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A meta-analytical study of the antecedents of customer engagement

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Abstract--This study fills a gap in customer engagement (CE) literature by exploring the influence of emotions and psychological differences. It analyses the relationship between nine antecedents—

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brand experience, consumer age, trust in brand, involvement, customer satisfaction, interaction, reward, perceived value, and product quality—and five CE outcomes: word of mouth, loyalty, brand commitment, purchase intention, and firm performance. A meta-analysis of 101 studies identifies 14 antecedents of CE, considering moderators such as sample size, publication year, study context (product vs. services), and location. Results indicate moderate to high effect sizes for all antecedents on CE, with significant impacts from the moderators. The study provides theoretical and managerial implications based on these findings.

Keywords---Customer engagement, Meta-analysis, Brand loyalty, Contextual factors, Customer attachment, Customer perception.

1. Introduction

In recent years, researchers' showed interest in the concept of customer engagement (CE) and the factors which contribute to increasing customer engagement has been notable (Kaur, Deshwal and Dangi, 2023). This has also been demonstrated in the Marketing Science Institute's (MSI) research priorities since 2010 (Islam and Rahman, 2016). Previous CE-related meta-analytical studies focused on identifying various factors that directly or indirectly influence customer engagement. Social media's influence on CE was analysed in Ali, Balta and Papadopoulos (2023) meta-analytical study. The study proposed a framework based on the conclusion that CE is dependent on the satisfaction, trust, and positive emotions. The study showed that commitment was not crucial in the CE. In another meta-analysis-based study by Steinhoff, Liu and Palmatier, (2023), it has been shown that customer engagement (CE) operates through two distinct pathways: an organic, relationship-driven pathway—shaped by perceived quality, perceived value, and relationship quality—and a promoted, firm-initiated pathway—driven by functional and experiential initiatives. Steinhoff, Liu and Palmatier, (2023) listed the limitations of the model as being restricted to customer-related factors. The existing literature based on CE-related meta-analytical studies is limited by the restriction of the studies to either social media or the organic and promoted pathways.

A significant gap in the existing customer engagement (CE) literature lies in the limited exploration of emotions and psychological differences within the CE framework. (Ali, Balta and Papadopoulos, 2023; Steinhoff, Liu and Palmatier, 2023). The present study addresses this gap by conducting a meta-analysis to examine how nine antecedents and five consequences contribute to the formation of customer engagement relationships. These factors have never been listed in the past Meta-analytical studies done so far on the topic of CE. Additionally, the study explores the moderating effects of factors such as sample size, publication year, study context (product vs. services), and study location on the relationship between antecedents and customer engagement—an aspect that adds a unique contribution to this research. The findings of this study make a few notable theoretical contributions to the existing CE literature and list some crucial implications for managerial practice with regards to the outcome of the study. The

present research enriches the extant literature on CE by identifying the roles of emotions and psychological differences in increasing customer engagement.

The structure of the paper is as follows. First, the antecedents and consequences of customer engagement (CE) has been reviewed to understand their impact and result of customer engagement. Second, we describe the conceptual framework along with moderators and their relation to customer engagement. Third, the methodological process and findings from the meta-analysis has been discussed and finally, we outline the theoretical and managerial implications of our findings, acknowledge the limitations of this study, and suggest directions for future research.

2. Review of literature

2.1 The concept of customer engagement

The concept of Customer Engagement (CE) emerged prominently in 2006 as a sub-set of the broader term 'engagement' (Vivek et al., 2014). CE is primarily concerned with the emotional and behavioural responses of customers (Brodie et al., 2011; Prentice et al., 2018). As marketing literature has evolved, CE has become an increasingly critical focus due to its positive impact on customer relationships and overall business performance (Abbas et al., 2018; Brodie et al., 2013).

2.2 Conceptual framework

Present study is based on a conceptual framework that identifies 14 variables influencing CE, derived from an extensive review of past literature. The framework includes nine antecedents and five consequences of customer engagement. The antecedents are Brand Experience, Customer Age, Trust in Brand, Involvement, Customer Satisfaction, Interaction, Reward, Perceived Value, and Product Quality. The consequences are Word of Mouth, Loyalty, Brand Commitment, Purchase Intention, and Performance. Although additional factors such as Positive Emotion, Post Transaction Service, Price Fairness, Progress Tracking, Prompts, Intrinsic Enjoyment, New Expectations, Variety Seeking Behavior, and Smart Connectivity Features were noted, they could not be included in the meta-analytical study due to limited effect size data from the literature.

2.2.1 Antecedents and Consequences:

Several antecedents of customer engagement have been consistently highlighted in prior research. These include, but are not limited to, brand experience (Cleff et al., 2014), consumer age (Jang et al., 2018), brand trust (Johnson & Grayson, 2005; Putnam, 1993), reward mechanisms (Doorn et al., 2010), customer satisfaction (Brodie et al., 2013), interaction (France et al., 2016), perceived value (Leckie et al., 2018), product quality (Vivek & Morgan, 2012; Islam et al., 2019), and brand involvement (Hollebeek et al., 2014). These antecedents were selected for investigation due to their frequent examination and significance in existing customer engagement literature.

