



Customer engagement and online reviews

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ABSTRACT

This study aims at understanding the role of customer engagement in writing online reviews by shoppers with specific focus on mobile devices for shopping. Mobile devices are becoming first screen for the customers and are being used by marketers to have interactive communication making it more suitable for building customer engagement. The research in this space however is in a very nascent stage. Current study is one of the first few empirical studies exploring the role of customer engagement in writing online reviews. The study explores mediating role of customer engagement in satisfaction - online review intention and trust - online review intention relationships. Further moderating role of trust and satisfaction levels in customer engagement - online review intention is explored. This study contributes to marketing literature in the space of customer engagement, online reviews and mobile shopping behaviour. Further, this study provides a framework to managers for motivating the customers in writing online reviews. Also recommendations for retailers in exploiting customer engagement on mobile platforms are provided to address merchants and advertisers for better management of a new technology.

1. Introduction

Online reviews are becoming increasingly important sources of information for shoppers impacting as much as 20–50% online purchase decisions (Mathwick and Mosteller, 2016). Potential shoppers often check online reviews posted by other customers who bought and used those products. Such reviews give them a glimpse of purchase and usage experience of other users. These reviews are considered to be more credible by shoppers as compared to seller promoted advertisements (Bickart and Schindler, 2001; Godes and Mayzlin, 2004). Researchers have found that shoppers specifically log on to online websites like Amazon.com to check reviews as part of their product evaluation journey (Bughin et al., 2010; Simonson and Rosen 2014). Online reviewers serve the role of information service provider for the potential shoppers by “shaping how customers serve themselves before, during, and after purchase” (Ostrom et al., 2015). Such reviews play crucial role in influencing shoppers’ choice of products, services (e.g. camera, airline, hotel) as well as retailer (e.g., Amazon.com, MakeMytrip.com). Online reviews, therefore impact the business of several firms in a multi-sided platform like online marketplaces. Researchers recognize that by posting online reviews, customers derive great social value within the community (Balasubramanian and Mahajan, 2001). The act of reviewing is, therefore, being considered as one of the most influential expressions of customer engagement (Mathwick and Mosteller, 2016).

Customer Engagement is a psychological state of mind that leads to

frequent interaction with the focal object (e.g., a brand or a medium). Customer engagement is a long term relationship that arrives out of emotional as well as utilitarian motivational drivers. Emerging literature in the domain indicates that customer engagement may lead to several favourable outcomes for brands and firms beyond repurchase intentions. Among other things, these outcomes may include posting likes and reviews on online and social media. Customer engagement is a significant construct in online and social business environments (Brodie et al., 2013; Hollebeek et al., 2014) and may offer valuable insights in customers’ propensity to post online reviews. The act may be perceived by customers as making them influential in their relationships with the brands, and the online organisations.

With online reviews becoming key influencers customer purchase decisions, researchers are exploring drivers of online reviews in various settings. There is a strong stream of literature indicating that high level of satisfaction leads to customer loyalty exhibited in the form of repurchase, referrals and favourable word of mouth (Anaza and Zhao, 2013; Anderson and Sullivan, 1993; Shankar et al., 2003). Within the specific context of online media, satisfaction has been found to have a significant impact on customer propensity to post online reviews (Maxham III and Netemeyer, 2002; Ranaweera and Prabhu, 2003). Another construct closely associated with satisfaction and widely explored, as an influencer in posting online reviews is the trust in the brand or the firm. Trust has been found to have significant impact on customers’ propensity to stay with the firm and provide favourable reviews (Harris and Goode, 2004; Kim et al., 2009; Ranaweera and

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Prabhu, 2003). While there is established literature on role of satisfaction and trust in motivating people to post online reviews (Anderson and Sullivan, 1993; Gvili and Levy, 2016; Kim et al., 2009; Oliver, 1980; Shankar et al., 2003), there has been increasing interest in under-explored role of customer engagement in online reviews (Kim et al., 2013; Rossmann et al., 2016). Engaged customers are likely to visit retailers website frequently for reasons beyond immediate purchase need. Such engaged customers are likely to be more emotionally invested with the retailer and therefore more likely to respond to requests for writing reviews about their purchases.

Customer interaction with retailers' websites for shopping and other related activities however are increasingly shifting to mobile devices. With rise in penetration of smart phones, and changing trends in society, mobile phones have become personal companion for the users. Increasingly, customers are using mobile devices for accessing online content more frequently than through personal computers. Especially in emerging economies like India, where access to computers is limited, and mobile phone penetration is high, mobile devices may play significant role in generating engagement and online reviews. Further, people in emerging economies spend considerable time in traveling using public transport where mobile phones act both as a productivity enhancer as well as a source of entertainment. Shopping, browsing and writing reviews on the go using mobile devices, therefore, may be a source of instant gratification. The behaviour of these customers in the said context is likely to be of interest for online retailers, brands as well as merchants selling through online retailers. Such usage patterns are likely to enable firms to interact with customers using their mobile devices more frequently and effectively as compared to other modes of communication. Mobile devices are therefore likely to be more effective in building customer engagement with the firm. With that perspective, the study looks at exploring the role of satisfaction, trust, and customer engagement through mobile phones in posting online reviews. The investigation takes a specific instance of mobile shopping applications for fashion and lifestyle products to achieve the research objective. This research offers a contribution to academia in the form of an addition to the body of knowledge in three emerging streams in marketing literature – customer engagement, mobile shopping and online reviews.

In the following section, relevant literature on customer engagement, online review, satisfaction and trust is provided to derive the proposed model and testable hypothesis. This is followed by detailed research methodology, data analysis, results, discussion and implications. This study demonstrates that customer engagement mediates the relationships satisfaction → online review intention and trust → online review intention. Further, trust moderates the relationship between customer engagement and online review intention. Implications for the practice include insights for retailers, merchants, and brands.

2. Theory and hypothesis

2.1. Defining customer engagement and online reviews

2.1.1. Customer engagement

Customer engagement is a state of mind of being emotionally invested with the focal object (brand or medium), which leads to customers' frequent interactions with the focal object. As the literature on customer engagement is still in nascent stage, the operationalization of the same is still evolving and is yet to converge. While there are several different conceptualizations, researchers' views agree that customer engagement (CE) is a psychological state that leads to frequent interactions with the focal object (brand or medium) that go beyond transactional motive of merely a purchase. Also, researchers have proposed that engagement leads to several outcomes beyond re-purchase, including posting likes, reviews and participation in co-creation of products and services (Brodie et al., 2011a,b; Calder et al., 2009; van Doorn et al., 2010). Scholars have conceptualized engagement as a multidimensional construct (Bowden, 2009b; Calder et al., 2009;

Hollebeek, 2011; Mollen and Wilson, 2010) covering cognitive, emotional and behavioral dimensions. Table 1 gives a snapshot of recent literature on the conceptualization of customer engagement by scholars.

