commitment which strengthens brand loyalty in the automobile sector. This industry could consider implementing this creating trustworthiness about the brand, by developing strong psychological connectedness between the customer and brand by the retail outlet by offering the best quality product, and by incorporating strategies to reduce cognitive dissonance among the buyers.

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1. Introduction

The consumer-brand relationship is characterised by emotional attachment and bonds which has lasting psychological connectedness with loved objects, thereby resulting in the concept of brand love (Carroll & Ahuvia, 2006). Recent years have seen the branding theory focusing on the consumer-brand relationship, which states that the consumer's attachment with branded products is similar to a human being's attachment with other human beings in a social context. The recent years have seen the branding theory focusing on consumer-brand relationships which states that the formation of the human relationships in the social environment is similar to the case of branded products which motivate consumers to develop an emotional attachment with brands (Fournier, 1998; McAlexander et al., 2002; Parvatiyar & Sheth, 2001). Emotional attachment, ties and connections are the fundamental characteristics of the consumer-brand relationship which has an acute emotional bond to adored items, thereby leading some researchers (Carroll & Ahuvia, 2006) to propose the brand love concept. Brand as a subject is widely present in the everyday life of consumers which includes everyone from the working class, middle class to students. Research also concentrated on understanding the types of relations that the daily consumers have with the branded products that they use daily. The measures of these constructs differentiate among numerous brand-consumer relationships and segmenting those consumers into groups by categorising in terms of the power of the relationships. The approach of love is not much researched relatively but only looked into recently (Ahuvia, 2005; Fournier, 1998). But, still, the main question remains, whether customers can quantify their feelings of love for a brand. Will a consumer have the same feeling towards a brand as he has to a person? Is this feeling similar across countries and cultures? Practitioners also express themselves a liking towards the concept (Roberts, 2006) and the origin of this research can be traced to the US. Interpersonal relationship theory (Beall & Sternberg, 1995) that talks about cultural influence on the love construct. Since the early '90s, brands have more been concerned with developing a bond that can help them retain as well earn a sense of trust within the consumers or practically trying to connect the consumers to brand thematic by using constructs such as brand trust, loyalty and commitment.

The initial studies were targeted at conceptualising and defining the feel of love (Shimp & Madden, 1988). Researchers (Carroll & Ahuvia, 2006) have used their opportunity to learn about the concern and emotion of love a consumer would have for a brand. Our study enables us to measure the parameters of love and the impact of love on a brand which can benefit a company to develop its brand strategies. Although all companies aim to market their products at a higher level of consumer satisfaction, there are attempts to move beyond consumer satisfaction with appropriate strategic consumer behavior (Chaudhuri & Holbrook, 2001; McAlexander et al., 2002). The love prototype consists of brand passion, brand emotion, and a perfect assessment of the brand (Ahuvia, 2005). Satisfaction and brand love are altogether different constructs. Brand love construct is operationalised as a mechanism of happiness. Nayak et al. (2021) highlighted the linkage between quality of life and economic growth in India.

In various ways, brand love is differentiated from satisfaction issues. Brand love has a more effective issue, but satisfaction is a more specific transaction issue. Brand love is hereafter a consequence of a long-term association of the customer's involvement with the brand. This is finally confirmed with the fact that brand love is declared with the willingness to declare love and comes with the consumer's status, which is, in turn, requisite to satisfaction (Fournier, 1998). The studies related to this provide important information as inputs for a firm to expand its business. From all these data, the analysts can learn what kind of way the consumers would think before they buy an automobile. Secondly, the finding of this study might be utilised to quantify an adoration feeling towards the brand. Moreover, Lowe (2010) investigated the consumer response to monetary and non-monetary promotions.

Hawaladar et al. (2019) argued that economic sustainability is the capacity of an economy to support a particular level of economic production or output and long-term economic growth, without affecting the environmental, social, or cultural factors, for an indefinite period of time. Ullal et al. (2021) revealed that consumers from North India see themselves as independent, while consumers from South India are more integrated as part of their families and groups.

As previously stated, the issue is critical for marketers who build items to fulfil the desires of users and generate greater demand, as well as a favourable response rate in purchasing them. Few academics have been interested in investigating the potential of brand love to characterise its significance to brand loyalty (Fournier, 1998) and which is dependent on relational exchanges between brands and their consumers (Ahuvia, 1999). According to the study, if a customer's pleasure exceeds their expectations, they are more likely to buy again. Customer commitment is insufficient, but consumer trust in a brand establishes a commitment to the brand loyalty (Hess & Story, 2005).

2. Literature review and conceptual framework

The constructs pertaining to the research are presented below in the form of conceptual framework (Figure 1).

'Self-expressive brands' refer to 'the customer's perception of the degree to which the specific brand enhances one's social self and/or reflects one's inner self among individuals' (Carroll & Ahuvia, 2006). Prior research articulates that it differentiates people who buy branded products from unbranded products (Amaldoss & Jain, 2005; Berger & Ward, 2010). There are a few pieces of research that reveal that consumers' sense of complete involvement is vested in the self-expressive function of the brand (Higie & Feick, 1989). A consumer's liking towards a brand involves several levels which are based on self-expressive brand role (Richins, 1987). Word of mouth plays a vital role when consumers engage with a brand that is purely an inner self-expressive brand rather than a social self-expressive brand (Wallace et al., 2014). There are two viewpoints on self-expression: inner-self and social-self. Individuals' self-apprehension is vested with an individual's inner-self and interdependent self-apprehension is rested on social-self (Trafimow et al., 1991). Consumers' preferences and buying products are mainly driven by self-expressive aspects (Belk, 1975; Richins, 1987) and

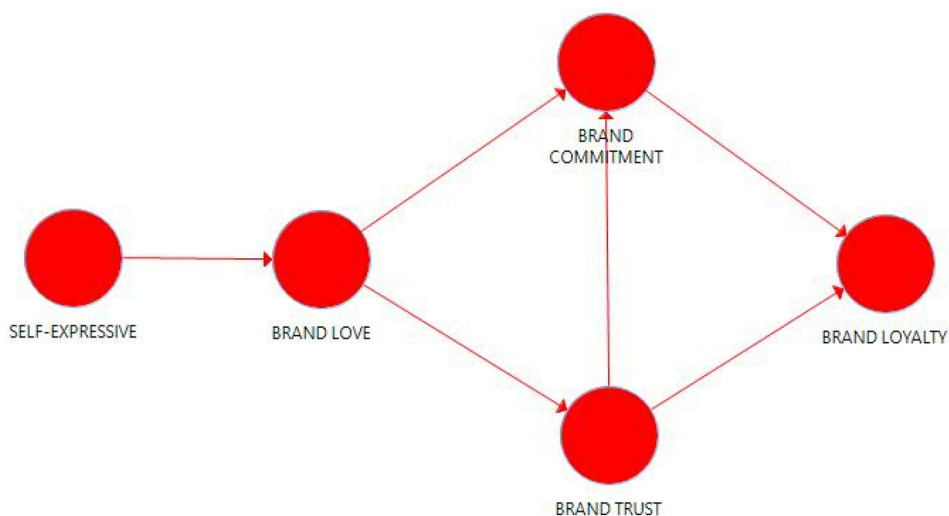


Figure 1. Association of self-expressive with brand love.