In this study 5 variables have been taken as a result/consequences of customer engagement. The major consequence of CE was found to be Word of mouth, brand loyalty, brand commitment, purchase intention and firm performance. Table 1 outlines the definitions of all the variables

Table: 1- Key Variables and Their Definitions in Customer Engagement

CONSTRUCT	DEFINITION
Antecedents	
Brand Experience	Brand experience refers to consumers' experiences related to purchasing and consuming the brand and the organization, as well as the brand influence on non-consumers (Khan and Rahman, 2015).
Age	Customer age is an independent demographic variable that acts as a moderator in impacting every area of marketing (Patterson, 2007).
Trust	Customer trust is defined as the level of confidence placed in the integrity and reliability of an exchange partner, and is reflected through relational attributes such as honesty, compassion, consistency, and competence (Morgan & Hunt, 1994).
Involvement	The customer's level of involvement and interest in a certain product or service is determined by his or her needs, wants, demands, values, and goals (Hollebeek, 2011).
Customer Satisfaction	Consumer satisfaction relates to how satisfied a customer is with their experience as compared to their expectations (Murali et al. 2016),
Interaction	Customers' online and offline communication with the brand, as well as other customers, is referred to as interaction (Funf So et al., 2014).
Reward	According to (Dholakia et al., 2009) financial, functional, social and psychological benefits are all possible rewards for the customers.
Perceived Value	Perceived value is basically a customer's perception of a product or service's merit or desirability, especially in relation to its competitor's product (Itani et al., 2019).
Quality	The consumer's appraisal or overall opinion of the services provided is referred to as service quality Zeithaml and Bitner (2003).
Consequences	
Word of mouth	According to Yang et al. (2018), Word of Mouth (WOM) refers to a customer's response to a product by educating and communicating others about it.
Loyalty	Customer loyalty refers to a customer's commitment to a brand, store, or supplier that is established on a strong positive mindset and manifested in frequent patronage (Sheth and Mittal, 2004).
Brand commitment	Brand commitment is a customer's willingness to be associated with a certain brand for a long period of time (Chaudhuri and Holbrook, 2001)
Purchase Intention	The purchases intention can be defined as the customer's buying intention or the desire to buy a

	product or service from a specific brand (Shaoufet al., 2016).
Performance	The term "business performance" refers to an organisational process in which success is evaluated in terms of non-financial and financial result outputs (Chen et al. 2016).

2.2.2 Hypothesis Development:

Brand experience: Defined as the 'subjective, internal consumer responses' to brand stimuli in sensory, affective, intellectual, behavioral, and social terms (Brakus et al., 2009). Positive brand experiences foster deeper customer engagement by motivating self-transformation and enhancing experiential marketing efforts (Kaur, Deshwal and Dangi, 2023). Customers often perceive themselves as co-creators of their brand experiences (Kaveh et al., 2021). Previous studies have consistently demonstrated that superior brand experiences can enhance CE (Brodie et al., 2011). Thus:

H1: Brand experience impacts the CE.

Age: Age has a moderating influence on marketing outcomes and customer behavioral engagement (Jang et al., 2018). Studies have examined age-related differences in CE among various age groups, such as young adults (18-24 years) and older individuals (35-54 and over 55 years) (Patterson, 2007). Younger consumers, who are generally more tech-savvy, tend to place greater emphasis on the usefulness of technology when interacting with brands, whereas older consumers may experience more anxiety (Jang et al., 2018; Venkatesh et al., 2012). This age-related variance impacts their engagement levels. Thus:

H2: The age of the consumer impacts the CE.

Trust: Trust is a critical factor influencing customer loyalty and engagement (Vohra and Bhardwaj, 2019). Higher levels of trust lead to increased engagement (Hapsari et al., 2017; Islam and Rahman, 2016). Trust fosters stronger bonds between customers and service providers and maintains committed buyer-seller relationships (Itani et al., 2019). CE is heavily dependent on the level of trustworthiness (Kosiba et al., 2018; Verma et al., 2016). Thus:

H3: Trust in the brand impacts the CE.

Involvement: Involvement with a brand, encompassing emotional and cognitive aspects, fosters psychological commitment and enhances CE (Bowden, 2009; Banyte, 2014). High involvement can stimulate active interaction with the brand community and sharing of experiences (Islam and Rahman, 2016). Research suggests that brand involvement is a significant antecedent of CE (Gligor and Bozkurt, 2020). Thus:

H4: Involvement in the brand could impact the CE.

Satisfaction: Satisfaction significantly influences CE. Customer engagement tends to rise when they are satisfied with a brand's products and services (Carlson et al., 2017; Abror et al., 2019). High satisfaction in complaint-handling contexts also contributes to greater engagement. Satisfied customers tend to exhibit more positive behaviors and improved relationships with the brand (Vavra, 1997; Islam and Rahman, 2016). Thus:

H5: Customer satisfaction positively influences CE.

Interaction: Technology and social media-facilitated interactions between customers and brands contribute to increased customer engagement (CE) (Liao and Chung, 2019). Greater social interaction and enhanced engagement

opportunities encourage higher customer participation and feedback, yielding benefits for both the customer and the company (Yoong and Lian, 2019; Eisingerich et al., 2019). Social media has transformed how customers interact with brands, making interaction a key factor in increasing CE (De Silva, 2019). Thus:

H6: Interaction impacts the CE.

Rewards: Rewards, including monetary and functional benefits, positively influence CE (Jani et al., 2020). Rewards drive customer engagement by offering incentives for continued interaction (Islam and Rahman, 2017). Customers engage more actively with brands when they perceive a reward for their participation, which can enhance their engagement levels (Braun et al., 2016). Thus:

H7: Rewards impact the CE of consumers.