There is a strong body of conceptual literature emerging in the field of customer engagement construct, however the empirical studies where scales have been developed and tested are relatively few (Calder et al., 2013; Hollebeek et al., 2014; Sprott et al., 2009; Vivek et al., 2014; Zheng et al., 2015). Amid the emerging empirical literature, Calder et al. (2013) looked at customer engagement with a focal medium, Hollebeek et al. (2014), and Sprott et al. (2009) investigated engagement with the brand while Zheng et al. (2015) investigated engagement in brand community and social networking sites. A scale developed by Vivek et al. (2014) took a more broad base view at engagement with any focal object ranging from a brand to an organization to a medium where they looked at a three-dimensional view of CE, including conscious attention, enthused participation, and social connection. As this study deals with mobile phones as a medium for shopping, conceptualization around experiencing a medium as suggested by Calder et al. (2013) was deemed to be most appropriate for this study.

Calder et al. (2009) proposed that engagement comes from experiencing a medium in a certain way. They defined an experience as a consumer's beliefs about how a medium fits into his/her life. Customer experiences could be driven by customer motivations for interactions with the focal object (medium, service/ brand). In the language of measurement models, experiences are first-order constructs while engagement is a second-order construct. The model developed by Calder et al. (2009), has been used in subsequent studies on social media, print media, live concerts, mobile media, online retail etc. Mobile shopping sites/ applications provide customers a convenient and compatible medium to shop from their chosen retailer. Also, the focus of this is to investigate role of mobile phones as a medium for building engagement and subsequently generate online reviews. Therefore the model of measuring customer engagement as a higher order construct with underlying customer experiences arising out of usage of mobile app as lower level constructs was deemed to be suitable for this study. Based on the relevant literature and objective of this study, Customer Engagement is conceptualized as

A psychological state that leads to frequent interactions with the focal object (mobile shopping apps in this case) that goes beyond transactional motive of immediate purchase intention. The motives for interactions with the focal object may be utilitarian (e.g., looking for new product launch, promotional offers, deals etc. in a specific category) with the objective of information for potential purchase in future or hedonic (e.g., looking for entertainment in new market trends, scenic pictures, etc.) with the objective of keeping oneself abreast of environment.

2.1.2. Online reviews

The Internet and information technology provide a new opportunity for consumers to share their product evaluations online. Online retailers like Amazon, Flipkart etc. often request shoppers to share post-purchase reviews on their respective websites. The consumer reviews include customers' experiences with product quality, as well as services of the online service provider. There is strong evidence suggesting the growing importance of consumer reviews in consumer purchase decisions and product sales (Chen and Xie, 2008). Consumer-created information in the form of online reviews are considered to be more credible than seller-created information due to the trustworthiness of the information source (Bickart and Schindler, 2001). Online consumer reviews, as consumer-created product information, can therefore be viewed as a special type of word-of-mouth communication (Godes and Mayzlin, 2004).

Traditionally, the word-of-mouth communication (WOM), has been shown to have a significant impact on consumer choice (Katz and

Table 1
Conceptualization of customer engagement construct.

Authors	Customer engagement definition	Type of paper
van Doorn et al. (2010)	Customers' behavioral manifestation toward a brand or firm, beyond purchase, resulting from motivational drivers such as word-of-mouth activity, recommendations, helping other customers, blogging, writing reviews.	Conceptual
Bowden (2009a, b)	A psychological process that models the underlying mechanisms by which customer loyalty forms for new customers of a service brand as well as the mechanisms by which loyalty may be maintained for repeat purchase customers of a service brand	Conceptual
Vivek et al. (2012)	The intensity of an individual's participation & connection with the organization's offerings & activities initiated by either the customer or the organization	Conceptual
Zheng et al. (2015)	"Individual participation and promotion behaviour" in online brand communities on social networking sites.	Empirical
Brodie et al. (2011a, b)	A motivational state that occurs by virtue of interactive, co-creative customer experiences with a focal agent/object (e.g. a brand) in focal brand relationships.	Conceptual
Calder et al. (2009)	Consumer engagement is a collection of experiences. An experience is a consumer's beliefs about how a website fits into his/her life. Some sites could be engaging because they provide high levels of a utilitarian experience while other sites could be engaging because they are intrinsically enjoyable.	Empirical
Hollebeek et al. (2014)	A consumer's positively valence cognitive, emotional and behavioral brand-related activity during, or related to, specific consumer/brand interactions.	Empirical
Sprott et al. (2009)	An individual difference representing consumers' propensity to include important brands as part of how they view themselves.	Empirical

Lazarfeld, 1966; Engel et al., 1969; Arndt, 1967), as well as post-purchase product perceptions (Bone, 1995). Word-of-mouth has also been shown to be more effective and credible than the conventional marketing tools of personal selling and various types of advertising (Katz and Lazarfeld, 1966; Engel et al., 1969). Similar to word-of-mouth communication, research has shown that online reviews have higher credibility, empathy and relevance to customers than marketer created sources of information (Bickart and Schindler, 2001; Godes and Mayzlin, 2004). Different from the traditional WOM however, the influence of which is typically limited to a local social network, the impact of online consumer reviews can reach far beyond the local community via the Internet. Further, technology enables sellers to effectively initiate and broadcast consumer online reviews via its own website (Chen and Xie, 2008).

Another information source closely related to online consumer review is professional reviews from third parties (e.g., Carwale.com, Tripadvisor, PC Magazine, PC World). Professional reviews are provided by experts to build up the product reputation, offer product information, and serve as indirect advertisements (Zhou and Duan, 2016). Empirical studies have demonstrated a significant relationship between professional reviews and user decisions (Basuroy et al., 2003; Chen et al., 2012; Chen and Xie, 2008; Lee and Tan, 2013). Professional reviews tend to focus on product attribute information (e.g., performance, features, and reliability) and their review ratings are likely to be correlated with the performance of these attributes. Different from professional reviews, online consumer reviews are posted by users based on their personal experiences and focus on whether and how a product matches a specific individual's preference and usage condition (Zhou and Duan, 2016). Online consumer reviews are likely to be more relevant to consumers as it often describes product attributes in terms of usage situations and measures product performance from a user's perspective. Consumer-reviews, therefore, help less-sophisticated consumers (i.e., novices) in finding their best-matched products (Bickart and Schindler, 2001). Further, as unpaid, voluntary sources of information, consumer reviews are considered more credible.

Given the widespread impact of consumer reviews, firms are adjusting their marketing communication strategy to respond to this emerging source of WOM information (Chen and Xie, 2008). While both professional reviews, as well as consumer reviews, have their own importance in influencing the potential customer's choice, this study investigates the factors influencing consumer reviews. There is a growing body of literature on psychological motivation including altruistic (helping) motives with a desire to help other consumers make informed buying decisions or due to egoistic motives, with a desire for self-reputational enhancement (Bendapudi et al., 1996; Hennig-Thurau et al., 2002). Researchers also recognize that by posting online reviews, customers derive great social value (Balasubramanian and Mahajan,

2001) and become empowered consumers (Labrecque et al., 2013).

With customers using mobile phones as a key mode to access online content, read reviews and shop online, the channel might be playing an important role in generating online reviews. Responding to a review request promptly soon after receiving it using a mobile device may give the customer a sense of instant gratification rather than thinking and posting it at a later time when using a PC device. However, consumer usage of mobile phones for writing reviews for products bought in the past is underexplored.