Source: Author's computation.

serve as symbolic functions (Park et al., 1986; Shavitt, 1990). In previous studies, self-expression was cited as one of the antecedents of brand love, along with brand loyalty (Bergkvist & Bech-Larsen, 2010; Marquette et al., 2017). Research also highlighted that self-expressiveness is a predictor of romantic brand love (Sarkar & Sreejesh, 2014).

Thus, we formulate the research hypothesis as:

Hypothesis 1: Self-expressive and brand love have a positive association.

2.1. Association of brand love with brand trust and brand commitment

Brand love is 'the degree of passionate emotional attachment a satisfied consumer has for a particular trade name' (Carroll & Ahuvia, 2006). The five different features involved in brand love are excitement for the brand, lasting psychological connectedness between person and brand, positive physical arousal of bodily response and cognitive interpretation towards a brand, and finally, acknowledging love towards the brand. Some research has implemented the interpersonal love theory in the marketing context (Ahuvia, 2005; Shimp & Madden, 1988; Whang et al., 2004). The term 'Brand love' is defined as 'the degree of lasting psychological connectedness between a person and trade name' (Shimp & Madden, 1988). Brand love is also the physical arousal of bodily response and cognitive interpretation for an appropriate trade name (Ahuvia, 2005). The interpersonal theory of love (Sternberg, 1986), which is also known as the triangular theory of love is adapted in a marketing context to figure out the role of various factors of brand love on brand loyalty. The concept of love involves 'Non-liking, Liking, Infatuation, Functionalism, Inhibited Desire, Utilitarianism, Succumbed Desire, and Loyalty'. These concepts of love are applied in the marketing context to understand the significance of brand constructs on brand loyalty. The term Trust is

defined by Moorman et al. (1992) as: ‘a willingness to rely on an exchange partner in whom one has confidence’. So, in a relationship with love, trust is a lasting psychological connectedness between people. Trust is a significant construct of love. This definition highlights the issues of strong reciprocal emotional attachment, confidence, and reliability. Prior research has viewed a psychological model of brand trust (Elliott & Yannopoulou, 2007), highlighting that the cause campaign of symbolic brands leads to emotional involvement of people and are trusted. The combination of joy and acceptance is called Love which makes people trust and buy products (Arnold, 1960; James, 1884; Watson, 1930). Brand love enforces trust. The major dimensions of trust are ‘passion, intimacy and commitment’ (Kamat & Parulekar, 2007). Brand commitment and brand trust are the antecedents of brand loyalty which is influenced by brand love responsible for consumer’s loyalty towards the brand (Loureiro et al., 2012). Huang (2017) found that brand love and brand trust stimulated sensory, intellectual and behavioural experiences, and completed with a brand’s behavioural and attitudinal loyalty. According to empirical studies of researchers, brand love is an antecedent of brand commitment (Albert & Merunka, 2013; Maisam & Mahsa, 2016). It is also positively related to brand commitment (Albert & Merunka, 2013; Maisam & Mahsa, 2016). Thus, we formulate the hypotheses as follows:

Hypothesis 2: There is a positive relationship between Brand love and Brand trust.

Hypothesis 3: There is a positive relationship between Brand love and Brand commitment.

2.2. Association of trust and brand commitment, trust and brand loyalty, brand commitment and brand loyalty

Several studies have been done in the marketing field by taking into consideration the association between trust and commitment (Garbarino & Johnson, 1999; Johnson et al., 2001; Morgan & Hunt, 1994). When there is trust there is commitment. So trust is considered by many researchers as the major parameter of commitment (Chaudhuri & Holbrook, 2001; Garbarino & Johnson, 1999; Morgan & Hunt, 1994). Theories about commitment and trust have influenced and proved to be a descent of loyalty (Garbarino & Johnson, 1999; Morgan & Hunt, 1994). The term commitment is ‘an enduring desire to maintain a valued relationship’ (Moorman et al., 1992). In another research, brand commitment was studied ‘as a competitive element of loyalty and as a construct at the basis of the consumer-brand relationships’ (Chaudhuri & Holbrook, 2001; Fournier, 1998). Commitment is distinctive from the construct brand love. Fehr (1988) and Fournier (1998) argue this as two different constructs. They are two relationship constructs (Chang & Chieng, 2006). A consumer who is very much committed to branded products is regarded as a loyal consumer (Oliver, 1999). Similarly, the findings revealed that brand commitment acts as a mediator between brand trust and brand loyalty (Morgan & Hunt, 1994). Several things can be detected from trust, according to Gurviez and Korchia (2003). The most difficult components of building a trust construct are cognitive and affective in form. Several elements influence loyalty, including brand, trust, and commitment (Joo, 2015; Lassoued &

Hobbs, 2015; Tezinde et al., 2001). Brand commitment leads to repeat buy back of same brand which promote brand loyalty (Kabiraj & Shanmugan, 2011; Oliver, 1999).

Thus, we formulate the hypotheses as follows:

Hypothesis 4: There is a positive relationship between brand trust and brand commitment.

Hypothesis 5: There is a positive relationship between brand trust and brand loyalty.

Hypothesis 6: There is a positive relationship between brand commitment and brand loyalty.