Perceived value: A customer's overall evaluation of a product or service's usefulness based on its perceived costs and benefits is known as perceived value (Zeithaml, 1988). It is a key factor in determining CE since consumers are more likely to interact with brands, they believe offer greater value (Ngo et al., 2019; Hollebeek, 2013). Stronger customer-brand relationships and increased engagement are the results of higher perceived value (Hapsari et al., 2017; Brodie et al., 2011). Thus:

H8: Perceived value impacts the CE.

Quality: CE is greatly impacted by product quality, which is the perception of a product's performance, dependability, and durability. (Waller and Ahire, 1996; Lim et al., 2019). High-quality products foster customer satisfaction and engagement by minimizing negative experiences and enhancing the brand's competitive advantage (Panjaitan, 2017; Situmorang, 2017). Quality products contribute to customer loyalty and attract new customers (Kaltcheva et al., 2014). Thus:

H9: The quality of the product impacts the CE.

Word of mouth: Word of Mouth (WOM) encompasses positive as well as negative comments about a product and service (Yang et al., 2018). Positive word-of-mouth (WOM) from engaged customers is more likely to affect how other people view the brand. (Hollebeek and Chen, 2014; Kumar et al., 2010). The impact of WOM has increased due to the growth of digital platforms, which has resulted in activities like blogs and reviews. (Cheung et al., 2011). Engaged customers actively contribute to spreading positive impressions and repurchases (Algharabat et al., 2018; Harrigan et al., 2017). Thus:

H10: CE of the consumer impacts positive word of mouth

Loyalty: CE increases brand loyalty by fostering a psychological bond with the brand. (Moliner-Tena et al., 2018). Higher levels of CE are associated with higher customer loyalty, a since loyal customers are more likely to stick with a brand that engages them. (Dwivedi, 2015; Hapsari et al., 2016). Engagement enhances customer experiences, leading to increased revenue, cost savings, and profitability (Hapsari et al., 2017). Thus:

H11: CE of consumers impacts loyalty

Brand commitment: CE and brand commitment are positively correlated, which involves a deep emotional connection with the brand (De Silva, 2019; Rather et al., 2018). By enabling consumers to develop closer bonds with the brand, high CE levels increase brand commitment. (Khan et al., 2019; Matute et al., 2019). Customer brand engagement strengthens emotional commitment and fosters long-term relationships (Claffey and Brady, 2019; Dessart, 2017). Thus:

H12: CE of consumers impacts the Brand commitment.

Purchase intent (PI): PI reflects the customer's readiness to buy a product or service. Prior studies have shown that CE significantly affects purchase intention (Rather, 2019; Islam and Rahman, 2017). Customers that are actively involved are more likely to spend more and have greater purchase intentions. (Toor et al., 2017; Molinillo, 2019). Research has shown that CE drives PI by influencing customers' purchasing behavior (Tommy et al., 2014; Castillo, 2019). Thus:

H13: CE of consumers impacts the PI

Performance: CE has a direct impact on business performance by enhancing customer relationships and interactions (Chong et al., 2016; Ali, Balta and Papadopoulos, 2023). Effective customer engagement improves firm performance by driving repeat purchases, increasing customer lifetime value, and optimizing marketing strategies (Hollebeek et al., 2016). Research shows that CE plays a crucial role in achieving superior organizational performance (Chao and Chien, 2020; Verhoef et al., 2015). Thus:

H14: CE of the consumer impacts the performance of the company

Moderator analysis hypothesis

Identifying moderator variables is crucial to determining the conditions under which these antecedents could impact CE. The four moderators which have been identified for the study are sample size, location, year of publication and context of the study.

Sample Size: Sample size has been considered a crucial moderator in the study. Faber and Fonseca (2014) discussed the main effects of sample size on orthodontic research and stated that research findings are directly impacted by the application of sample size calculation. Thus, sample size could be taken as a moderator for studying the relationship between CE and its antecedents. The two categories of sample size taken for the study are sample size less than 250 and greater than 250 samples per study taken for meta-analysis.

Location of the study: The research findings may also be influenced by the field of study that was selected. However, most researchers choose quite different service areas to empirically validate their theoretical insights, based on the service-dominant (S-D) logic (Banyte and Dovaliene, 2014). Thus, location was taken as a moderator in this study.

Publication year: Another moderator hypothesized to impact the relationship of antecedent and CE is publication year. The publication year reflects the time when the data were collected. This could further influence the type of CE antecedent which has been studied at a particular time. (Sune, Sune and Montoro, 2013).

Study Context: The context of the study was taken as the fourth moderator in this study. The study context was divided into two categories, namely, product and services. A meta-analysis study the major antecedents of CE with respect to only services (Patterson, 2007), different age groups (one of the antecedents in this study) displayed variance in loyal behaviour in the services context.