2.2. Conceptual model and hypothesis development

2.2.1. Satisfaction

Researchers have found that higher levels of satisfaction is likely to lead to higher levels of loyalty among customers (Anaza and Zhao, 2013; Anderson and Sullivan, 1993; Shankar et al., 2003). Satisfied customers are likely to exhibit loyalty through repurchase intentions and writing favourable reviews (Maxham III and Netemeyer, 2002; Oliver, 1980; Ranaweera and Prabhu, 2003). The likelihood of customers writing online reviews will depend on a) the extent to which the product or service performance exceeds the customer's expectations to share their positive experience, or b) the extent that the customer's expectations are not fulfilled, motivating them to engage in negative reviews warning others, and/or seeking retaliation (De Matos and Rossi, 2008). Hirschman (1970), in his seminal work on customer loyalty, suggested that customers with a strong attachment to the firm actively look for mechanisms to make themselves influential regarding the products of those firms. Researchers have specifically explored the role of satisfaction in building loyalty in online retailing environment thereby popularising the terms e-satisfaction and e-loyalty (Anaza and Zhao, 2013; Sahadev and Purani, 2008). Writing positive reviews on retailers' portal or third-party portals are common practices among satisfied customers that influences potential shoppers (Gvili and Levy, 2016). This study therefore proposes

H1. Customer satisfaction will have a positive effect on intention to write online reviews.

2.2.2. Trust

Trust refers to "a willingness to rely on an exchange partner in whom one has confidence" (Moorman et al., 1993, p. 82). Trust has an important effect on customer's propensity to leave or stay with the same service provider (Garbarino and Johnson, 1999; Morgan and Hunt, 1994; Singh and Sirdeshmukh 2000). Empirical findings have shown that higher levels of trust are associated with a greater tendency to offer favourable reviews (Garbarino and Johnson, 1999; Gremler et al., 2001; Ranaweera and Prabhu, 2003). This is based on the rationale that

Table 2
Literature on relationship of customer engagement with other constructs.

Author	Relationships proposed/ explored	Type of paper	Description of conceptual relationship
van Doorn et al. (2010)	Customer Satisfaction, Trust	Conceptual	Satisfaction and trust act as “CE behaviour” antecedent for existing customers, and consequence for new customers
Bowden (2009a, b)	Trust	Conceptual	Trust acts as “CE behaviour” antecedent for existing customer
Vivek et al. (2012)	Trust, Commitment, Word of Mouth, Loyalty	Conceptual	Trust, Commitment, Word of Mouth, and Loyalty act as a consequence of CE
Zheng et al. (2015)	Online community commitment, Brand loyalty	Empirical	Online community commitment, and Brand loyalty act as consequences of CE
Jaakkola and Alexander (2014a,b)	Trust	Empirical (Qualitative, Case based)	Trust acts as “CE behaviour” antecedent for existing customer
Brodie et al. (2011a, b)	Trust	Conceptual	Trust can be a potential antecedent of CE
Hollebeek (2011)	Trust, loyalty	Conceptual	Trust is more likely to be an outcome of CE Loyalty act as a consequence of CE
So et al. (2014)	Trust and loyalty	Empirical (Quantitative)	Trust and loyalty are consequences of CE
Harwood and Garry (2015)	Trust, commitment, loyalty, subversion (repeat interaction, spin off action)	Empirical (Qualitative, exploratory)	Trust, commitment, loyalty, and subversion are likely outcomes of CE
Calder et al. (2009)	Attitude towards advertisements, Intention to click	Empirical (Quantitative)	Attitude towards advertisements and Intention to click are consequences of CE
Hollebeek et al. (2014)	Consumer involvement, self-brand connection, brand usage intent	Empirical (Quantitative)	Consumer involvement is an antecedent while self-brand connection and brand usage intent are consequences of customer brand engagement
Dwivedi (2015)	Customer brand engagement, loyalty intention	Empirical (Quantitative)	Customer brand engagement is an antecedent while loyalty intention is a consequence of customer brand engagement
Thakur (2016)	Loyalty intention	Empirical (Quantitative)	Consumer loyalty intention is a consequence of customer engagement

customers mostly provide recommendations to other individuals of their reference group, such as a friend or a relative, and, thus, a customer will be more likely to endorse a provider that he or she has previous experience with and confidence in (Gremler et al., 2001). But even when customers are offering advice to others, no matter who the receiver is, there is a risk of being wrong and a reviewer would not like to be wrong (Mazzarol et al., 2007). Trust creates benefits for customers such as lower anxiety, uncertainty, and vulnerability about the transaction. These benefits influence satisfaction, which in turn affects reviews, especially in a service context that is relatively more complex (Garbarino and Johnson, 1999; Hennig-Thurau et al., 2002). This study therefore proposes

H2. Trust will have a positive effect on intention to write online reviews.

2.3. Customer engagement and online reviews

Customer engagement is being explored as a construct to facilitate favourable behaviour among existing customers including commitment, loyalty and online word of mouth (Brodie et al., 2011a, b; Calder et al., 2009; Pham and Avnet, 2009). Researchers have proposed that higher frequency of interaction with the focal object is an indicator of higher engagement. Further, scholars are also investigating various antecedents of customer engagement including trust and satisfaction (R. J. Brodie et al., 2011a, b; Jaakkola and Alexander, 2014a, b; So et al., 2014). Table 2 provides a snapshot of recent literature on antecedents and consequences of customer engagement.

As can be seen in Table 2, the literature on antecedents and consequences of customer engagement is largely conceptual or exploratory with small sample size. Further, there is a lack of convergence among the propositions of scholars that is common where the central construct is still emerging. With reference to the role of customer engagement in online reviews, Vivek et al. (2012) in their conceptual paper proposed word of mouth to be a potential consequence of customer engagement. Further, Hollebeek (2011) in his conceptual paper and Dwivedi (2015) and Thakur (2016) in their respective empirical paper found a significant role of customer engagement in customer loyalty. There is also evidence in marketing literature on a significant relationship between loyalty and referrals / online reviews (Cheung and Lee, 2012; Harris and Goode, 2004; Srinivasan et al., 2002). There is a whole new stream of research that is emerging in customer engagement in online reviews

(Mathwick and Mosteller, 2016). Customer engagement construct has a strong affective component that repeatedly drives customers back to the focal object, i.e., mobile shopping application. Such psychological state is likely to motivate customers to act favorably towards the shopping app and the retailer that may include responding positively to the requests for writing online reviews. Therefore, this study proposes,