3. Sample and data description

Spulbar et al. (2021) argued that structural equation modeling (SEM) represents a multivariate statistical analysis technique whose major purpose is to analyse structural relationships, since it is a mixture of factor analysis and multiple regression analysis. Lohmöller (1989) suggested that 'scientific knowledge of reality comes in form of models'. There are broadly two ways through which sample size is determined in PLS-SEM models (Hair et al., 2016). First, the literature on PLS-SEM mentions the use of rule of thumb (Barclay et al., 1995) and second, the statistical power analysis (Cohen, 1992) for sample size determination. Sample size is also determined by considering desired R^2 level also. Accordingly, the numbers of arrows that point towards a construct, significance level and minimum desired R^2 level are considered for obtaining a statistical power of 80% while determining the sample size. The minimum desired R^2 level would be 0.25 at 5% level of significance. One hundred one people from Kochi and Manipal districts at Kerala and Karnataka state of India were surveyed. A systematic ally-designed questionnaire was used to collect the data. The study is cross-sectional. The questionnaire included information on indicators of respective constructs. The survey questionnaire was divided into two parts. The first part focused on the demographic characteristics of the respondents, such as age, gender, Profession, and household income. The second part of the questionnaire has 21 items or questions, used a Likert scale to assess the model variables, with 1 indicating strongly disagree and 5 indicating strongly agree. The data was gathered using Google Forms. Data are analysed without the restriction of distributional assumptions. Therefore, this research endeavor has adopted the use of PLS-SEM approach as it is conducive for this research considering data characteristics of the present study (Birkinshaw et al., 1995; Green & Ryans, 1990; Hair et al., 2016, 2017; Henseler, 2010; Henseler et al., 2009; Nijssen & Douglas, 2008; Reinartz et al., 2004).

The current study has model complexity. This is because it has a mediating construct. Further, this study wants to know whether the constructs relating to endogenous latent variables are indeed the driver constructs of brand loyalty. These are the two reasons due to which the current research endeavor has chosen PLS-SEM approach for the purpose of model specification and assessment (Cenfetelli & Bassellier, 2009; Diamantopoulos et al., 2012; Hair et al., 2012, 2016; 2017; Henseler et al., 2009). The current research endeavor has used reflective measurement model to meet the research objectives. Specifically, model complexity calls for the use of

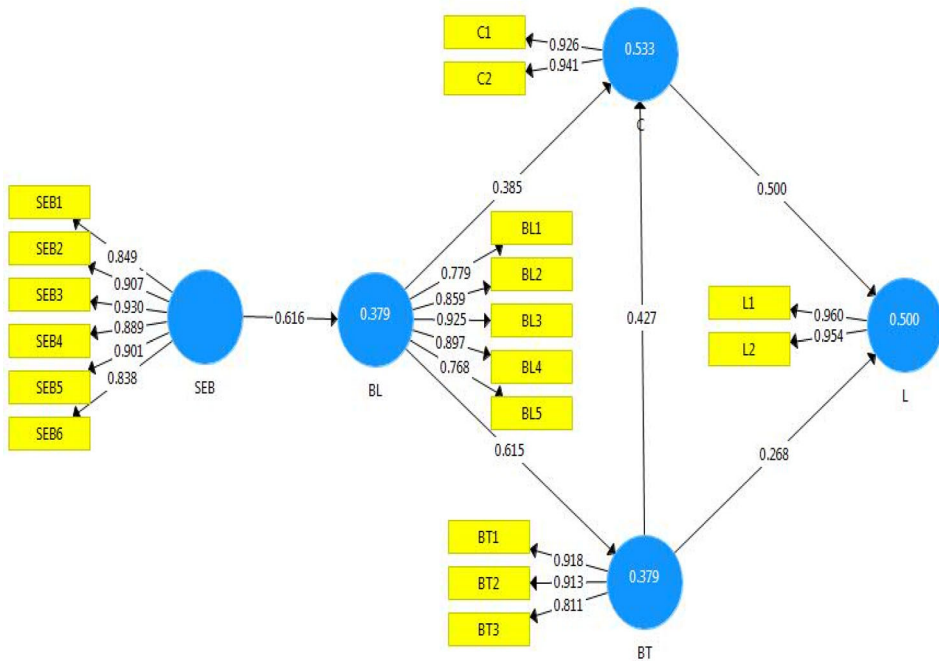


Figure 2. Measurement model.

Source: Author's computation.

PLS-SEM approach in the current research endeavor. Matthews et al. (2016) highlighted based on an applied study how to identify and treat unobserved heterogeneity in PLS-SEM considering finite mixture PLS (FIMIX-PLS) module in the Smart PLS 3 software.

4. Empirical analysis and interpretation

The study's conceptual and theoretical frameworks are concentrated on Sternberg's 'triangular theory of love' (Sternberg, 1986). There are varying rules of thumb that can be used to determine if R^2 values are high or low (Hair et al., 2016). According to previous research (Hair et al., 2016), the cut-off values of 0.25, 0.50 and 0.75 for endogenous constructs are classified as weak, moderate, and high in other studies, respectively. In this model, the R^2 value of the endogenous latent variable is 0.50 which can be considered as moderate. Even the R^2 value of mediating construct commitment is found to be 0.533 which substantiates that the model is moderate (Figure 2).

Outer loadings of indicators in reflective measurement models indicate the absolute contributions of indicators to their respective constructs. PLS-SEM approach calculates outer loadings of indicators by running simple regression models. Therefore the outer loadings of indicators signify the absolute contributions of indicators. The path loadings threshold value for a reflective model should be equal to or greater than 0.70 (Henseler et al., 2012). In this study, the outer loadings cut off value is more than 0.7, for all indicators of the corresponding constructs. This demonstrates

Table 1. Discriminant validity by Fornell-Lacker (1981) criterion.

	BL	BT	C	L	SEB
Brand love	0.848				
Brand trust	0.615	0.882			
Commitment	0.648	0.664	0.934		
Loyalty	0.505	0.600	0.678	0.957	
Self-expressive	0.616	0.420	0.774	0.568	0.886

Source: Author's computation.

that all construct indicators have acceptable amounts of outer loading. The internal consistency reliability level for confirmatory research should be more than or equal to 0.70 (Henseler et al., 2012). However, having a composite reliability value that should be more than or equal to 0.80 is always preferable (Daskalakis & Mantas, 2008). In the present study, the composite reliability of exogenous and endogenous latent variable constructs of the measurement models has values higher than 0.80. The indicator reliability is a commonality of an item. We calculate this by squaring the outer loadings of each construct indicator. There should be a cut-off value of 0.5 and above (Hair et al., 2016, 2017) to obtain acceptable values of indicator reliability. This demonstrates that a given construct provides at least 50% explanation for the variance of its items. In this study, all the indicator values are above 0.5, which means that a given indicator adequately represents the theoretical meaning embedded in a construct. The average variance extracted (AVE) test is a highly recommended method for determining convergent validity (Naylor et al., 2012). For assessing convergent validity, the AVE cut-off value should be 0.50 and above (Chin, 1998; Höck & Ringle, 2006; Wixom & Watson, 2001). All exogenous and endogenous latent variable construct values have an AVE of 0.50, which is higher than the threshold value. Therefore, there exists convergent validity in all the constructs of all the measurement models.