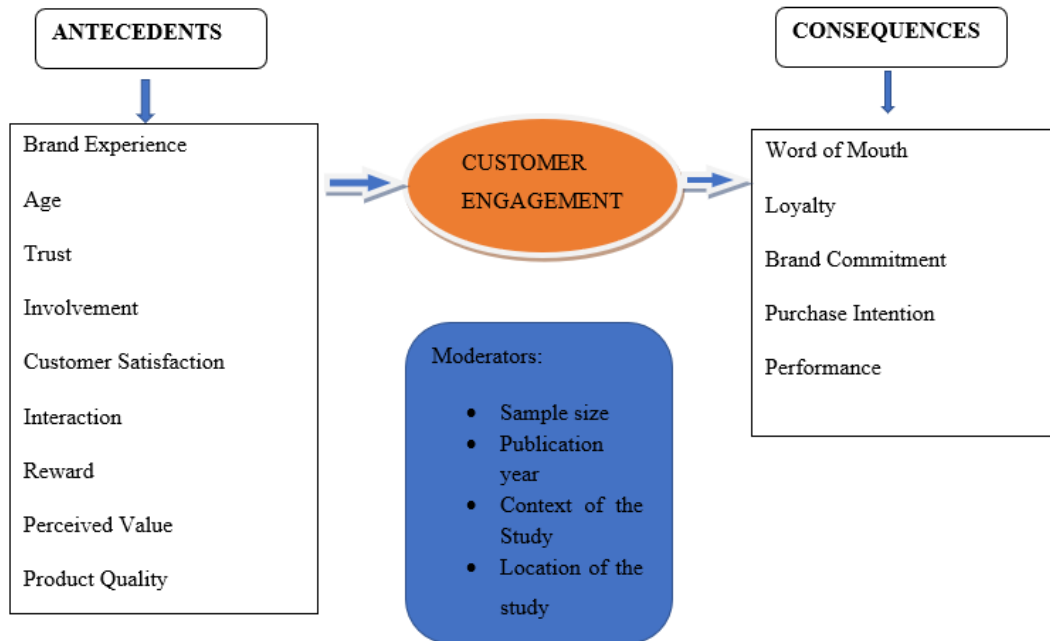


Fig. 1: Conceptual Framework For The Study

3.0 Research Methodology

Meta-analysis is a known statistical method that can summarise and synthesize multiple studies to consolidate their results. Meta-analysis increases the power to study the effects of a particular topic (here CE) by combining the results and findings of the primary studies and providing an estimate of the effects (Quintana, 2023).

3.1 Study retrieval and sample selection

In this meta-analytical study, the data was collected from three prominent databases (Scopus, Web of Science and ProQuest). Keywords such as 'antecedents of CE' and 'factors affecting CE' were used for search. The search generated a total of 6703 results for the two keywords from the three databases. The articles selected were peer-reviewed articles written in English. Articles published until January 2021 have been included in the study. The net search produced about 1716 articles. Of these, the qualitative studies were removed, leaving 245 quantitative studies. The quantitative articles included experimental studies and empirical studies on the topic of CE.

3.2 Inclusion criteria

The following are the inclusion criteria for the studies. The quantitative studies (245) were screened based on antecedents of CE related to the marketing field of study. One of the criteria was empirical quantitative research papers in which the authors could find a causal relationship between the antecedent and the construct CE. Studies that reported the effect measures, namely, correlation and beta coefficients between variables, were included. A total of 64 antecedents to CE were found from these studies. A construct (out of these 64) was considered and included in the analysis as an antecedent if at least two effect sizes were found

from the total research articles collected. This was because use of a single study for a technique such as meta-analysis is not advisable. This resulted in 14 eligible constructs or antecedents. Based on the 14 antecedents, only 112 studies were retained. (The most of the 245 studies were experimental studies or studies which did not generate more than two effect measures of a given construct.)

3.3 Exclusion criteria

Studies from other than English language were excluded. The experimental studies, along with the empirical studies that did not include the appropriate statistical values to calculate effect sizes (Pearson's correlation value or beta coefficient or sample size) with the formulas suggested by Quintana (2023), were excluded. In such studies, the authors were contacted by email for correlation and Beta coefficient tables for their studies. Some of the authors did not provide the relevant data, resulting in 8 further studies being removed from the dataset. We were then left with 101 studies. An exclusion rate of 18% is acceptable in a meta-analysis study. The 101 studies finally yielded a total of 57707 samples. These 101 studies ranged from the year 2012 to the year 2020. They have been listed in the appendices.

3.4 Meta-analytic procedures

Effect size calculation:

The CMA software version 3.0 was used for calculating the effect size values. The correlation values, Beta coefficients and sample size were used as an effect size estimate for the meta-analytical formulas as per Quintana (2023). The Beta coefficients were converted to correlation values for further analysis. The correlation 'r' was converted to Fisher's Z (Wang et al, 2023) by the following formula:

$$z = 0.5 \times 1n \left(\frac{1+r}{1-r} \right)$$

The effect size calculations were based on the model of random effects. The model assumes that the true effect varies for different studies in the dataset. These differences could be attributed to the variation in intervention used, mixes of participants, varied profile of samples, location of study, research methods and standard scales used to measure constructs. As a result, the random effect model accounts for both within and between study variances. The random model was chosen for the study (Liu et al, 2023). The study's findings could be generalized as the dataset is assumed to be a random subset of a larger population of study. Many studies have reported the effect size of a particular antecedent (of the 14) of CE in this set of studies. A minimum of five measures has been reported for each of the 14 antecedents from the set of articles.