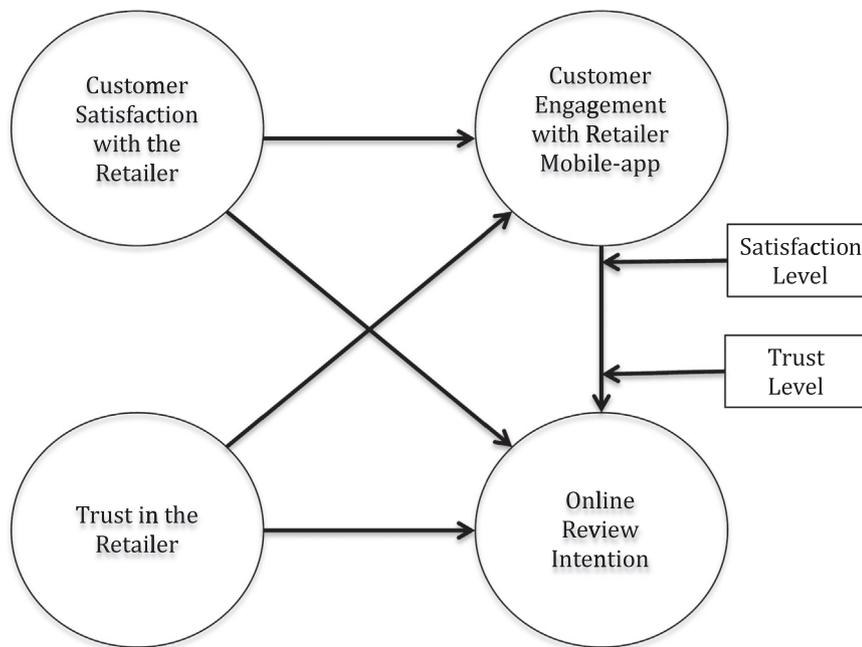
H3. Customer Engagement will have a positive effect on intention to write online reviews.

2.4. Satisfaction, customer engagement and online reviews

Customer engagement may be driven by satisfaction, i.e., a satisfied customer is likely to engage more with the focal construct as also observed by van Doorn et al. (2010). In the case of mobile and online retail, a satisfied customer is likely to interact with the medium (i.e., website/ mobile application) to check back on new offerings, trends, promotions etc. offered by the retailer demonstrating engagement. Such engagement is likely to influence customers' behaviour beyond transactional purchase relationship and is likely to provide a favourable response to a request for writing reviews. Conversely, a dissatisfied customer is less likely to engage further with the service provider and subsequently demonstrate favourable behaviour. In their paper on engagement and satisfaction, Calder et al. (2013) explored predictive power of satisfaction vs engagement in the adoption of different media. There is an emerging stream of literature which posits role of engagement in long-term non-transactional relationships (Brodie et al., 2011a, b; Pansari and Kumar, 2017) and writing online reviews as a mechanism to express the same is likely. Further, there are some researchers who have proposed/ validated the relationship between customer engagement and loyalty and the likelihood of writing online reviews (Dwivedi, 2015; Hollebeek, 2011; Thakur, 2016; Vivek et al., 2012; Zheng et al., 2015). Based on existing literature and the current analysis, it is likely that satisfaction will influence customer engagement, which in turn is likely to influence intention to write online reviews. This study, therefore proposes a mediating role of customer engagement in satisfaction – online review intention relationship.

H4. Customer Engagement will mediate the relationship between satisfaction and online review intention.

Fig. 1. Conceptual framework.



2.5. Trust, customer engagement and online reviews

There seems to be a lack of convergence in existing literature regarding the relationship between customer engagement and trust. Some scholars have proposed trust to be an antecedent for customer engagement (Bowden, 2009b; Brodie et al., 2011a; Jaakkola and Alexander, 2014a, b; van Doorn et al., 2010). Other researchers, on the contrary, have proposed trust to be a consequence of customer engagement (Harwood and Garry, 2015; Hollebeek, 2011; So et al., 2014; Vivek et al., 2012). Trust is a long term relationship that builds over time as it refers to customers' willingness to rely on the service provider with confidence (Moorman et al., 1993, 1992). Such long term relationship built on trust is likely to build efficiency and effectiveness (Morgan and Hunt, 1994). The customers' engagement with a retailer's mobile site/ application in the form of visiting/ downloading the same on her device is likely to be influenced by customer's trust in the retailer. In other words, the act of engagement with retailers' mobile portal is unlikely by the customers with lack of trust in the relationship. This study, therefore, would like to consider trust as an antecedent to customer engagement. Further, trust is likely to have a strong role in customer writing online reviews (Garbarino and Johnson, 1999; Gremler et al., 2001). Considering the likelihood of trust influencing customer engagement which in-turn is likely to influence propensity to write online reviews, this study proposes mediating role of customer engagement in trust-online review relationship.

H5. *Customer Engagement will mediate the relationship between trust and online review intention.*

2.6. Moderating role of satisfaction level

Customer engagement is a psychological state whereby the desired outcome of writing online reviews is driven by customer's positive feeling with the focal object. Satisfaction, being a function of a positive experience with the retailer, is likely to amplify the effect of customer engagement on online review intention. A satisfactory experience will motivate an engaged customer to respond favorably to a retailer's request for providing online reviews while using the shopping app. Conversely, when a customer is not satisfied with the retailer, the positive effect of customer engagement on intention to write online reviews is weakened due to the discrepancy in affective component of

usage experience of shopping app and cognitive (usage outcome) experience with the retailer.

Therefore, it is proposed that customer engagement will have a stronger (weaker) influence on online review intention for customers with higher (lower) satisfaction level. Based on the current analysis, this study proposes,

H6. *Satisfaction level will moderate the relationship between customer engagement and online review intention such that higher the satisfaction level higher is the effect of customer engagement on intention to write online reviews.*

2.7. Moderating role of trust level

Customer engagement has a strong hedonic component that creates positive association with the retailer. Trust, 'willingness to rely on an exchange partner' (Moorman et al., 1993) is developed over a period of association based on several positive interactions. Lack of trust on the contrary may be a function of unpleasant experiences or perceived opportunistic behaviour of the exchange partner in the past. Trust in the retailer, a positive construct, therefore, is likely to strengthen the effect of customer engagement (a positive association) on online review intention. Contrariwise, lack of trust the retailer is likely to weaken the positive effect of customer engagement on intention to write online reviews.

An engaged customer who also has developed strong trust (dis-trust) in the retailer through multiple interactions is more (less) likely to take out time and respond favorably to retailer's request for writing online review for past purchase. Based on the current analysis, this study proposes,

H7. *Trust level will moderate the relationship between customer engagement and online review intention such that higher the trust level higher is the effect of customer engagement on intention to write online reviews.*

Based on the relevant literature, a conceptual framework is proposed (Fig. 1).

3. Method and analysis

The research methodology in this investigation was designed to test the proposed model for the role of customer engagement (Fig. 1) in influencing customers to write online reviews using mobile devices

through survey method with a large sample size. The survey data facilitated validation of the psychometric properties of experience scales through confirmatory factor analysis and then a second-order factor model for engagement. The final step was to test the research hypothesis around motivators for writing online reviews with emphasis on mediating role of customer engagement.

3.1. Measures

The research instrument for the study was designed with items from validated scales for measuring customer engagement, satisfaction, trust and online review intentions. This study was focused on shopping of fashion and lifestyle products using mobile shopping applications/ site. To capture the specific context, verbatim of the existing scales were slightly modified for this study. Three scholars working in similar research area examined the face validity of the modified measures. Following their advice, some measures were refined to improve their validity. The final items of the research instrument and the source are provided in the [Appendix A](#). Three different versions of questionnaire employing a distinct, randomly assigned sequence of the data collection items with seven-point Likert scales anchored in ‘strongly disagree’ (1) through to ‘strongly agree’ (7) were designed. This was done to reduce the occurrence of primacy and recency effects.