PLS Algorithm is the most suitable approach to ensure conceptual differentiation from other constructs while assessing discriminant validity. To evaluate discriminant validity, the square of the correlations between variables was compared to the AVE (Chin, 1998). Before evaluating the structural model, calculating the measurement models is essential. The Fornell-Lacker (1981) criterion, which compares the square root of AVE, is one of the most commonly used methods to assess discriminant validity.

The degree to which a model construct varies from other constructs (Chin, 1998; Fornell & Larcker, 1981; Hair et al., 2016). The diagonal values shown in Table 1 are nothing but the square root values of AVE of the constructs, when compared to the values of other constructs, these have a higher horizontal and vertical value.

4.1. Structural model assessment and hypotheses testing

The path of the structural model shows the strength of structural model relationships. The path coefficients, whose values are not near zero, indicate strong relationships among constructs. Conversely, those path coefficient values which are near zero indicate a weak relationship between constructs. The bias-corrected confidence intervals

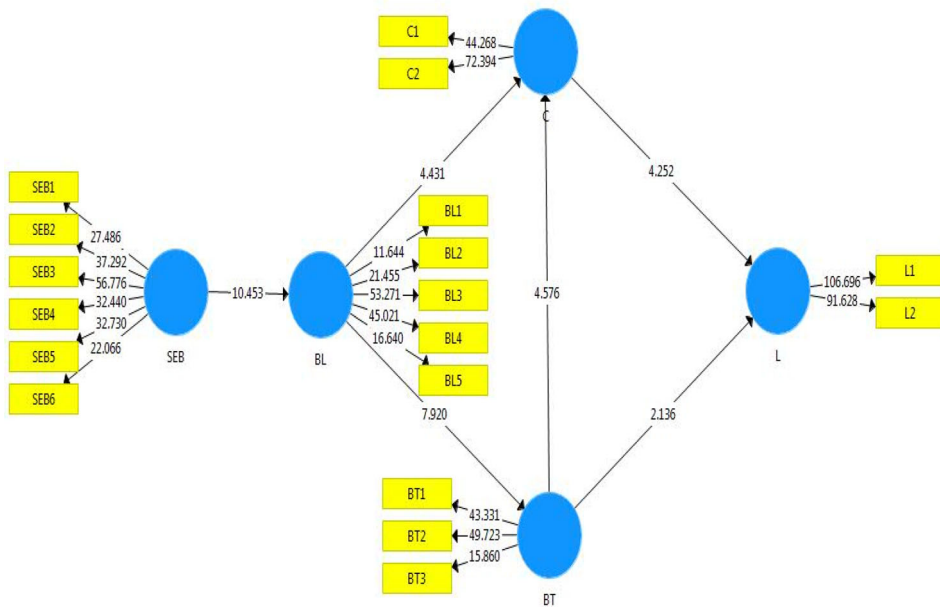


Figure 3. Structural model.

Source: Author's computation.

Note: The bias-corrected 5% (two-tailed) confidence interval was calculated using a twofold bootstrap routine (Chin, 1998).

provide precise results (Efron & Tibshirani, 1998). Sarstedt et al. (2011) proposed the bias correction formula (Figure 3).

From the structural model, the total effect of self-expressive benefits of the brand on brand loyalty was investigated. The path coefficient of 0.613 is above the cut-off value of 0.20, which is further measured by the empirical t value of 10.453. This value is above the cut-off value of 1.96 at a 5% level of significance. Thus, these values support Hypothesis 1 that states the positive effect of self-expressive benefits of the brand on brand loyalty. Similarly, the path coefficient of brand love with the brand commitment of 0.385 is above the cut-off value of 0.20, which is further measured by the empirical t value of 4.431. This value is above the threshold value of 1.96 at a 5% level of significance, substantiating Hypothesis 2 that states the positive effect of brand loyalty on brand commitment. The total effect of brand loyalty on brand trust was measured by the path coefficient of 0.615. The empirical t value of 7.920 is above the threshold value of 1.96. Accordingly, there is significance in the relationship between brand loyalty and brand trust at a 5% level which substantiates Hypothesis 3 that states the positive effect of brand loyalty on brand trust. The evaluation of the direct effect of brand trust on brand commitment shows that the total effect of brand trust on brand commitment is significant ($p < 0.05$) at the path-coefficient value of 0.427 and the empirical t value is 4.576, which is above the cut-off value of 1.96.

Thus, these values empirically substantiate Hypotheses 4 that there is a positive total effect of brand trust on brand commitment. The total effect of brand trust on brand loyalty was investigated. Further, the total effect of brand trust on brand loyalty is significant ($p < 0.05$) at the path-coefficient value of 0.268 and the empirical t value

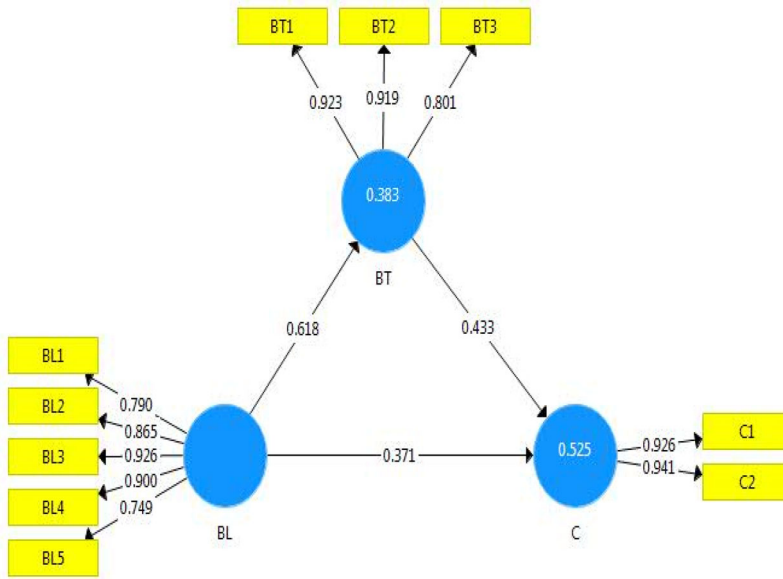


Figure 4. Mediating effect of brand trust.
Source: Author's computation.

is 2.136, which is above the threshold value of 1.96. Thus, these values substantiate Hypotheses 5 that states the positive total effect of brand trust on brand loyalty. The path coefficient and the empirical t value on the total effect of brand commitment and brand loyalty are 0.5 and 4.252, respectively which are above the threshold value. Accordingly, there is significance in the relationship between brand commitment and brand loyalty at a 5% level. Thus, these values substantiate Hypotheses 6 that states the positive total effect of brand commitment and brand loyalty

4.2. Mediator analysis

The mediating effects of brand trust and brand commitment are separately assessed, to explore the consequences of their intervention in the liaison between brand love and brand commitment, and also brand trust and brand loyalty, respectively. After incorporating mediator variables into the model, we must now establish whether exogenous latent factors have a direct impact on brand loyalty (Hair et al., 2016). However, after the mediating variable is taken into account, the indirect effect is significant. The fact that this indirect effect absorbs a portion of the direct effect proves its importance (Figures 4 and 5).