The heterogeneity of the data set was analysed with heterogeneity measures such as Q-value and I-square value. The Q-statistic test and I2 statistics were used to test the homogeneity of effect sizes. A significant Q-statistic and an I-square value of more than 75% indicate the variance in effect size distribution (Kim, Yun and park, 2024). The true heterogeneity divided by the total variation in observed effects is known as the I-square. (Hassouna, 2023). The Q-value has been calculated based on the given formula (Borenstein, 2017):

$$Q = \sum_{i=1}^K \left(\frac{Y_i - M}{s_i} \right)^2$$

Where W_i is the study weight ($1/V_i$), Y_i is the study effect size, M is the summary effect and k is the number of studies. After this the I-square was calculated by the following formula (Borenstein, 2017):

$$I^2 = \left(\frac{Q - df}{Q} \right) \times 100\%,$$

where Q is the value of the Q-statistic, df is degree of freedom. The Fail-safe N test with the Rosenthal (1979) formulas was used to test the publication bias. The publication bias test eliminates the potential obstacle that might have prevented a truly representative sample of studies from being obtained. Thus, the publication bias was checked for any overestimation of unreliable conclusions (Smith et al, 2023).

For the moderator analysis, the technique of a sub-group random-effects meta-analysis was used. The sub-group analysis helped to investigate the heterogeneity pattern within the data (Kim, Yun and park, 2024). The moderators assessed for the various antecedents of CE were sample size, publication year, context of the study and location. The sample size was divided into two sub-groups, namely, 'less than 250 samples' and 'more than 250 samples', coded as 0 and 1, respectively, for the moderation analysis. The publication year of the study was divided into two sub-groups, namely, 'less than and more than 5 years old', coded as 0 and 1, respectively. The context of the study was divided into two sub-groups., namely, studies conducted on 'products' and those conducted on 'services', and were coded as 0 and 1, respectively. The location of the study was divided into continent-based sub-groups, namely, Asia, Africa, Europe, America, Australia and Global. These were coded from 0-6, respectively.

4. Findings and Analysis

The findings of the study for the antecedents and consequences of CE have been summarized in Table 1. The interpretation of effect size has been done as per Cohen (1977), where the effect size $r > 0.1$ is small, $r > 0.3$ to be medium, and $r > 0.5$ to be high. Results suggested that from among the fourteen factors a mix of antecedents and consequences, commitment ($r=0.71$) had the highest level of association with CE, followed by word of mouth ($r=0.63$), trust ($r=0.62$), interaction ($r=0.6$), experience ($r=0.6$), behavioural loyalty ($r=0.60$), satisfaction ($r=0.58$) and purchase intention (0.53). On the other hand, age had a very low effect size (0.01), with a 95% confidence interval including the zero value.

Heterogeneity was calculated with the Q-statistic, and a significance value of 0.05 was considered to show significant heterogeneity in the dataset. A further I-square statistic (I^2) was calculated for reporting the variation caused by within-study heterogeneity (Borenstein, 2017). Most of the factors resulted in substantial heterogeneity I-square values (90 to 98%) among the studies, which was apt to forward for the moderation analysis.

The Fail-safe N value given in the table ranges from 30 to 117515, with an average Fail-safe N value of 17350, passing the 5K+10 criteria of Rosenthal (1979). The high Fail-safe N specifies that there is no publication bias in the dataset. This has been shown in Table 2:

Table 2: Effect size, heterogeneity and publication bias calculations for the meta-analysis

Hypothesis	Impacting factor	Total number of studies(k)	Total samples (n)	Effect size(R+)	Upper limit (UL)	Lower limit (LL)	Q-value	p-value	I-square value	Fail-safe N value
H1	Brand Experience	6	6623	0.6	0.77	0.33	723.27	***	99.31	7070
H2	Age	7	8799	0.01	0.15	-0.14	128.79	***	95.34	30
H3	Trust	18	11492	0.62	0.73	0.49	1139.1	***	98.51	32547
H4	Involvement	10	8353	0.44	0.63	0.21	503.57	***	98.21	4823
H5	Word of Mouth	12	5430	0.63	0.69	0.56	111.36	***	90.12	12070
H6	Loyalty	36	24663	0.60	0.66	0.53	1625.64	***	97.85	117515
H7	Brand Commitment	8	2953	0.71	0.85	0.46	597.91	***	98.83	6069
H8	PI	19	8063	0.53	0.6	0.46	308.28	***	94.16	18793
H9	Customer Satisfaction	16	7160	0.58	0.66	0.47	448.69	***	96.66	16993
H10	Interaction	13	7022	0.6	0.75	0.39	1163.1	***	98.97	14931
H11	Rewards	6	4546	0.48	0.58	0.36	35.4	***	85.87	2166
H12	Perceived Value	11	4075	0.42	0.6	0.2	510.45	***	98.04	3087
H13	Quality	16	4792	0.47	0.61	0.29	423.83	***	96.46	6204
H 14	Performance	7	1728	0.42	0.66	0.1	148.52	***	95.96	602

Moderator Analysis

The potential moderators of CE identified in the research were sample size, year of publication, context of the study and location of the study. A sub-group analysis was carried out for the above-mentioned moderators to elucidate the moderating effects on the factors of CE (Borenstein, 2017). The moderation effect of the first moderator, sample size, has been reported in Table 3.