The respondents were asked to select a fashion or lifestyle mobile shopping application (like Myntra, Jabong, Fashion & You or lifestyle e-retailers like Flipkart and Amazon) they had made purchased from, and to complete the entire questionnaire for that mobile shopping application/ mobile shopping site only. The choice of fashion and lifestyle retailers was appropriate as the study explored both utilitarian and hedonic aspects while dealing with customer engagement. A pure utilitarian category like grocery may not be appropriate for exploring such constructs and hence the choice of a category that has both utilitarian and hedonic purchase motivations.

3.2. Sample

The study was conducted in Mumbai, the financial capital of India. Mumbai is a large metropolitan city with a mix of the population from different parts of the country. The research instrument developed for the study was administered using survey method to a set of respondents who had made more than one purchases in past six months using mobile devices from a fashion/ lifestyle retailer. For data collection, 1500 questionnaires were distributed. A total of 439 responses were received indicating around 30% response rate. Of this, 18 responses were found incomplete or un-usable due to extreme patterns and were removed from further analysis. 421 responses were used for final analysis. This provided a sample size that exceeds the recommended minimum ([Bentler and Chou, 1987](#); [Hair et al., 1998](#)).

The qualified respondents were current users of mobile devices for shopping (31% female; 66% below 30 years of age; 82% with professional experience of over 5 years). Young professionals are appropriate sample as they are comfortable with the usage of mobile devices for shopping and spend a considerable amount of time on mobile phones. Further, they have sufficient disposable income to spend on both utilitarian as well as discretionary needs. While the gender mix may not represent the user base of mobile telephony, it does reflect the population mix of working population in the country.

Before proceeding with further analysis, common method variance was tested using Harman's single method test ([Podsakoff and Organ, 1986](#)). The factor analysis did not produce a single factor or one general factor that accounted for the majority of the variance. Each factor accounted for more than the 5% cut-off thereby establishing that common method variance was not a problem.

3.3. Analysis

The data collected in the study was analysed with structural equation modeling (SEM) using SPSS AMOS 20. Following a two-step analytical procedure ([Hair et al., 2006](#)), the measurement model was first evaluated for validity reliability and statistical fit. This was followed by an assessment of the structural model, path analysis and test for mediation.

4. Results

4.1. Construct operationalization and confirmatory factor analysis

Customer engagement was conceptualized as second order construct with six dimensions - social-facilitation, self-connect, intrinsic enjoyment, time-filler, utilitarian experience and monetary evaluation experiences as per existing literature ([Calder et al., 2009](#); [Thakur, 2016](#)).

Scholars in marketing and information systems have a perpetual debate on the suitability of reflective vs. formative indicators for second order constructs. Some of the decision rules that favor selection of reflective model include direction of causality from construct to indicator items, indicators as manifestations of the construct, indicators being interchangeable, dropping an indicator should not alter the conceptual domain of the construct and indicators are expected to covary with each other ([Jarvis et al., 2003](#)). Also, reflective indicator models yield more meaningful measures of reliability and tests for construct validity enabling generalisation ([Bagozzi and Yi, 2012](#)). Specific to this research, consensus definition of engagement as a psychological state arising from context dependent experiences ([Brodie et al., 2011a, b](#)) indicates that varied experiences are manifestations of engagement, experiences in usage of a focal medium (mobile device in this case) are interchangeable, dropping one experience from the measurement model is unlikely to alter the construct and these experiences are likely to vary with each other ([Calder et al., 2009](#)). Further, researchers in the domain have extensively conceptualized customer engagement as a multi-dimensional construct ([Brodie et al., 2013](#); [Calder et al., 2009](#); [Hollebeek et al., 2014](#); [Vivek et al., 2014](#)) that is best measured using second order reflective model. This study, therefore, conceptualized customer engagement as a second order reflective construct measuring engagement with customer experiences arising out of usage of mobile shopping applications as first order constructs.

To establish reliability and validity of customer engagement scale, first order CFA followed by second order CFA was conducted. One indicator item of the monetary evaluation was dropped due to low factor loading ([Hair et al., 2010](#)). Further analysis was carried out with 18 indicator items. The first order CFA results for the six-factor, 18-item CE scale indicated the model provided acceptable fit to the data: $\chi^2(32) = 116.699$; $\chi^2/df = 3.647$; GFI = 0.956; CFI = 0.981 and RMSEA = 0.069. The six factors measured with 18 indicator items had high correlation and were validated for second order reflective construct model for customer engagement. These six factors converged into the second order construct CE explaining 81 per cent of variance explained by the six constructs. The fit indices ($\chi^2(44) = 470.71$, $\chi^2/df = 3.22$, GFI=0.86, RMSEA=0.09, NFI=0.79, CFI=0.9) suggest that the proposed model represents a good fit to the data.

This was followed by reliability and validity test of the complete measurement model, using confirmatory factor analysis (CFA). The fit indices ($\chi^2(288) = 999.11$, $\chi^2/df = 3.47$, GFI = 0.85, RMSEA = 0.07, NFI = 0.86, CFI = 0.9) suggest that the model with the nine latent variables represents a good fit to the data ([Tables 3, 4](#)). The instrument demonstrates evidence of both convergent (significant critical ratios, average variance extracted > 0.50 in all occasions) and discriminant validity (“square root” of AVE of each latent variable is greater than the correlations among the latent variables) ([Fornell and Larcker, 1981](#)).

Table 3
Measurement statistics for model constructs.

Construct	Std. loading	Mean	Std. deviation
Monetary Experience (a = 0.81; C.R. = 0.90)	0.91	4.64	1.64
Social_Facilitation (a = 0.67; C.R. = 0.71)	0.90	4.55	1.71
	0.78	4.63	1.51
	0.62	4.23	1.55
Intrinsic_Enjoyment (a = 0.7; C.R. = 0.76)	0.62	4.63	1.57
	0.81	5.05	1.57
	0.65	4.39	1.68
Utilitarian(a = 0.87; C.R. = 0.87)	0.70	5.14	1.49
	0.87	5.20	1.57
	0.89	5.22	1.62
Self_Connect(a = 0.82; C.R. = 0.86)	0.76	5.73	1.50
	0.81	5.55	1.49
	0.86	5.61	1.47
Time_Filler(a = 0.82; C.R. = 0)	0.81	5.32	1.45
	0.81	5.07	1.69
	0.67	4.58	1.57
Satisfaction(a = 0.81; C.R. = 0.86)	0.71	4.84	1.53
	0.74	5.63	1.54
	0.74	5.35	1.45
Online_Review_Intention (a = 0.9; C.R. = 0.9)	0.89	5.32	1.47
	0.85	5.16	1.52
	0.84	5.26	1.53
Trust (a = 0.74; C.R. = 0.82)	0.87	5.33	1.46
	0.91	5.25	1.54
	0.73	4.15	1.89
	0.90	4.04	1.76
	0.71	3.92	1.76

(χ^2 (360) = 1196.23, χ^2/df = 3.32, GFI 0.84, RMSEA 0.07, NFI 0.86, CFI 0.9).
Note: a: Cronbach's alpha, C.R.: Composite Reliability.