The formula used to calculate extent of mediation through VAF is as follows:

$$VAF = \frac{\text{Indirect Effect}}{\text{Indirect Effect} + \text{Direct Effect}}$$

$$\frac{0.618 \times 0.433}{(0.618 \times 0.433) + 0.371} = 0.462$$

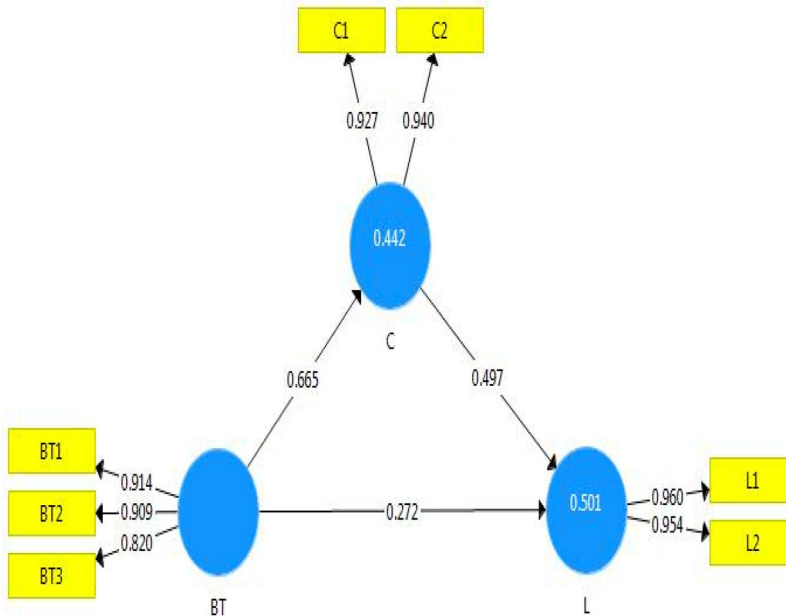


Figure 5. The mediating effect of brand commitment.
Source: Author's computation.

$$\frac{0.665 \times 0.497}{(0.665 \times 0.497) + 0.272} = 0.548$$

In both cases, the VAF value is greater than 0.2 and less than 0.80, indicating that the construct brand trust mediates the relationship between brand love and brand commitment, while brand commitment mediates the relationship between brand trust and brand loyalty. Thus it substantiates the hypothesis 7 and 8 that brand trust mediates between brand love and brand commitment and also brand commitment mediates between brand trust and brand loyalty, respectively.

4.3. Importance-Performance matrix analysis (IPMA)

The Important-Performance Matrix Analysis, provides insights into the relative importance and performance of exogenous and endogenous constructs in relation to each other. Total effects and index values represent their importance and performance respectively. The overall effect on the endogenous variable is revealed by importance. The capability of latent variables scores is revealed by performance.

Importance and performance are measured with the X and Y-axis respectively. X-axis reveals total effect and Y-axis reveals performance. When the construct has a higher mean value, it has higher performance. This shows strong measurement paths (Hair et al., 2016; Hock et al. 2010; Rigdon et al., 2011; Schloderer et al. 2014; Völckner et al., 2010) (Figure 6 and Table 2).

IPMA analysis for constructs shows that brand love has a high performance of 68.776 as well as a high total effect of 0.737 in comparison with the other exogenous

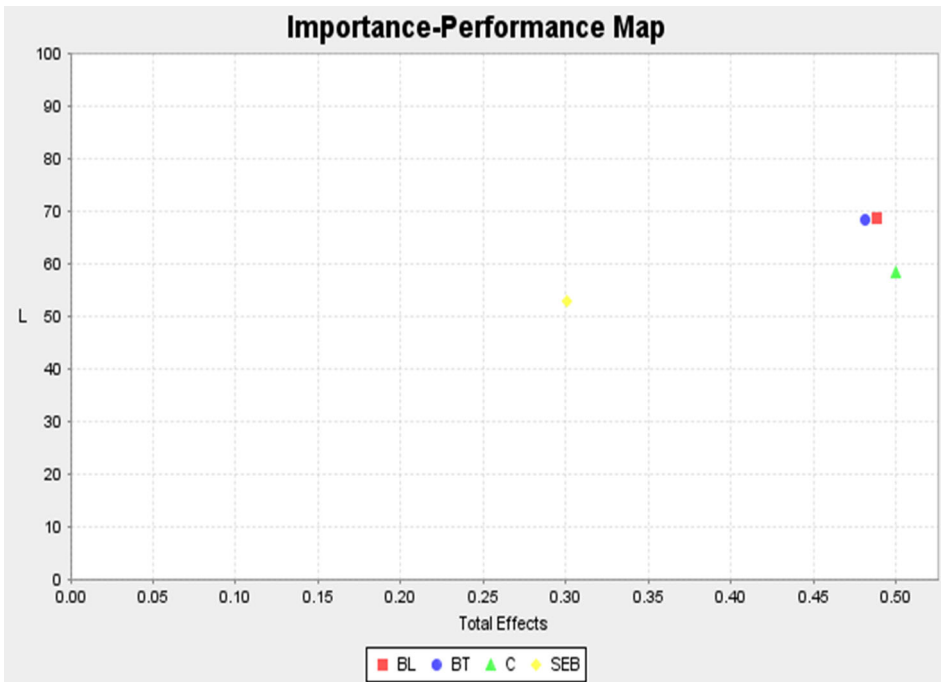


Figure 6. IPMA of the exogenous constructs.
Source: Author's computation.

Table 2. Latent constructs, total effect and performance of constructs.