Table 3: Random-effect average correlation statistics by Sample Size

		Less than 250			Greater than 250			Total		
		k	n	R+	k	n	R+	k	N	R+
1	CE and Quality	8	1509	0.48	8	3283	0.46	16	4792	0.47
2	CE and Performance	4	366	0.42	3	1362	0.42	7	1728	0.42
3	CE and Age	1	60	0.20	6	8739	-0.01	7	8799	0.01
4	CE and Brand Commitment	2	439	0.74	6	2514	0.69	8	2953	0.71
5	CE and Perceived Value	1	203	0.59	10	3872	0.40	11	4075	0.42
6	CE and Trust	4	1465	0.68	14	10027	0.61	18	11492	0.62
7	CE and Brand Experience	2	431	0.63	4	6192	0.58	6	6623	0.60
8	CE and PI	3	722	0.58	16	7341	0.53	19	8063	0.53
9	CE and Customer Satisfaction	2	428	0.51	14	6732	0.59	16	7160	0.58
10	CE and Interaction	3	652	0.38	10	6370	0.66	13	7022	0.60
11	CE and WOM	1	100	0.76	11	5330	0.62	12	5430	0.63
12	CE and Loyalty	5	988	0.64	31	23675	0.60	36	24663	0.60
<i>n</i> = number of participants, <i>k</i> = number of effect sizes included in the analysis, CI = 95% confidence interval, R+= random effects average correlation.										

The results showed that the average effect sizes of studies with a small sample size (less than 250) were found to be higher among all factors of CE except for the factors satisfaction and interaction. The sample size was found to be a significant moderator for factors such as age, experience, trust, word of mouth, behavioural loyalty, commitment, PI, satisfaction, perceived value and quality, but not for business performance and CE. Thus, sample size was found to be a significant moderator for the study. The moderation effect of the second moderator, year of publication, has been reported in Table 4.

Table 4: Random-effect average correlation statistics by year of publication of the study

		< 5 years			> 5 years			Total		
		K	n	R+	k	n	R+	k	N	R+
1	CE and Perceived Value	10	3825	0.42	1	250	0.48	11	4075	0.42
2	CE and Trust	16	6466	0.63	2	5026	0.58	18	11492	0.62
3	CE and PI	17	7467	0.54	2	596	0.52	19	8063	0.53
4	CE and Customer Satisfaction	14	6348	0.58	2	812	0.55	16	7160	0.58
5	CE and WOM	11	5154	0.64	1	276	0.44	12	5430	0.63

		< 5 years			> 5 years			Total		
	Association	K	n	R+	k	n	R+	k	N	R+
6	CE and Reward	5	4270	0.50	1	276	0.36	6	4546	0.48
7	CE and Involvement	7	2969	0.39	3	5384	0.55	10	8353	0.44
8	CE and Loyalty	34	19637	0.61	2	5026	0.52	36	24663	0.60

n = number of participants, *k* = number of effect sizes included in the analysis, CI = 95% confidence interval, R+= random effects average correlation.

In the above table the results prove that in eight studies there was a moderating effect of year of publication of the study in all the factors listed. The effect size for studies of recent years (less than 5 years) was found to be higher for factors such as trust, PI, satisfaction, WOM, rewards and behavioural loyalty. At the same time, the effect size was reported to be higher for older studies (more than 5 years) for factors such as perceived value and involvement. Thus, publication year of study was found to be a significant moderator for this study. The moderation effect of the third moderator, context of the study, has been reported in Table 5.

Table 5: Random-effect average correlation statistics by Context of the Study

		Product			Service			Total		
	Association	K	m	R+	k	N	R+	k	n	R+
1	CE and Quality	2	448	0.12	14	4344	0.51	16	4792	0.47
2	CE and Performance	2	1074	0.35	5	654	0.45	7	1728	0.42
3	CE and Age	1	424	0.09	6	8375	-0.01	7	8799	0.01
4	CE and Perceived Value	2	697	0.34	9	3378	0.44	11	4075	0.42
5	CE and Brand Experience	1	289	0.72	5	6334	0.57	6	6623	0.60
6	CE and PI	2	560	0.60	17	7503	0.53	19	8063	0.53
7	CE and Customer Satisfaction	3	1046	0.76	13	6114	0.54	16	7160	0.58
8	CE and Interaction	1	508	0.96	12	6514	0.53	13	7022	0.60
9	CE and WOM	1	1120	0.55	11	4310	0.64	12	5430	0.63
10	CE and Involvement	1	273	0.63	9	8080	0.42	10	8353	0.44
11	CE and Loyalty	2	654	0.61	34	24009	0.60	36	24663	0.60

n = number of participants, *k* = number of effect sizes included in the analysis, CI = 95% confidence interval, R+= random effects average correlation.

The findings of the study's moderation effect indicate that the moderator has an impact on the relationship between all 11 variables and CE. Seven variables, namely age, experience, PI, satisfaction, interaction, involvement and behavioural loyalty report a higher effect size in the context of product than in the context of service. The highest level of moderation of the context of study was seen in the quality and CE relationship. Thus, an effective moderator in the research was the context of study. The moderation effect of the fourth moderator, location of the study, has been reported in Table 6.