4.2. Structural model - path analysis, mediation and moderation

The next step in the analysis involved testing of the structural model and corresponding proposed relationships. Structural equation modeling and path analysis are standard tools for estimating the strength of relationships between multiple constructs especially while dealing with latent constructs (Hair et al., 2006; Kline, 2010). The model (Fig. 2) was investigated to evaluate the variance explained by the model in predicting customer propensity to write online reviews and to establish the mediating role of the customer engagement.

The overall fit measures (χ^2 (312) = 1226.67, χ^2/df = 3.93, GFI = 0.817, RMSEA = 0.035, NFI = 0.96, CFI = 0.87) indicate that the hypothesized model (Fig. 2) is a reasonable representation of the structures underlying the observed data (Fornell and Larcker, 1981; Hair et al., 2006). The results of the analysis produced a satisfactory

Table 4
Discriminant validity.

	AVE	Construct reliability	1	2	3	4	5	6	7	8	9
1. Satisfaction	0.68	0.87	0.83								
2. Social Facilitation	0.51	0.72	0.43	0.71							
3. Intrinsic Enjoyment	0.52	0.76	0.59	0.43	0.72						
4. Utilitarian	0.71	0.88	0.59	0.41	0.36	0.84					
5. Self Connect	0.68	0.86	0.65	0.42	0.54	0.68	0.82				
6. Time Filler	0.54	0.82	0.72	0.52	0.49	0.82	0.70	0.73			
7. eWoM	0.76	0.91	0.79	0.39	0.37	0.65	0.68	0.75	0.87		
8. Monetary	0.82	0.90	0.50	0.54	0.47	0.37	0.36	0.56	0.46	0.91	
9. Trust	0.51	0.75	0.72	0.45	0.68	0.47	0.65	0.57	0.73	0.66	0.71

Note - Values below the diagonal are correlations between the constructs; bold diagonal elements represent the square root of Average Variance Extracted (AVEs) for the relevant construct.

picture regarding the significance of estimated coefficients. The model explained 72% variance in the dependent variable i.e., customer propensity to write online reviews. The next step was to examine the hypothesized explanatory paths (Hair et al., 2006). As proposed, satisfaction (b = 0.374, C.R. = 5.128, p < 0.01), trust (b = 0.156, C.R. = 2.172, p = 0.03) and customer engagement (b = 0.416, C.R. = 5.239, p < 0.01) had statistically significant impacts on customer propensity to write online reviews. Hypothesis H1, H2, and H3 are therefore retained.

Hypothesis	Explanatory Path	Standardized coefficient (β)	Critical ratio	Interpretation
H1	Satisfaction → Online Review Intention	0.374**	5.128	Retained
H2	Trust → Online Review Intention	0.156*	2.172	Retained
H3	Customer Engagement → Online Review Intention	0.416**	5.239	Retained

**p < 0.01. *p < 0.05.

4.2.1. Testing mediation

Towards examining the mediating role of customer engagement, i.e., indirect effects of satisfaction and trust on online reviews via customer engagement, a path analysis was performed using the bootstrapping method in AMOS (Byrne, 1998). First, the direct effects of satisfaction (b = 0.707, p = 0.002), and trust (b = 0.343, p = 0.002) on online review intention are all significant. Having established these direct effects, the indirect effects were then tested (Table 5).

The indirect effect of satisfaction on online reviews via CE was found to be significant (b = 0.255, p = 0.002). However, the direct effect of satisfaction on online reviews was still significant (b = 0.446, p = 0.005) suggesting that CE partially mediates the effect of satisfaction on online reviews, in partial support of H4a. Next, the indirect effect of trust on online reviews via CE was significant (b = 0.175, p = 0.002), at the same time direct effect was not significant (b = 0.180, p = 0.092), indicating CE fully mediates the relationship between trust and online review intention, supporting H5a.

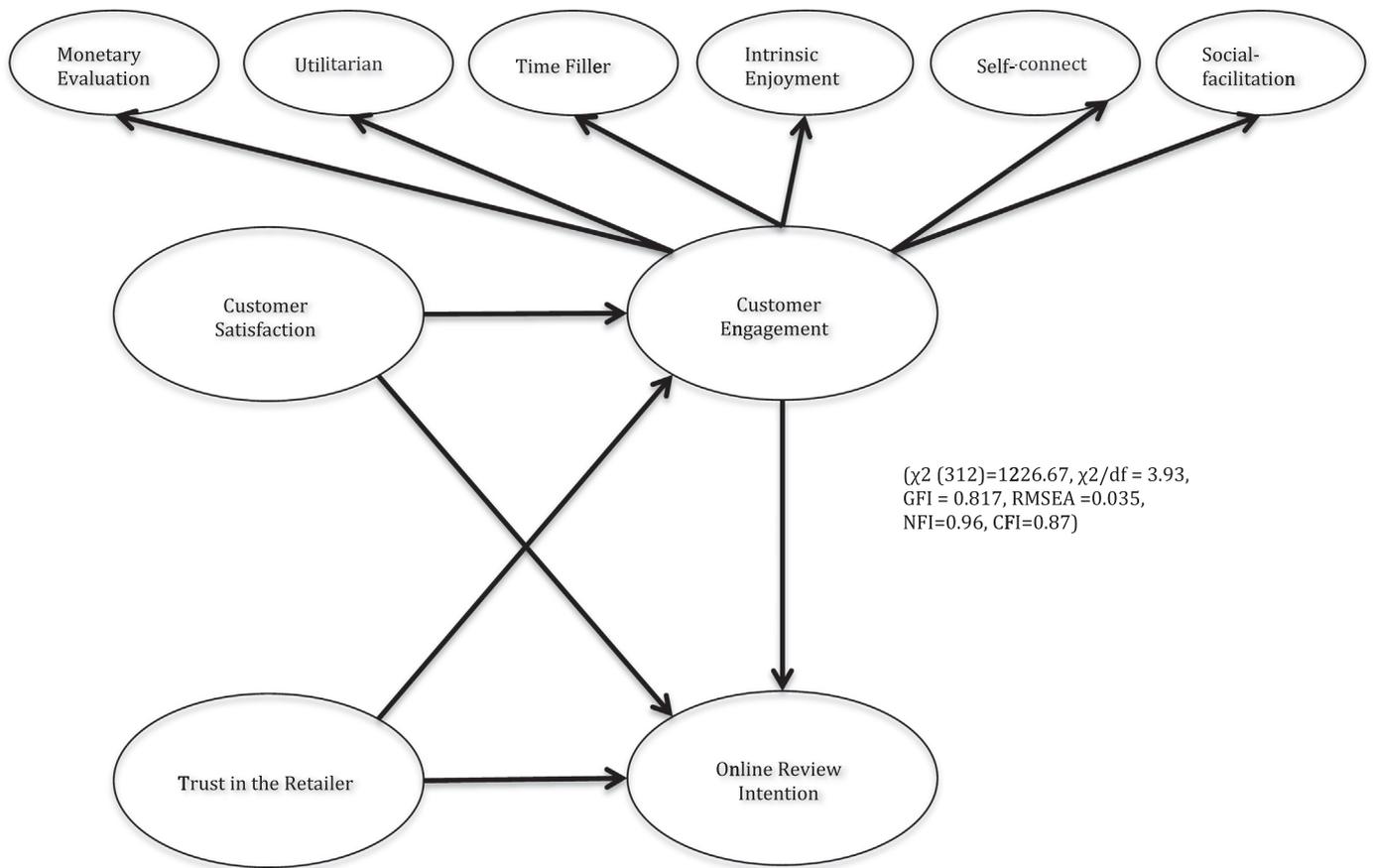


Fig. 2. Nomological network of customer engagement - continuance intention conceptual relationships.