Latent constructs	Total effect	Performance
Brand love	.737	68.776
Brand trust	.592	68.392
Brand commitment	.522	58.409
Self expressive benefits	.340	52.812

Source: Author's computation.

latent variables. Thus, an increase in one unit of construct, brand love's performance from 68.776 to 69.776 would increase the performance of construct brand loyalty by 0.737 points from 54.950 to 55.687. Similarly, IPMA analysis shows that brand trust has a performance value of 68.392 with a total effect of 0.592. An increase of one-unit increase in construct brand trust performance from 68.392 to 69.392 would increase the performance of construct brand loyalty from 54.950 to 55.542. In the case of brand commitment, the performance is 58.409 and the total effect is 0.522 which increases the performance of brand loyalty from 54.950 to 55.472. Finally, from IMPMA analysis it is clear that self-expressive benefits have 52.812 performance with a total effect of 0.340 which increases the performance of brand loyalty from 52.812 to 53.152.

4.4. Finite-Mixture Partial Least Square (FIMIX-PLS) segmentation analysis

When data is not identical, FIMIX-PLS is required. As part of a study, segmentation into groups is essential (Hahn et al., 2002; Ringle et al., 2010; Sarstedt et al., 2011). If

Table 3. Alternative FIMIX-PLS methods.

Relative segment sizes				Quality criteria	The that has been pre-determined		
S1	S2	S3	S4		S = 2	S = 3	S = 4
S = 2	53.9	46.1		AIC	901.165	896.339	874.985
S = 3	44.1	33.8	22.1	AIC3	922.165	928.339	917.985
S = 4	39.8	38.6	14.9	AIC4	943.165	960.339	960.985
			6.7	BIC	956.083	980.023	987.435
				CAIC	977.083	1,012.023	1,030.435
				HQ	923.397	930.217	920.508
				MDL5	1,343.753	1,570.758	1,781.236
				LnL	-429.583	-416.170	-394.493
				EN	0.520	0.579	0.711
				NFI	0.575	0.575	0.674
				NEC	48.486	42.558	29.211

Source: Author's computation.

the researcher does not use FIMIX when analysing the results, there will be enough inaccuracy. Based on variability in the inner path model, FIMIX-PLS segments are investigated. Cumulative models, such as those based on the confirmed standard plan, are evaluated using FIMIX-PLS.

As a result, focusing on two to five pre-specified segments is preferable when running FIMIX-PLS. 'AIC (Akaike's Information Criterion), AIC3 (Modified Information Criterion), BIC (Bayesian Information Criterion) and CAIC (Consistent Akaike's Information Criterion)', indicates significant over-segmentation salient features (Becker et al., 2013; Sarstedt et al., 2011). A three-segment solution is plausible because 'AIC, AIC3, BIC, and CAIC' all point to four segments (Table 3). Only the normed entropy (EN) criterion, which reveals the best result with four segments, is an exception (.711) and increases significantly as there is an increase in segment numbers. Higher EN criterion values with a maximum value of one are assigned to segments with greater separability. This feature is critical for FIMIX-PLS' ex-post analysis (Ringle et al., 2010; Sarstedt et al., 2011).

We get the segment-specific difference and also significantly different PLS-SEM for the 4-segment solution outcomes when compared to earlier solutions (Table 3). In terms of 'substantiality, differentiability, plausibility and accessibility', this four-part segment is adequate (Becker et al., 2013).

The four-segment solution's FIMIX-PLS findings are shown in Table 4. Segment 1 has one massive segment with a relative segment size of 0.398, and segment 2 has a relative segment size of 0.386. Segment 3, with a relative segment size of 0.149 and a relative segment size of 0.149. With a relative segment size of 6.7, a smaller segment arises as well.

The four-segment solution's FIMIX-PLS path coefficient shows that brand love and brand trust are more relevant in segment 3 (0.813) followed by segment 2 (0.797), segment 1 (0.397) and segment 4 (0.307). The path coefficient relationship between brand love and brand commitment segment 4(0.790) has higher relevance followed by segment 1 (0.512), segment 2 (0.315) and finally, segment 3 (0.127). Further, the direct relationship between the construct brand trust and commitment has very high significance in segment 3 (0.850), then segment 1 (0.490), followed by segment 2 (0.366), and finally segment 4 (0.344). However, the direct relationship of construct brand trust on love, significance is found high in segment 4 (1.077) and

Table 4. FIMIX-PLS (Four-segment solution).

	Segment-1	Segment-2	Segment-3	Segment-4	t-value (EDU)	t-value (EDU1)
Relative segment size	39.8	38.6	14.9	6.7		
Path coefficient						
BL -> BT	0.397	0.797	0.813	0.307	7.517***	3.820***
BL -> C	0.512	0.315	0.127	0.790	3.016***	3.239***
BT -> C	0.490	0.366	0.850	0.344	2.322**	3.584***
BT -> L	-0.369	0.619	-0.221	1.077	1.785*	1.532 (NS)
C -> L	1.096	-0.030	1.209	-0.161	2.776***	3.486***
R ²						
SEB -> BL	0.768	0.403	0.878	0.992	5.853***	9.426***
BL	0.590	0.163	0.770	0.984		
BT	0.158	0.636	0.662	0.094		
C	0.702	0.418	0.915	0.908		
L	0.776	0.362	0.999	0.982		
Total effects						
BL -> BT	0.397	0.797	0.813	0.307	7.517***	3.820***
BL -> C	0.707	0.607	0.819	0.895	10.643***	6.916***
BL -> L	0.628	0.476	0.809	0.186	6.743***	5.158***
BT -> C	0.490	0.366	0.850	0.344	2.322**	3.584***
BT -> L	0.168	-0.030	0.806	1.021	3.315***	4.510***
C -> L	1.096	0.403	1.209	-0.161	2.776***	3.486***
SEB -> BL	0.768	0.403	0.878	0.922	5.853***	9.426***
SEB -> BT	0.305	0.322	0.714	0.304	4.372***	3.483***
SEB -> C	0.543	0.245	0.718	0.888	4.113***	4.611***
SEB -> L	0.483	0.192	0.710	0.184	3.711***	3.836***

Source: Author's computation.

Note: The *t*-value [mg] uses the FIMIX-PLS membership probabilities to split the data-set; the significance test of segment-specific PLS-SEM results uses a double-bootstrap routine for PLS multi-group analysis (PLS-MGA), as described by Sarstedt et al. (2011). ****p* < .01; ***p* < .05; **p* < .10 (reported for path coefficients only). NS indicates not significant.

also in segment 2 (-0.041) has no relevance. But it has been found that in comparison to segment 1 (0.307) and segment 4 (0.800), it is substantially greater in segment 3 (0.800) (0.619). But the same construct has no significance at segments 1 (-0.369) and 3 (-0.221). Conversely, concerning the direct relationship between self-expressive benefit and brand love, it is highly significant at segment 3 (1.209) and segment 1 (1.096). The total effect results reveal that brand trust on brand loyalty has no relevance in segment 2 (-0.030). Similarly, brand commitment on brand loyalty also has no significance at segment 4 (-0.161). Brand trust on brand loyalty has significance in segment 4 (1.021), 3 (0.806) and 1 (0.168), respectively. In the case of construct brand commitment on brand loyalty, it is significant at segment 3 (1.209), 1 (1.096) and 2 (0.403), respectively. All other direct relationship constructs are significant in all the segments (Table 4).