Table 6: Random-effects average correlation statistics by Location of Study

		Asia			Africa			Europe			America			Australia			Global			Total		
	Association	k	n	R+	k	N	R+	k	n	R+	k	n	R+	k	n	R+	k	n	R+	k	N	R+
1	CE and Quality	10	2605	0.45	1	400	0.06	1	246	0.45	3	1141	0.58	1	400	0.61				16	4792	0.47
2	CE and Performance	5	992	0.55				1	504	0.08	1	232	0.08							7	1728	0.42
3	CE and Age	2	5496	0.15				2	385	0.05	3	2918	-0.11							7	8799	0.01
4	CE and Brand Commitment	6	1878	0.76	1	491	0.15	1	584	0.71										8	2953	0.71
5	CE and Perceived Value	7	2711	0.41	1	491	0.11				3	873	0.52							11	4075	0.42
6	CE and Trust	9	3492	0.63	5	2232	0.6	1	437	0.82	2	4835	0.54	1	496	0.51				18	11492	0.62
7	CE and Brand Experience	3	5845	0.56				2	431	0.63	1	347	0.63							6	6623	0.6
8	CE and Purchase Intention	16	7100	0.53				3	963	0.54										19	8063	0.53
9	CE and Customer Satisfaction	8	2755	0.62	2	980	0.28	4	2656	0.66	1	273	0.41	1	496	0.49				16	7160	0.58
10	CE and Interaction	9	3533	0.67				1	246	0.32	1	273	0.64				2	2970	0.36	13	7022	0.60
11	CE and WOM	11	4993	0.63				1	437	0.68										12	5430	0.63
12	CE and Reward	5	1976	0.48													1	2570	0.45	6	4546	0.48
13	CE and Involvement	4	1824	0.46				1	273	0.63	2	4877	0.41	2	730	0.3	1	649	0.48	10	8353	0.44
14	CE and Loyalty	21	12976	0.62	5	2066	0.56	5	3464	0.54	2	4835	0.44	2	822	0.62	1	500	0.82	36	24663	0.6

n = number of participants, *k* = number of effect sizes included in the analysis, CI = 95% confidence interval, R+= random effects average correlation.

The studies of factors impacting CE saw a population of study from Asia, followed by Europe and America, and global samples too. Where performance, age, commitment, interaction and reward resulted in the highest effect size for the Asian studies, factors like trust, experience, PI, satisfaction, WOM and involvement were seen to have the maximum effect size in studies conducted in Europe. At the same time, factors such as quality and behavioural loyalty had the highest effect sizes among studies done in Australia and perceived value in studies done in America. Thus, location of the study significantly moderated the relation of these listed factors and CE.

Further, a meta-regression was done on all the factors for the four listed moderators to confirm the moderation impact on the relation of the factors and CE. Table 7 shows the results of the meta-regression.

Table 7: Meta-regression results for the moderators of the study

Location of the study					
	Association	Slope (β)	p-value	Significance	R ²
1	CE and Quality	0.21	0.292	Not Significant	4.27%
2	CE and Performance	-0.75	0.000	Significant	56.28%
3	CE and Age	-0.76	0.013	Significant	57.68%
4	CE and Brand Commitment	-0.29	0.497	Not Significant	8.61%
5	CE and Perceived Value	0.18	0.593	Not Significant	3.16%
6	CE and Trust	-0.09	0.707	Not Significant	0.80%
7	CE and Brand Experience	0.18	0.802	Not Significant	3.20%
8	CE and PI	0.02	0.918	Not Significant	0.06%
9	CE and Customer Satisfaction	-0.17	0.534	Not Significant	2.74%
10	CE and Interaction	-0.35	0.259	Not Significant	11.94%
11	CE and WOM	0.17	0.533	Not Significant	2.98%
12	CE and Reward	-0.12	0.799	Not Significant	1.54%
13	CE and Involvement	-0.1	0.721	Not Significant	1.06%
14	CE and Loyalty	0.01	0.971	Not Significant	0%
Sample Size					
	Association	Slope (β)	p-value	Significance	R ²
1	CE and Quality	0.03	0.893	Not Significant	0.08%
2	CE and Performance	0	0.995	Not Significant	0%
3	CE and Age	0.42	0.322	Not Significant	17.61%
4	CE and Brand Commitment	0.11	0.791	Not Significant	1.22%
5	CE and Perceived Value	0.21	0.523	Not Significant	4.32%
6	CE and Trust	-0.31	0.554	Not Significant	1.69%
7	CE and Brand Experience	0.13	0.854	Not Significant	1.78%
8	CE and PI	0.15	0.536	Not Significant	2.16%
9	CE and Customer Satisfaction	-0.14	5.85	Not Significant	2.01%
10	CE and Interaction	-0.36	0.188	Not Significant	13%
11	CE and WOM	0.42	0.116	Not Significant	17.46%
12	CE and Loyalty	0.09	0.563	Not Significant	0.79%
Publication Year					
	Association	Slope (β)	p-value	Significance	R ²
1	CE and Perceived Value	0.07	0.844	Not Significant	0.42%
2	CE and Trust	-0.06	0.804	Not Significant	0.38%
3	CE and Purchase Intention	-0.03	0.91	Not Significant	0.07%
4	CE and Customer Satisfaction	-0.06	0.828	Not Significant	0.33%
5	CE and WOM	-0.49	0.059	Not Significant	23.82%
6	CE and Reward	-0.5	0.190	Not Significant	24.68%

Location of the study					
7	CE and Involvement	0.28	0.375	Not Significant	7.73%
8	CE and Loyalty	-0.1	0.474	Not Significant	1.08%
Study Context					
	Association	Slope (β)	p-value	Significance	R ²
1	CE and Quality	-0.39	0.049	Significant	15%
2	CE and Performance	-0.15	0.738	Not Significant	2.16%
3	CE and Age	0.24	0.591	Not Significant	5.68%
4	CE and Perceived Value	-0.13	0.0698	Not Significant	1.68%
5	CE and Brand Experience	0.32	0.649	Not Significant	10.49%
6	CE and PI	0.17	0.485	Not Significant	2.75
7	CE and Customer Satisfaction	0.45	0.062	Not Significant	20.35%
8	CE and Interaction	0.84	0.000	Significant	70.45%
9	CE and WOM	-0.24	0.396	Not Significant	5.71%
10	CE and Involvement	0.25	0.355	Not Significant	6.35%
11	CE and Loyalty	0.01	0.945	Not Significant	0.01%

The relationship between CE and business performance was significantly moderated by the location of the study ($\beta = -0.75$, p-value = 0.000) and CE and age ($\beta = -0.76$, p-value = 0.013). The context of the study also resulted in a significant moderation on the relationship of CE and quality ($\beta = -0.39$, p-value = 0.049) and CE and interaction ($\beta = -0.84$, p-value = 0.000). The moderators, publication year of study and Statistical significance was not achieved by the sample size with any of the CE factors.