4.2.2. Testing moderation

Once support for the main effects had been found, the next step was to include the suggested moderator variables into the model in order to gain further insights. As the proposed moderators were latent variables, it was important to convert the data into categorical variables. Two step process was followed for that – derivation of factor scores for satisfaction and trust (through imputation), followed by median split. For testing moderation through invariance analysis, new categorical variables were created – Satisfaction_Level and Trust_Level and grouping was done by a median-split on their the respective scores. As satisfaction and trust had a full spectrum of values, the variables were divided into three levels – low, medium and high. The High_Satisfaction group consisted of 106 subjects, and the Low_Satisfaction group consisted of 108 subjects. Similarly, the High_Trust group consisted of 108 subjects, and the Low_Trust group also consisted of 108 subjects. The subjects in the middle groups were excluded for more accurate analyses. Mean comparison test was conducted between the groups (High_Satisfaction, Low_Satisfaction and High_Trust, Low_Trust respectively) before proceeding with further analysis. The difference in both the cases was found to be statistically significant (Yi and La, 2004).

Towards testing the moderating effects of Satisfaction_Level and Trust_Level, multiple-group analysis was conducted with two groups in each of the case (Arbuckle, 2010; Byrne, 2004). This technique was appropriate as customer engagement and online review intention are

both latent constructs. The technique involves a two step procedure – testing overall differences in the relationship at model level followed by assesment of outcome variable values at different levels of the moderating variable. In the first step, an overall Chi-square difference was calculated for each of the proposed moderating variables, i.e., Satisfaction_Level and Trust_Level. As a standard statistical process, a model with equality constraints was compared to a model that allowed the parameters to vary. This test imposed the null hypothesis that the moderator variables do not have any effect on the parameters (Arbuckle, 2010). For both Satisfaction_Level ($\Delta\chi^2 = 108.212, \Delta DF = 26, p < 0.001$) and Trust_Level ($\Delta\chi^2 = 119.702, \Delta DF = 26, p < 0.001$), groups were found to be different at model level (Steenkamp and Baumgartner, 1998). As a next step, hypothesized path (CE → eWoM) was tested for invariance for different levels of satisfaction and trust. In the case of moderating role of Satisfaction_Level, the χ^2 test showed insignificant difference across groups ($\Delta\chi^2 = 0.317, p = 0.573$), basis which hypothesis H6 is rejected. However, a significant difference ($\Delta\chi^2 = 5.87, p = 0.015$) at the 5% confidence level indicated that the hypotheses H7 proposing the moderating effect of Trust_Level is supported by the data in this study. Further the data validated a higher impact of customer engagement in writing online reviews among High_Trust group ($\beta_{high} = 0.403, C.R. = 1.9$) vs those in Low_Trust group ($\beta_{low} = 0.096, C.R. = 0.737$). Based on these results hypothesis H7 was retained while H6 was rejected.

Table 5 Results of the direct and indirect effects for mediation.

Relationship	Direct without mediator	Direct with mediator	Indirect	Mediation Type
Satisfaction – Customer Engagement – Online Review Intention	0.707 (0.002)	0.446 (0.005)	0.255 (0.002)	Partial
Trust – Customer Engagement – Online Review Intention	0.346 (0.002)	0.180 (0.092),	0.175 (0.002)	Full

5. Discussion

5.1. Findings

The objective of this research is to elucidate customer online reviews with a specific focus on mobile shopping. There is an established literature on the role of satisfaction with products and services in building customer loyalty (Anaza and Zhao, 2013; Anderson and Sullivan, 1993; Shankar et al., 2003) which may be exhibited in various forms including re-purchase and writing online reviews. Further, researchers have proposed that trust in the retailer or brand purchased in the online environment would play a key influence in customer decision to write online reviews (Hennig-Thurau et al., 2002; Ranaweera and Prabhu, 2003). This study validated the significant role of satisfaction and trust in writing online reviews that are in line with the existing stream of literature in this space (De Matos and Rossi, 2008; Gvili and Levy, 2016).

In past fifteen years or so, there has been a growing body of literature on customer engagement. There are different conceptualizations and researchers do not necessarily converge on the operationalization as well as antecedents and consequences (Pansari and Kumar, 2017). However, most of the scholars have conceptualized customer engagement as a multi-dimensional construct. This study validated the multi-dimensional operational structure of customer engagement as per existing literature (Brodie et al., 2011a, b; Calder et al., 2009; Vivek et al., 2012). Further, scholars largely believe that satisfaction is an antecedent to customer engagement (Calder et al., 2013; Pansari and Kumar, 2017; van Doorn et al., 2010). This study validated the same with respect to mobile shopping context. However, the existing body of knowledge does not converge on the relationship between trust and customer engagement. One stream of research considers trust as antecedent while other consider it as a consequence of customer engagement (Bowden, 2009a; Brodie et al., 2011a, b; Jaakkola and Alexander, 2014a, b; Vivek et al., 2012). This study looked at trust as an antecedent and proposed that trust is essential for the customer to download/ visit mobile shopping site and spend time as well as make a purchase. The empirical results validated the same providing evidence to the proposed hypothesis. The study had further proposed that customer engagement is likely to have a significant impact on customer propensity to write online reviews that are fast becoming an important source of information for potential customers. While there has been a lot of literature around the same, most of the studies are conceptual in nature (Vivek et al., 2012). Building on the literature, empirical evidence in this study provided the evidence that customer engagement adds to the predictive model of writing online reviews in addition to customer trust in the retailer and customer satisfaction with the retailer. Moderating role of trust in engaged customers' propensity to write online reviews is another interesting finding of this study. The significant influence of customer trust level in the retailer in influencing CE → OR path demonstrates the higher the level of trust, higher is the likelihood of impact of customer engagement on intention to write online reviews. On the contrary, the insignificant influence of satisfaction level on CE → OR path may be a reflection of a short-term relationship based on current transaction only, which may not influence the likelihood of customer engagement on intention to write online reviews. These findings further emphasize the importance of building long term relationships leading to overall trust, which is beyond satisfaction in a single transaction. Such relationships are likely to generate a positive response to online review request not only directly but also by influencing customer engagement to online review intention relationship. With these results, the study provided evidence that engagement plays an important mediating role between satisfaction and trust as antecedents for online reviews. Also trust plays a significant moderating role in customer engagement – online review intention. Building customer engagement, therefore, is crucial for the retailers to improve the likelihood of customers in responding to online review requests.

5.2. Theoretical implications

The study has multi-fold theoretical contribution in the emerging areas of online reviews, customer engagement, and mobile shopping.