There are varying rules of thumb that can be used to determine if R^2 numbers are high or low (Hair et al., 2016). According to the previous study (Hair et al., 2016), the threshold values for endogenous constructs are 0.25, 0.50 and 0.75, respectively, and are considered as 'weak', 'moderate' and 'substantial'. The R^2 value of brand love is substantial in segment 4 (0.984) followed by segment 3 (0.770). But it is moderate in segment 1 (0.590) and weak in segment 2 (0.163). However, for the construct brand trust, the R^2 value is moderate for segment 3 (0.636) and segment 2 (0.662) but weak for segment 1 (0.158) and 4 (0.094). The R^2 value of brand commitment is substantial for segment 3 (0.915) and 4 (0.908) but moderate for segment 1 (0.702) and weak for segment 2 (0.418). Conversely, the R^2 value of brand love is substantial at segments 3 (0.999), 4 (0.982) and 1 (0.776). But weak at segment 2 (0.36).

Table 5. Permutation path coefficients significance test by comparing the Edu and Edu1 groups.

Path	Path coefficients-original (EDU)	Path coefficients-original (EDU1)	Path coefficients-original difference (EDU -EDU1)	Path coefficients-permutation mean difference (EDU - EDU1)		Permutation (<i>p</i> -values)	
				2.5%	97.5%		
BL -> BT	0.701	0.486	0.215	0.003	-0.306	0.308	0.177
BL -> C	0.424	0.384	0.040	-0.007	-0.370	0.355	0.823
BT -> C	0.355	0.455	-0.100	0.001	-0.398	0.388	0.631
BT -> L	0.329	0.246	0.083	-0.008	-0.533	0.516	0.768
C -> L	0.462	0.539	-0.076	0.001	-0.510	0.493	0.754
SEB -> BL	0.575	0.638	-0.062	0.000	-0.231	0.222	0.612

Source: Author's computation.

4.5. Permutation path coefficients

With the objective of comparing groups the permutation algorithm is used. Also, the permutation algorithm may be applied to carry out the PLS-SEM, MICOM (Measurement Invariance Composite Model) method (Henseler et al., 2015). MICOM is applied to understand if significant inter-group distinctions are due to the results of inter-group differences in constructs. For the strength of the results, 5,000 random samples are suggested to run for the final analysis (Table 5).

All Permutation *p*-values are over the threshold value of 0.05. The permutation procedure results show no significant difference between the EDU and EDU1 groups for the structural (inner) model.

4.6. Measurement invariance (MICOM) tests

The MICOM approach is used to see if the measurement (outer) model is similar between groups. Only if there is measurement invariance then multi-group analysis (MGA) tests is a must. MICOM, therefore, is a reasonably significant step before operating MGA (Henseler et al., 2015).

4.7. Compositional invariance

Confidence intervals based on the permutation can be used to see if a composite has significantly lower correlations in Groups 1 and 2. If this is not the case, the composite between the two groups does not differ appreciably, suggesting compositional invariance. 'If there is compositional invariance, scores generated by the indicator weights for the observed groups should correlate entirely with scores generated by the indicator weights vectors for pooled data'. The 'Permutation *p*-values' in MICOM output are used to see if the router model's item loadings are consistent across groups. The observed indicator vector correlation is not significantly different from that reported for similar-size groups populated randomly from the pooled data. This implies that the indicator vectors are not unique from one another, even if the difference is not significant. Compositional invariance can be established if there is a non-significant observation. This will happen if the correlations are not significantly lower than 1.0 (Table 6).

Table 6. Compositional invariance measurement.

	Correlation- original	Correlation- permutation mean	5.0%	Permutation (<i>p</i> -values)
BL	0.997	0.998	0.994	0.192
BT	1.000	0.999	0.996	0.946
C	1.000	0.999	0.997	0.778
L	1.000	1.000	0.999	0.120
SEB	1.000	0.999	0.998	0.539

Source: Author's computation.

4.7.1. Invariance of scalars (Equality of composite means and variances)

We can analyse the mean value using permutation-based confidence intervals for mean values and variance of a composite differ between groups (Henseler et al., 2016). For each construct in the inner model, the MICOM result shows 'Permutation *p*-value' tests for mean and variance different groups. The fact that the composite's mean value and variance do not alter among groups, despite the non-significance of the 'Permutation *p*-value' test, suggests that scalar invariance cannot be assumed. If both compositional invariance (correlations are lower than 1.0 and not significant) and scalar invariance (composite's mean value and its variance differ across groups and non-significance) are established, then there is 'full measurement invariance'. If only compositional invariance (correlations are lower than 1.0 and non-significance) and not scalar invariance (composite's mean value and its variance don't differ across groups) is established, there is 'partial measurement invariance'.

MGA may be unnecessary if there is full measurement invariance. The presence of compositional invariance and absence of scalar invariances compel the researcher to implement MGA for the task of measuring models. MGA output enables comparing structural paths across groups. When Step 2 indicates compositional invariance, it is better to cut-off MICOM analysis and runs MGA before interpreting results for Step 3 (Henseler et al., 2016) (Table 7).

4.8. PLS-MGA (Multi-group analysis)

Independent samples t-tests are used to correlate paths between groups in parametric multi-group analysis (Keil et al., 2000).

Table 8 displays the PLS-SEM results for each group and their differences. By doing a PLS multi-group analysis, a twofold bootstrap method establishes the significance of the differences (Henseler et al., 2016; Sarstedt et al., 2011). The two segments' descriptions are derived in the final stage. This is done by assigning each observation to one of the two groups based on the highest membership probability. Thereafter, better to consider demographic characteristics for analysis (Ringle et al., 2010). Only educational level under demographic characteristics demonstrates a good fit. As a result, two categories of data set namely Group 1 (EDU1) and Group 2 (EDU2) are formed. Group 1 (EDU1) represents individuals Group 1 is those who have less than or equal to the 12th standard education level and Group 2 (EDU) represents the education of graduate and postgraduate level. Table 8 displays the PLS-SEM results for each group and their differences. By doing a PLS multi-group analysis, a twofold bootstrap method establishes the significance of the differences (Henseler et al., 2016; Sarstedt et al., 2011).