4. Discussion and Conclusions

This study analyses the results of 101 research articles from the past 18 years. This research contributes to marketing theory by summarizing the previous results and making a conceptual model of Customer Engagement with the major antecedents and consequences to CE for the past two decades.

The study has shown that brand experience, trust, involvement, customer satisfaction, interaction with the brand, Socialization and interactivity, rewards, perceived value, quality of product, word of mouth, behavioural loyalty, brand commitment, firm performance and purchase intention positively and strongly impacts CE (H1). This is validated by past studies (Kaur et al, 2023; Islam and Rahman, 2016). Age of the customer did not seem to have any impact on CE, and thus the hypothesis was false (H2). This is contradictory to a previous literature review where age has been studied as a moderating factor to impact CE (Jang et al., 2018; Abror et al. 2019; Eisingerich et al., 2019; Itani et al., 2019).

In the moderation analysis, it was seen that the location of the study significantly moderated the relationship of primarily two factors, namely, business performance and age, with CE. At the same time, the sample size and publication year were found to have no significant impact as a moderator on the relationship of any of the factors impacting CE. The association between quality and interaction with CE was found to be strongly moderated by the study's context.

5. Conclusion

The study not only consolidates previous findings but also introduces novel moderators affecting CE, enriching the current understanding of CE literature and managerial practice.

5.1 Theoretical implications

The research contributes significantly to the theoretical landscape of CE. Previous meta-analyses have explored CE through social media's impact and its two primary pathways: the organic, relationship-oriented pathway (encompassing perceived quality, perceived value, and relationship quality) and the promoted, firm-initiated pathway (including functional and experiential initiatives). This research identifies a critical gap by incorporating the role of emotions and psychological differences into the CE framework (Hollenbeck, Hammedi and Sprott, 2023). By examining 14 unique antecedents and consequences, the study provides new insights that were not previously explored comprehensively within CE literature.

The development of a conceptual model consisting of these 14 factors represents a significant advancement. The study challenges earlier findings, particularly by demonstrating that age does not significantly influence CE, contrary to previous research. This new perspective offers marketing scholars valuable insights, shifting the focus from demographic factors like age to other influential aspects of CE (More, 2023).

This study's meta-analytical approach has consolidated findings from various individual studies, presenting a comprehensive view of the factors influencing CE across different industries. By providing a centralized repository of CE research, the study supports future research efforts by offering a clear overview of CE trends and progress (Hoang et al., 2023). Furthermore, it highlights the importance of CE in enhancing the brand experience and raising brand value. To date, this is the first meta-analysis to robustly connect CE with brand experience and value, marking a substantial contribution to the field.

5.2 Practical implications

The findings of the study have more practical implications for managers as well as practitioners involved in CE. It identifies nine antecedents and five consequences that significantly impact customer engagement. Among the antecedents, brand experience emerges as the most influential, whereas age shows the least impact. Consequently, organizations should focus on enhancing brand experience rather than tailoring strategies based on age demographics.

Organizations should also focus on improving product satisfaction and brand interaction. Utilizing social media to promote brand initiatives and fostering positive customer reviews can further enhance brand perception and interaction. Satisfied customers who generate positive reviews can significantly bolster the brand's image among potential consumers (Mabkhot and Piaralal, 2023).

In CE Consumer perception plays a significant role. Enhancing the perceived value of products and differentiating them from competitors can lead to increased engagement (Rane et al 2023). The study highlights that the perceived value of a product, along with its quality, directly influences consumer engagement.

5.3 Limitations and future research directions

Despite its contributions, the study has limitations that future research should address. The analysis was based on factors with adequate empirical data for Pearson correlation, potentially overlooking some antecedents that did not receive sufficient attention. Factors such as income, desire, hope, brand knowledge, positive emotion, post-transaction service, price fairness, progress tracking, prompts, intrinsic enjoyment, new expectations, variety-seeking behaviour, and smart connectivity features were underexplored. Future research

should examine these factors to provide a more comprehensive understanding of their effects on CE. Additionally, this study focused totally on the positive impacts of CE antecedents and consequences. There is limited research on the potential negative impacts of CE. Exploring these negative aspects could offer new insights and contribute to a more balanced understanding of CE dynamics.

Future research could also expand the categories of antecedents examined. As empirical studies continue to grow, more factors are likely to be identified, allowing for the development of a more exhaustive and effective conceptual framework of CE. This broader approach will enhance the depth and applicability of CE research, providing valuable information for both theoretical exploration and practical application.

In summary, this study advances the understanding of customer engagement by addressing gaps in the literature, offering practical insights for managers, and highlighting areas for future research. Its contributions are expected to drive both academic and practical advancements in the field of customer engagement.

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