There is increasing interest among scholars on the influence of online reviews in customer decision making (Chevalier and Mayzlin, 2006; De Matos and Rossi, 2008; Srinivasan et al., 2002). This study contributes to this emerging body of literature whereby online reviews are becoming preferred and more credible sources of information by customers as compared to company sponsored advertorials (Bickart and Schindler, 2001). This study validates the role of satisfaction (De Matos and Rossi, 2008) (Gvili and Levy, 2016) and trust in the retailer (Garbarino and Johnson, 1999; Gremler et al., 2001; Ranaweera and Prabhu, 2003) as significant antecedents of online reviews by customers specifically in mobile shopping apps in tandem with the existing literature.

There is an increasing interest among scholars on the role of engagement in the relationship between customers and brands/ retailers (Bowden, 2009b; Brodie et al., 2013; Hollebeek, 2011; van Doorn et al., 2010). However, the role of customer engagement in motivating users to write online reviews remains underexplored (Vivek et al., 2012). This research broadens the established antecedents of online reviews and thus contributes to the emerging stream of research in the role of customer engagement in online reviews. Trust is a long-term relationship arising out of several interactions whereby the customer is ready to rely on the exchange partner on whom she has confidence (Moorman et al., 1993). However, engagement is important for the customer who trusts the retailer to go back and respond to the request to write online reviews when there is no personal need for the customer. Further, beyond satisfaction with the current transaction, the customer may not have any functional incentive to motivate her for writing reviews – in other words, the customer may feel 'what's there for me' acting as an inhibitor. The significant role of customer engagement in this network would come into play when the customer does not have a current purchase requirement but the engagement will motivate her to go back and write reviews when requested. The conceptualization and empirical validation of mediating role of customer engagement in satisfaction and trust as antecedents of online reviews is, therefore, a strong contribution of this study. Further, the moderating role of trust level in influencing customer engagement – online review intention is another valuable contribution highlighting the importance of building long-term trust in the relationship for favourable actions. Lastly, this study explored the usage of mobile devices for shopping which are becoming mainstream sources for accessing online content (Grewal et al., 2016; Kleijnen et al., 2007; Shankar et al., 2010). Mobile devices enable a higher level of engagement for service providers especially retailers both in pure-play online/ mobile format as well as multi-channel format. Retailers are actively extending their stores through a mobile channel that enable a higher degree of engagement and hence increase the likelihood of online reviews from customers.

5.3. Managerial implications

The findings of this study have implications for several entities in a multi-sided market including the retailers offering mobile shopping applications, the merchants selling their products and for the brands that advertise/ sell with these retailers.

Through empirically testing of the key antecedents, this research seeks to provide managers with strategic tools that drive online reviews. Both anecdotal and empirical evidence attests the importance of online reviews in influencing potential customer decision in their purchase journey. Findings of this study seek to inform managers regarding what factors to focus on to generate higher levels of reviews, thereby helping potential customers to make favourable purchase decisions. Satisfaction with the products (and services) and trust in the retailer are essential for customers to post online reviews. However, to increase the

likelihood of customers posting online reviews post the purchase, retailers need to build customer engagement and motivate them to keep coming back to their sites.

Findings of this study empirically validate the importance of customer engagement in engendering online reviews that are influential in customer purchase decision. Thus, managers in retail organisations are advised to put in place initiatives to increase customer engagement. Customer engagement arises out of experiencing the retail environment repeatedly and mobile shopping applications could be a critical tool in enabling such engagement. Promoting adoption of mobile shopping apps and using the platform to send customized triggers for fostering repeat visits to retailer app may be crucial to building engagement. The study provided empirical evidence of higher likelihood of writing online reviews by engaged customers. Usage of mobile apps for shopping, therefore, is, therefore, likely to increase online reviews in addition to making more purchases.

5.4. Limitations and future research avenues

The research has some limitations that may lead to future research avenues. This research had self-reported data from the respondents and have limitations of the study of this nature. Also, the study looked at satisfaction, trust and customer engagement to predict online reviews. The future studies could look at other emotional, economic, and

contextual variables. This study focused on lifestyle and fashion products that provide a good context for customer engagement. The framework and results may not be directly applicable to some other formats like grocery and may need more investigation and modifications in the model. Further, online service retailers offering travel, vacation, hospitality products (like Makemytrip.com, Yatra.com, Airbnb.com) as well as information (like Tripadvisor.com, Yelp.com) also rely heavily on online reviews for choices of potential customers. Similarly, in the business of food service aggregators like zomato.co, foodpanda.com, customer reviews play a critical role. Future research may look at taking this study and validating the results across other services.

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Appendix A.: Items used for survey

Item label	Item description	Source
Social-facilitation		
SOC1	I bring up things I have seen on this application in conversations with other people	Adapted from Calder et al. (2009)
SOC2	Mobile shopping applications often gives me something to talk about.	
SOC3	I use things from mobile shopping applications in discussions or arguments with people I know.	
Self-connect		
SCY1	Browsing a mobile application is a personal shopping trip	Thakur (2016)
SCY2	Mobile shopping applications provide intimate shopping experience	
SCY3	Nobody is watching me to comment on my shopping when I am using mobile device	
Intrinsic Enjoyment		
IE1	Browsing a mobile shopping applications is like a treat for me	Adapted from Calder et al. (2009)
IE2	Browsing a mobile shopping application improves my mood	
IE3	I like to sit back and unwind with mobile shopping applications	New
Time Filler		
TF1	I like to browse the mobile device when I am taking a break	Thakur (2016)
TF2	I like to browse the mobile device when I am traveling	
TF3	I browse the mobile device when have nothing else to do	
TF4	I browse the mobile device for entertainment when I am bored	
Utilitarian		
UT1	Mobile shopping applications give me good product information	Adapted from Calder et al. (2009)
UT2	Mobile shopping applications help me make good purchase decisions	
UT3	Mobile shopping applications provide information from other users that help me make good purchases	
Monetary Evaluation		
MON1	Mobile shopping applications help me save money	Thakur (2016)
MON2	Mobile shopping applications give me better deals	
MON3	Mobile Shopping applications give exclusive time-bound offers	
Satisfaction		
SAT1	I think that I made the correct decision to use mobile application for making purchases	Adapted from Brockman (1998);
SAT2	The experience that I have had in making purchases using mobile applications has been satisfactory	Janda et al. (2002)
SAT3	In general, I am satisfied with the service I have received from mobile applications for making purchases	
Trust		
TR1	I think that mobile application service providers deliver authentic products to meet the needs of its users	Adapted from Gefen et al. (2003); Mukherjee and Nath (2003)

- TR2 I think that mobile application service providers are concerned with the present and future interests of its users
- TR3 I think that mobile application service providers offer good quality products to meet the needs of users

Online Review (ORI)

- ORI1 I am likely to recommend the products I bought when the retailer asks for the review on its site/ mobile application Adapted for this study from Brown et al. (2005)
- ORI2 I am likely to write a review on the site/ mobile application after using the products purchased from the retailer
- ORI3 It is likely that I will give online feedback based on my purchases from the retailer's website/ mobile application in future

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