Table 7. Scalar invariance measurement.

	Mean – (Original difference) (EDU – EDU1)	Mean – Permutation (Mean Difference) (EDU – EDU1)	Permutation (<i>p</i> -values)	Variance – (Original difference) (EDU – EDU1)	Variance – permutation- (Mean difference) (EDU -EDU1)	Permutation (<i>p</i> -values)
BL	–0.338	0.005	0.081	0.237	–0.008	0.459
BT	–0.486	0.005	0.009	0.255	–0.019	0.483
C	–0.465	0.010	0.015	0.056	–0.013	0.826
L	–0.107	0.005	0.612	–0.185	–0.020	0.444
SEB	–0.646	0.006	0.001	0.081	–0.007	0.752

Source: Author's computation.

Table 8. PLS-MGA (Educational level).

	Path relationship	Path coefficients- original (EDU1)	Path coefficients- original (EDU)	Δ
N		48	53	
Path relationship	BL -> BT	0.701***	0.486***	0.215
	BL -> C	0.424***	0.384***	0.040
	BT -> C	0.355**	0.455***	0.100
	BT -> L	0.329*	0.246 (NS)	0.083
	C -> L	0.462*	0.539***	0.077
	SEB -> BL	0.575***	0.638***	0.063
R ²	BL	0.331	0.407	
	BT	0.491	0.236	
	C	0.516	0.524	
	L	0.521	0.521	
AVE/Composite Reliability	BL	0.776/0.945	0.655/0.904	
	BT	0.779/0.914	0.756/0.902	
	C	0.885/0.939	0.848/0.918	
	L	0.925/0.961	0.912/0.954	
	SEB	0.783/0.956	0.762/0.950	
Total effects	BL -> BT	0.701***	0.486***	0.215
	BL -> C	0.672***	0.605***	0.067
	BL -> L	0.541***	0.445***	0.096
	BT -> C	0.355**	0.455***	0.100
	BT -> L	0.493***	0.491***	0.002
	C -> L	0.462***	0.539***	0.077
	SEB -> BL	0.575***	0.638***	0.063
	SEB -> BT	0.403***	0.310***	0.093
	SEB -> C	0.387***	0.386***	0.001
	SEB -> L	0.312***	0.284***	0.028

Source: Author's computation.

Both segments have a major influence on brand trust when it comes to the impact of brand love. However, it has been discovered that brand love is more significant in determining brand trust in group 1 (0.701) than in group 2 (0.486). Conversely, the effect of brand love on brand commitment, where brand love plays a significant in both groups. But it is more significant in group 1 (0.424) than group 2 (0.384). Similarly, group 2 (0.455) has a strong significant level than group 1 (0.355) indirect effect of brand trust on brand commitment constructs. However, the effect of brand trust on brand loyalty, brand trust is significant at group 1 (0.329) and not at all significant at group 2 (0.246). The impact of brand commitment on brand loyalty reveals that group 2 (0.539) is more significant than group 1 (0.462). Finally, group 2 (0.638) is more significant than segment 1 (0.575) about the effect of self-expressive benefits with brand love.

The total effects validate the results of path relationships about the effect of brand love on brand trust, brand trust on brand commitment, brand commitment on brand loyalty, and self-expressive benefits on brand love. Brand love and brand commitment the total effects are though significant, it is slightly higher in group 1 (0.672) than group 2 (0.605). A similar result is also found in group 1 (0.541) and group 2 (0.445) in total effects of brand love on loyalty. The total effect is found to be a little higher in group 1 (0.493) than group 2 (0.491) with regards to brand trust on loyalty. Self-expressive benefits on brand trust total effect are significant in both groups but much more significant in group 1 (0.403) than group 2 (0.310). In contrast, in group 2 (0.386), the total effect of self-expressive benefits on brand loyalty is relatively higher than in group 1 (0.387). Finally, self-expressive benefits on brand loyalty are much higher in group 1 (0.312) than group 2 (0.284).

5. Conclusions

Brand love construct has a high effect and high performance. So, there is no need to divert attention for further increase in the effect as well as the performance of the construct brand love. But in the case of the construct, Self-expressive benefits have low effect as well as low performance. So, firms need not concentrate on the Self-expressive construct because it will not contribute to the endogenous latent variable, brand loyalty. The importance-performance matrix analysis showed that the brand trust construct has a low effect and high performance. Hence, corporate should aim at increasing the brand trust which improves brand loyalty. The automobile industry (particularly, car) can do this by (1) creating trustworthiness about the brand, (2) by developing strong psychological connectedness between the customer and brand by the retail outlet by offering the best quality product and (3) by convincing the customer that their decision of buying brand is the best one. Again, IPMA also shows that brand commitment has a high effect and low performance. In this case, the companies must concentrate on improving the performance of brand commitment which in turn affects the whole model positively.

Through multi-group analysis, this study attempt has empirically demonstrated the critical significance played by demographic segment, educational level. The path coefficients of brand love on brand trust, brand love on brand commitment, brand trust on brand commitment, brand commitment on loyalty, and self-expressive benefits on brand love in both Group 1 and Group 2 are equally significant. As a result, this study has important management implications that it must divert more attention towards both groups of the segment, because of the relative variations in values except in the case of path coefficient of brand trust on loyalty where Group 2 is not at all significant. Here firms need to pay attention to Group 1.

The limitations and future research have certain implications for the managerial process. This research has not considered the mediating variables like emotion which is a necessary factor in love, trust, commitment, and loyalty exist in the real life of human beings. Certain researchers also consider that emotions affect the value of products (Felbermayr & Nanopoulos, 2016). Moreover, emotions play a significant role in customers' decisions (Zablocki et al., 2019). One can take the construct of

emotion as a mediating variable and conduct further research. In future research, one can take into consideration the moderating variables like age, gender, income and race, and conduct multi-group analysis and permutation algorithm. Structural model of the future research can take up global items and develop hierarchy model of PLS-SEM. Hierarchical component models involve second order structure which consists of constructs in two layers (Lohmoller, 1989). Accordingly, the model must possess lower order constructs and higher order constructs, wherein lower order constructs emanate from higher order constructs, while the lower order constructs are part of the measurement model, higher order constructs are part of the structural model. It may be noted that the repeated indicators approach (Hair et al., 2016, 2017), which is used for building the hierarchical component model in the future research endeavor, must warrants the inclusion of same number of items in every lower order construct. Finally, as the IPMA assumes linear relationships, future research could focus on non-linear IPMA results (Anderson & Mittal, 2000; Eskildsen & Kristensen, 2006; Mittal et al., 1998), making the analysis even more useful.

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